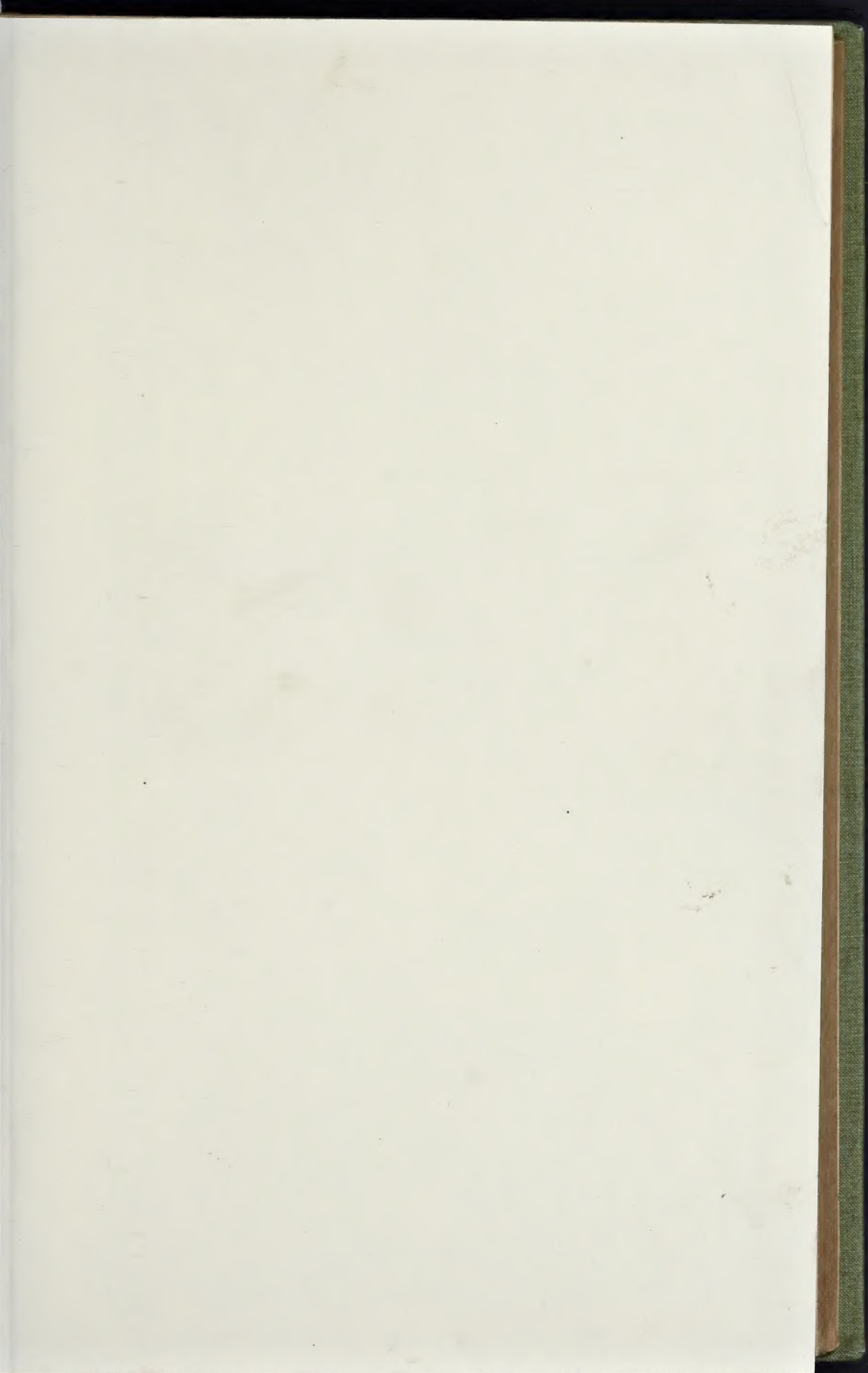


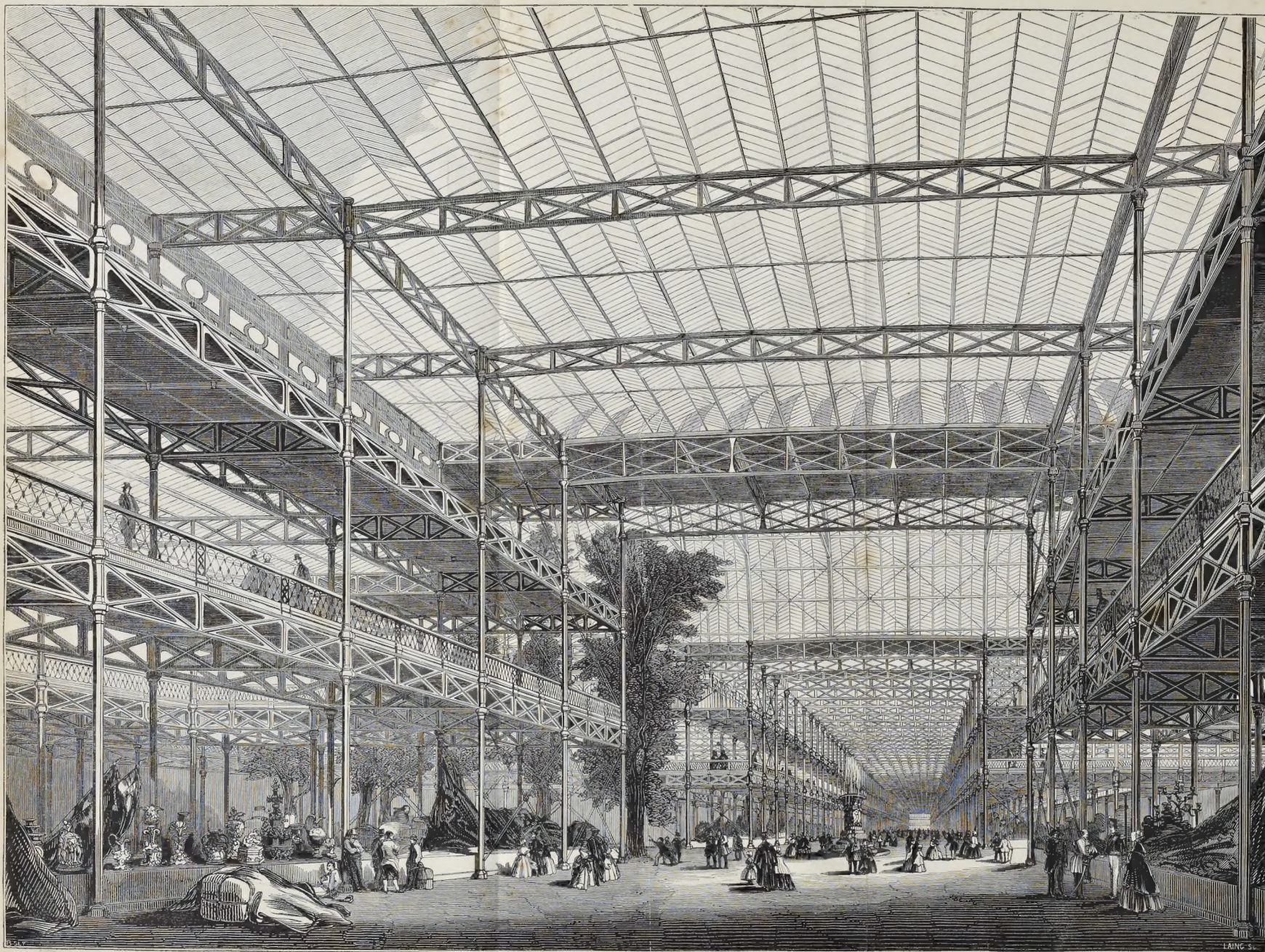


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The Builder.

AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

Architect, Engineer, Operative, and Artist.

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The Builder

NUMBER 413.]

VOLUME FOR 1851.

[SATURDAY, JAN. 4.

OUR NEW VOLUME.—THE EXHIBITION BUILDING IN HYDE PARK.

INSTEAD of the pledges with which we have usually commenced each new volume of our Journal, we, on the present occasion, begin with performance. THE BUILDER is enlarged from sixteen to twenty-four pages, the price remaining the same; and we present to our readers, in addition to our usual illustrations, a large-sized view of the inside of the enormous structure raised in Hyde Park for the International Exhibition of Industry. It will be our constant and earnest endeavour to render this Journal equal to its purpose: we shall strive zealously to prove ourselves worthy of the confidence which the public have heretofore placed in us, and the favours we have received: and if honesty of purpose, love of truth, kind feeling, and a firm determination to follow what may seem to us the right course, will suffice to effect this, we may venture to anticipate success. We ask, as we have often done before, for the co-operation and sympathy of our readers, confidence in our good intentions, consideration for our short-comings. Although forced occasionally, in discharge of our office, to contravene the opinions of others and animadvert on their proceedings, we would never willingly hurt the feelings of any. We see no reason why, if we are forced to differ with individuals in special questions of taste, judgment, or even propriety, that we should be viewed in all things as an enemy. We have no pleasure in giving pain, and infinitely prefer smiling countenances and a shake of the hand to black looks and spiteful recriminations: but we have a duty to the public to discharge which over-rides all other considerations. *This duty we shall do;* but we will endeavour to do it fairly and kindly. We are not bound to say on every occasion all we think, but we pledge ourselves to think all we say. And so with warm and hearty thanks to many friends, and referring to the introductions to former volumes of the journal for our views of its scope and claims, we leave this part of the subject, saying, with *Hamlet's* player,—

“For us and our miscellany,
Here stooping to your clemency,
We beg your hearing patiently.”

The interior view we have given of the Exhibition Building represents it as it will appear looking towards the east, and gives some idea of the extraordinary length of the structure, 1,848 feet, and of its general construction.* The hemispherical roof of the transept is seen above the flat roof of the nave: the columns piled on columns, the “ridge and furrow” roof, and the girders carrying both that and the galleries, are clearly represented. The floors of the galleries, it will be seen, are level with the top of the girders

(not as shown in the prints which have been published), and have a light iron railing as a protection for the visitors. We have introduced some few figures and articles of manufacture, to serve as a scale (a fountain, also, as there will be several),—but the view does not pretend to show the structure as it will appear when furnished: the aisles will then be separated, as most of our readers know, by tapestry, carpets, or hangings of other sort, suspended between the columns, and there will be an “embarrassment of riches,” which we may not attempt to fore-show.

The correctness with which all the 2,500 columns have been placed is very striking. Regularity has been secured, and the task of construction simplified, by making all parts of the plan multiples of one small manageable figure. A perfect fit is thus secured with much greater ease, while the repetition of the same dimensions renders confusion or complexity impossible. This is the case with all the great iron roofs of railway stations recently constructed. All the dimensions of the Building in the park are multiples of 8: for instance, the width and height of the smallest aisle is 3 times 8, or 24 feet; of the second largest aisle, the width is 6 times 8, or 48 feet; and of the great centre aisle, 72 feet, or 9 times 8. The whole width is 408 feet.

The side aisles look low, but still are high enough for their purpose.

The effect of the transept is very striking,—we may even say grand: the full-grown elms, put under a hand-glass, are dwarfed into insignificance: it may safely be pronounced the most daring and extraordinary piece of construction ever attempted. The span is 73 feet: the roof is a semicircle with a radius, therefore, of half that dimension: it is 408 feet long, and is, at the crown, 108 feet from the floor. Only those who saw on the ground the semicircular wooden ribs which are the main stay of this roof, will properly estimate their size and construction.* It was no ordinary feat to

raise these enormous ribs whole from the ground into their places.* Horizontal tie-beams are placed at a level about 20 feet above the springing, and diagonal ties are introduced throughout the roof.†

Machinery has necessarily been resorted to in every stage of the business to facilitate progress: the arrangement for cutting off the ends of the wooden gutters and making a further hollow at the end to receive the castings to discharge the drip-water,‡ for splaying

to the face of the plank. At the distance of 3 feet from the point of contact between the curve and the straight edge of the plank, which occurs in the middle of its length, the deflection, or distance of the curve from the straight line, is 1½ inch, and at either end of the plank, supposing it to be 12 feet long, it is 7½ inches. By means of the templet the curvature is accurately obtained at all intermediate points; and it is obvious, that the figure of a circular roof of any species might be constructed in a similar manner, only, as the radius of curvature in all curves is not constant, except in the circle, but varies continually from point to point of the curve, a series of templets would be necessary to make the different segments of the arch. The curved piece cut off from the plank on the one side is added on the other, and the two such segments, making up the figure of a semicircle, the interior undergoes a slight alteration to adapt it to a second templet, which exactly gives the curvature of the inner circle. Wooden dowels, or pins, are used to connect the two parts of which each segment is composed, and the strong combination which results is completed by cutting off the ends according to the radii drawn there. The entire rib is built of two layers of two-inch thick segments, formed in the above manner, and a layer of four-inch thick segments interposed between them. All these being accurately portions of the circle, no great difficulty attends their union, because, when put together, they exactly make up a circular arc in this way:—A layer of the two such segments, making up the figure of a semicircle, with its terminal extension, is first put together upon the ground, and forms, in fact, a rib of the same pattern as the compound rib, only two inches in thickness instead of eight. Upon this layer of segments the figure of four-inch segments is laid, in such a manner as to “break joints” with it; that is to say, each joint or break, in the four-inch course, falls upon the centre of one of the segments in the two-inch layer, and vice versa. The four-inch segments is imposed upon the upper side of the layer of four inches, which is, in fact, included between the two. The joints of the two four-inch courses of segments would exactly correspond with each other, if nothing were interposed between them, and both of them, consequently, break joints, with the intermediate four-inch course. All three courses being exactly put together in their respective places, are “spiked” or nailed up, and the ribs are then, and thus united in one rigid mass, which it is obvious could not have been made in the first instance from eight-inch timber.”

These were raised upon end and set up in pairs, with pulleys fitted in, distance-pieces to support the intermediate gutters, and six sets of cross-bracing to make the whole sufficiently stiff. Ropes were then attached to this framework from scaffolding on either side of the transept, at the point of intersection with the centre aisle, and the power used in raising the ribs consisted of four “crabs” so disposed that the men working them could see exactly the extent to which the rope pulled and their crabs should be pulled. As the framework was necessarily broader than the transept, one side was raised about 36 feet higher than the other, until the whole was raised to the desired elevation. It was then moved on rollers to its proper position in the arch, and dropped into the socket of the crane, and formed for its reception at the top of each east-iron column in that part of the third tier.

† Mr. Henderson originally suggested the introduction of the transept, Mr. Barry proposed the hemispherical roof.

‡ The apparatus for this purpose consists principally of a circular saw, about 20 inches in diameter, about the centre of which curved cutters are arranged, and their edges disposed in a manner to cut in the same direction as the saw. An axle mounted upon a heavy mass of wood and iron, carries the saw, and also a crank, passing over a wheel, and a heavy counterweight, proceeding from a larger drum concentric with the fly-wheel of a stationary horse steam-engine. The mass upon which the saw axle is mounted is suspended by a strong cable, passing over a wheel, and a heavy counterweight, on the other side by a weight. On the under side it is connected with a lever, one end of which is fixed to the up-rights which carry the wheel and apparatus, and the other stands forward to be worked by the operative. In front of the plane of the saw, at a convenient level, is a level table, and exactly distant from the same plane by the required length of each gutter, a shoe or box of iron open towards the saw, and provided with a heavy strap, is passed down, is screwed to a block on the table. Midway between the shoe and the plane of the saw, a crutch is fixed about 8 inches above the table, capable of swinging completely round on a pivot. Into this crutch the gutter is put, and slewed round until one end drops into the shoe, against the end of which it is thrust home, when the lid is brought down and fastened. The other end of the gutter, near the saw, is now forced down against a rest, by a man in attendance, and it will be observed, that as he

* For exterior view, plan, and descriptive particulars, see our former Volume, VIII.

the ends of the sash-bars, drilling them, &c., is very interesting. A Bramah press tests the girders, steam gives motion every where, and the sash-bars are *dipped* into paint and passed under brushes to wipe off the superfluity.

The machines to enable the men to glaze the transept are somewhat different from those employed in other portions of the building, in order to enable the glaziers to travel up the circular roof. The mode adopted is that of placing a small windlass in each carriage, to which is attached one end of a rope, the other being made fast to the upper portion of the roof. The machine is provided with wheels which travel in the gutters of the circular ribs, and by turning the small windlass the workman is enabled to propel himself along as his work advances.

The Building is not yet finished: it will scarcely be so in less than a month at the present rate of progression, wonderfully rapid as that is. This, however, will be quite 'early enough.

On the last day of the old year, when, as it is understood, Messrs. Fox and Henderson's more complete control over the building expired, the members of the Society of Arts visited the works at their invitation, and Professor Cowper, of King's College, gave an explanation of the scientific construction of the edifice. The two principal points made by Mr. Cowper were, 1st, to exemplify the greatly increased strength which could be obtained from materials by giving them a scientific form (a very good point); and secondly, to prove what much cleverer fellows engineers were than architects,—a very weak one. He demonstrated the first very neatly and nicely; showed how two quills, 1 inch high, were not crushed by less than 2 cwt.; how that the same quantity of material in a solid iron column, when formed into a hollow one, would carry much greater weight, and that a piece of tin plate, of no strength in that form, would, when twisted into a cylinder, withstand a great pressure. He drew attention to the regularity with which the columns were placed. Had the relative distances not been accurately preserved, the girders, cast as they were at a distance, would not have fitted. The cast-iron columns being mounted on each other, tier above tier, it was necessary that the points of junction should be fitted to each other with mathematical precision. This necessity the professor illustrated by pieces of wood roughly cut in pillar-shape and placed above each other, which, of course, would not stand straight; the same experiment being repeated with pieces of wood pillar-shaped, and the ends turned in a lathe, of course with a very different result. Thus, he continued, it became requisite that the ends of the pillars should be turned. There were 2,500 columns and 12,000 "facings" to be done. Few engineers would have ventured on such an undertaking, but

is pressing in opposition to the arch which stands above the table, the elasticity of the wood tends to press this end upwards against the saw, by which the operation is much facilitated. At this moment another man makes pressure on the lever first spoken of, which brings the saw down in rapid revolution upon the gutter, and cuts it completely through. The descent of the saw is continued a few inches further, when its motion is stopped by the lever coming in contact with a stud. Before this point is reached, the cutters fixed about the centre of the saw, and which, whilst revolving with it appear to form as it were a boss, have scooped out the end of the groove in a figure approximating to a hemisphere. Into this hemisphere a corresponding projection in the casting attached to the end of the gutter will drop, and this will form the tube by which water will be conducted to the large gutters. The lever being released, the saw rises, the box at the other end is opened, the gutter released from its constrained position, and turned round on the crutch to present the uncured end to the action of the saw. That which has been cut is now confined in the shoe, and the operation above described performed at the other end. It is then released, and removed from the machine, and in this state is ready to undergo the next process, which is that of cambering.

Messrs. Fox and Henderson had accomplished it, and the result was that there was not a crooked line in the building. He stated, as to the girders for galleries, that they are proved to 15 tons; that the breaking weight is 30 tons, and that they could not be subjected in their places to a greater weight than $7\frac{1}{2}$ tons.

We cannot compliment the professor on the manner in which he replied to those unknown quantities,—“the critics:” according to our humble judgment, it was quite unworthy of his position and reputation. Take one instance. The lecturer produced a model, made of laths, representing the half of the transverse section of the building. Every column was represented by a single lath, and every girder by two laths, one for its upper, and the second for its lower ledge. All the connections, for the sake of experiment, were made by pivots or pins; and the effect of the wind in blowing down the building was shown by pushing the inner columns outwards, when they all turned over on the pivots, and folded up flat like a parallel ruler. “This,” exclaimed the lecturer, “is how the critics build. Now I will show you how Fox and Henderson build.” He then added a few diagonal pieces to the girder pivots to represent the cross pieces in the girders, and showed that with these additions the frame would not close up as before, but was susceptible of being raised up as a whole. One of the morning papers gravely describes this experiment as “triumphantly conclusive of the rigidity of the edifice!” We need not tell the readers of THE BUILDER that it no more applied to any of the remarks made by “the critics,” than telling them the Emperor of Russia had taken the “Star and Garter” would have done. It served its purpose, and was not without use with an audience of amateurs; but “the critics” ought to have been left out of the question, especially when, putting a hundred-weight on two small semicircular ribs, made out of a hoop, the lecturer exclaimed—“Now will they be afraid to go under the transept roof.” Tenterden steeple, the world-famous illustration of a *non sequitur*, must hide its head henceforth. We regret being so often dragged into fault-finding, and made to appear antagonistic to an undertaking in which we are so largely interested, and for the promotion of which we have personally devoted much time, and will therefore say no more.*

Earnestly we wish the Grand Exhibition, what it will doubtless have, a successful and triumphant issue, and we will close our present remarks with the words of one who has, on other occasions, sung in our pages,—

“Right gladly, brother workmen, will each English artisan
Rejoice to make you welcome all, as honest man to man—
And teach, if aught he has to teach, and learn the much to learn;
And show to men in every land, how all the world may earn—
Whatever earth, man's heritage, of every sort man yield,
From mine and mountain, sea and air, from forest and from field,
Whatever reason, God's great gift, can add or take away,
To bring the worth of all the world beneath the human sway.
Whatever science hath found out, and industry hath earned,
And taste hath delicately touched, and high-bred art hath learned,

* Mr. Cowper stated that the personal superintendence had devolved upon Mr. Fox. The general management of the works had been conducted by Mr. Cochrane. The laying out of the ground had been entrusted to Mr. Browner, and Mr. Cowper, a son of the lecturer, had constructed the machinery. The contractors express their obligations to Messrs. Cochrane and Co., of Woodside Ironworks, near Dudley, and to Mr. Robert Johnson, of Hollyhall works, near the same place, for their exertion and attention in the preparation of casting.

Whatever God's good handicraft, the world he made hath made;
By man, God's earnest artisan, the best shall be displayed,

Oh! think it not an idle show, for praise, or pride, or pelf,
No man on earth who gains a good can hide it from himself;
By any thought that anything can any how improve,
We help along the cause of all, and give the world a move.”

“RIPLEY WITH A RULE.”

THOMAS RIPLEY has been immortalised by Pope, who has preserved his name, like a fly in amber, in no less than three passages of his “Moral Essays” and satirical works.

“What brought Sir Visto's ill-got wealth to waste?
Some demou whisper'd, ‘Visto have a taste,’
Heav'n visits with a taste the wealthy fool,
And needs no rod but Ripley with a rule.”—
Epistle IV. to Richard Boyle, Earl of Burlington, line 15.

“See under Ripley rise a new Whitehall,
While Jones and Boyle's united labours fall.”—
Dunciad, book 3, line 327.

“Who builds a bridge that never drove a pile?
(Should Ripley venture all the world would smile.)”—
Imitations of Horace, book 2, ep. 1.

These repeated notices, by so great a man as Alexander Pope (although far from laudatory), will at least justify the inquiry, who was Ripley, and what were his works?

Horace Walpole tells us, that Thomas Ripley was born in Yorkshire, and executed such considerable works that he must not be omitted, though he wanted taste and fell under the lash of lasting satire, Pope having twice mentioned him (in fact, thrice). The truth is (says Walpole), “politics and partiality concurred to help on these censures: Ripley was employed by the minister, and had not the countenance of Lord Burlington, the patron of Pope.”

The parentage, place of birth, and education of Ripley are not known even to his descendants, who, however, preserve a tradition that early in life he walked from Yorkshire to London to seek his fortune: probably he had some connections in London to apply to. John Ripley had been chief joiner to King Henry VIII., which is a curious coincidence, if the subject of the present notice had no other connection with him than having filled a similar office under the sovereign of his own time.

The *London Gazette*, of May 8, 1726, contains the appointment of Thomas Ripley, Esq., Chief Carpenter of His Majesty's Works, to be Comptroller of His Majesty's Works, in the room of Sir John Vanburgh, deceased: he thus became the successor, also, to Geoffrey Chaucer, William of Wykeham, Inigo Jones, Sir Christopher Wren, and other great architects who had previously filled the same honourable and responsible position.

Before this appointment, however, he had acquired reputation in his art. He was much patronised by Sir Robert Walpole, for whom he built and greatly improved the plan of Houghton Hall (Norfolk), for which Colin Campbell had furnished the original design. This mansion was commenced in 1722, and not finished till 1735. “The whole building is of stone, and though not strictly conformable with the present taste, is nevertheless a superb and elegant structure: it extends 500 feet, including the wings, which contain the offices. The centre is 165 feet by 100, and consists of a rustic principal and attic stories. The west front is ornamented with a pediment, containing the armorial bearings of the family, supported by four Ionic three-quarter columns, and crowned with statues. The principal apartments are very magnificent, particularly the saloon, which is 40 feet long, 30 feet wide, and 40 feet high (rather too high), and the hall a cube of 40 feet, with a stone gallery round three of its sides. And these apartments were decorated with the sculpture of Rysbrack, and the best private collection of pictures in England,” which were afterwards sold to the Empress of Russia.

The first public edifice which we know to have been built by Ripley was the Custom House. The former Custom House having been burned in 1715 (as its predecessor had been in the Fire of London, 1666), Ripley was employed to erect a new Custom House, which he did in 1718; and the building, although

not remarkable for taste, was considered to be most convenient and well adapted to the purposes for which it was intended; and although erected on a swampy site, it stood firmly until it was burned down in 1814, when the present Custom House was erected in its room.

The present Admiralty Office at Whitehall was Ripley's next public office. This building, which was erected in 1724, is, I suppose, what Pope alludes to in the Dunciad as "A New Whitehall." H. Walpole says of it: "The Admiralty is a most ugly edifice, and deservedly veiled by Mr. Adam's handsome screen. Yet Ripley in the mechanic part, and in the disposition of apartments and conveniences, was unluckily superior to the Earl (of Burlington) himself."

The chief defect of the front elevation of this building is the disproportion of the portico, for which I find the following apology in a work called "Modern London," quarto, 1804.

The architect had made his shafts of a just length, when it appeared that the pediment blocked up the windows of one of the apartments, and he was ordered and compelled to carry his columns to the roof of the building.

Ripley erected Wooltorton House, Norfolk, for Lord Walpole in 1730, which Horace Walpole says "is one of the best houses of the size in England;" and with Lord Orford's, at Houghton, "will, as long as they remain, acquit this artist of the charge of ignorance."

The only remaining work of Ripley's that I have to mention is the chapel at Greenwich Hospital, which was burned down in 1779, and was replaced with the present structure by James Stuart.

In November, 1737, Ripley was appointed Keeper of his Majesty's Private Roads, and Conductor in his Royal Progresses.

In March, 1738, he was promoted to the office of paymaster of his Majesty's Board of Works, in room of Hugh Howard, esq. deceased; and Henry Flitcroft (architect of St. Giles's-in-the-Fields and St. Olave's, Southwark) succeeded Ripley as controller.

He was thrice married: his first or second wife died 17th Nov. 1737; and in April 1742, he married Miss Bucknall, of Hampton, Middlesex, with a fortune of 40,000*l*.

In 1744 Mr. Ripley was elected one of the sheriffs of London and Middlesex, and paid his fine to be excused serving that responsible office.

Mr. Ripley's descendants are in possession of a very handsome silver vase, presented to the architect by the Princess Amelia, daughter of King George II., for whom he had executed some alterations at Gunnersbury House; and the princess being desirous that he should be paid for his work, he declined to receive any remuneration, stating that he considered the work to be within the scope of his duties to his Majesty. The inscription on this vase is merely "The Gift of Her Royal Highness the Princess Amelia to Thomas Ripley, Esq.," with the date.

After his elevation in life, he applied to the Heralds College for a grant of arms, and the armorial bearings of the Yorkshire family of the same name, with the variation of a dovetailed line in the escutcheon, and an escutcheon azure and Or in the paws of the lion, which is the family crest, were assigned to him.

Mr. Ripley's family possess a kitcat portrait of him by Jacob Highmore,—one of that painter's best productions. There is also a younger portrait of him at Wooltorton, by Gardiner, every way inferior to Highmore's picture, and not in good preservation.

He died at Hampton Court (where he had an official residence), Feb. 10, 1758, and was buried at Hampton church, in which there is a gravestone to his memory.

He left a considerable fortune, which descended to his eldest son, Richard, who was called to the Bar, but did not follow his profession, and diminished his inheritance. He left two other sons and several daughters.

The line in his eldest son, Richard, is extinct. His youngest son, Horatio (named after the Walpole family), a naval officer, died unmarried. His second son, Thomas, who had an appointment in the Exchequer, continued the family, who now occupy a highly respectable station in life. John Richard Ripley, Esq., of Clapham, an eminent merchant of London, was grandson of the archi-

tect. Jeremy Jephson Ripley, Esq., clerk to the northern ports in the Custom-house, is a great-grandson; and the present representative of the subject of this memoir is the Rev. Thos. Hyde Ripley, rector of Tolkenham, and vicar of Wootton Bassett, Wilts.

G. R. CORNER.

CAUSES AND CURE OF SMOKY CHIMNEYS.*

We have seen that the primary cause of the *current*, or "draught" of chimneys in actual use, is the *rarefaction of air*, and also that this rarefaction is effected by means of heat generated by the fire; and we will now proceed to show how it is that a *current*, or "draught," frequently exists in those not in actual use: which existence has doubtless contributed to the prevalent belief that there is something mysterious or difficult of comprehension in the action of chimneys; and obscured the simple fact, that it is purely a mechanical action, viz. that of gravitation.

Let us take the example of an ordinary engine chimney for our first illustration, and suppose it to be standing in an open situation, apart from every description of building. Let it be built without any lateral openings from the level of the ground to the top; and we will find that the column of air inclosed by it is perfectly motionless. Now, cut a flue-opening near its base, and it will be seen that a *current*, or "draught," will instantly commence, and gradually increase until it reaches its maximum. This *current* then, is not the result of the existence of a fire at the opening to the chimney, as in the case of those in use; although it is still the result of the *rarefaction of air*. The cause of such *current* lies in the supply of rarefied air, afforded to the flue-opening at the surface of the earth; and the operation of this cause we will endeavour to describe.

We find that the temperature of the atmosphere is maintained by the radiation of heat from the earth, which it acquires by the absorption of the rays of the sun; and from other natural sources. This process of nature may be distinctly observed in operation at any time at which the sun's rays have considerable strength, as on a summer's day; when, if we look horizontally along any considerable extent of a dry part of the earth's surface, we will perceive that the radiating heat has produced a stratum of highly rarefied air, which may easily be recognised by the peculiar dazzling motion that renders indistinct, objects seen through it. The same appearance may be observed around and above the top of any chimney from which only heated air issues, and also around a piece of heated iron, or any other heated body which possesses the power of readily giving out again the heat imparted to it. It would be out of place here to enter into a full investigation of these natural phenomena; suffice it, therefore, for our present purpose, to know that they exist, and that there is a constant—although not uniform—supply of rarefied air at the surface of the earth.

The radiation of heat, and consequently the *rarefaction of air*, is constantly going on at that part of the surface of the earth which is enclosed by a chimney, such as we have selected for example, as well as at the surrounding portions. But the rarefied air on the exterior is exposed to the action of the natural currents or winds, which traverse, with scarcely any total cessation, the surface of the globe in various directions; and which disturb the rarefied air, preventing its accumulation at the earth's surface, in proportion to the amount of their force and temperature. On the contrary, the rarefied air enclosed by the chimney is protected from the disturbing action of these winds, and it therefore accumulates until it attains a greater perpendicular height than the stratum of rarefied air outside. By this means the column of air inside the chimney becomes specifically lighter than the surrounding column of air of equal height outside. This is proved by the fact that the barometer will indicate a lighter, and the thermometer a warmer atmosphere in the interior of a long chimney closed up entirely at its base than they will do on the exterior at the same level.

* See vol. VIII. p. 578.

Let us now suppose the chimney which we have taken as an example to be still without an opening at its base; with a column of light air inside, and surrounded by a column of heavier air outside. The moment we bring the two columns into contact by cutting a flue opening, the heavier column will preponderate, causing the lighter to ascend, as explained at p. 530, vol. VIII. and illustrated by diagrams Figs. 2 and 3; and the current once commenced, will continue to flow upwards through the chimney so long as it receives a supply of rarefied air from the stratum immediately above the surface of the earth. In fact, every chimney situated as we have described, being open to the atmosphere at its base, has a *current*, or "draught," constantly passing upwards through it; which varies in force or velocity according to the state of the atmosphere, and the quantity of radiated heat passing off at the time from the earth's surface.

We have hitherto purposely considered the chimney to be completed without any lateral opening, previous to forming the communication between the external and internal columns of air; but it is quite immaterial whether it is so or not; for even if a chimney were built, with the full internal area at its base open to the atmosphere, an upward *current* or "draught" through it, would exist from its commencement, from the causes just described. This current would be sensibly felt at the distance of a few feet above the opening; and as the work increased in height the current would be found to increase in strength.

Although the same cause as we have described in reference to the engine chimney, i. e. the natural rarefaction of air, operates to produce draughts in the chimneys of dwellings, yet there are peculiar circumstances constantly interfering with this natural action; and it therefore becomes necessary, for the more perfect elucidation of our subject, to inquire into the nature of these circumstances and in what way they operate.

For this purpose let us take the example of an ordinary eight-roomed house, of which let fig. 6 represent a vertical section at AB, fig. 7,

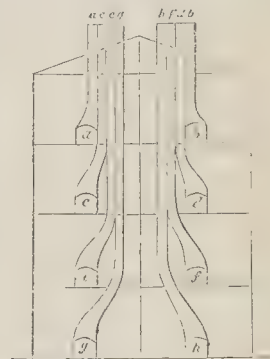


Fig. 6.

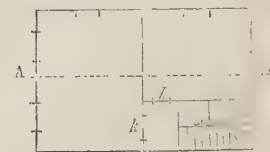


Fig. 7.

and fig. 7 the plan of each floor. Now, supposing the chimneys of all the eight rooms to be built to the same level at the top, each being separate from the rest, we should find a natural *current* or "draught" existing in each of them, entering at the fireplaces *a, b, &c.*, and flowing upwards. Those currents at *a* and *b* would have the least, and those at *g* and *h* the greatest velocity, by reason of the perpendicular height of the preponderating column of air outside the chimney being greater in the case of *g* and *h* than in that of *a* and *b*; and, therefore, exerting a greater pressure upon the air entering the opening of the fireplace. Now, if a fire be made in any of the rooms, say at *g*, and a communication formed between all the rooms by throwing open the doors *k, k*, on each floor (all outer doors and windows being

closed), the natural current or "draught" in the chimney *g* will be increased by the fire, as explained at page 578, and the currents, or "draughts," in the remaining seven will be checked, totally stopped, or even reversed. We will endeavour to make this fact clear by the following reasoning:—

Taking it for granted that the eight chimneys are of equal sectional area, we will, in order to avoid complexity, suppose that the natural current existing in each of them is of equal velocity with the rest; say 10 cubic feet per second for each, or 80 cubic feet per second for the whole eight, taking this quantity to represent the maximum amount of external air capable of gaining admittance through the crevices around the outer doors and windows; which, we may here remark, is the only medium of supply allowed by the present system of constructing dwelling-houses. If then, by the aid of a fire, we increase the velocity of the current in any of the eight chimneys, say at *g*, until we double it; instead of 10 cubic feet per second, we shall have 20 cubic feet of air per second passing upwards through it; and as this increased quantity cannot be supplied from the same limited source as in the first instance, i. e. the crevices around the closed doors and windows, it follows that the increased 10 cubic feet per second is taken from the remaining seven chimneys; and consequently each chimney has one-seventh less than at first, and the currents in them are therefore checked. By increasing the current at *g* to eight times its original velocity, i. e. 80 cubic feet per second, it is clear that it will then absorb the whole of the air previously passing through the whole eight, at the rate of 10 feet per second; and therefore the upward currents of the remaining seven will be stopped. And if by increased firing, we increase still more the velocity of the current at *g*, say to 150 cubic feet per second, we will not only absorb the whole original supply of 80 cubic feet per second, but we must have 70 cubic feet per second in addition; and as the crevices admitting it can only give us the former quantity, the additional 70 cubic feet will find a way in by some other aperture; and as the openings of the remaining seven chimneys are the only other apertures, the additional supply will flow downward through them at the rate of 70 cubic feet per second for each, or 10 cubic feet per second for the seven, and therefore their natural currents or "draughts" will be reversed.

These natural currents are also impeded, or even reversed, in many cases where the chimneys in the same building are not all raised to the same level; and here it may be well to explain that it is the level of the tops of chimneys, and not their relative lengths, that regulates their influence upon each other. For instance, if two chimneys in the same house be constructed of different heights, one reaching only to the level of the second floor, whilst the other extends to the full height of the house; it will invariably be found that when the doors of communication between the two are open, and all other doors, windows, and other apertures are closed, the longer chimney will check, or perhaps even reverse the current or "draught" of the short one. This is a very important point, and it is desirable that it should be clearly understood, and remembered; as we shall have shortly to account for many of the causes of "smoky chimneys," by tracing them to a neglect of its due consideration of this individual question.

We will endeavour to make it plain by the following illustration.—Let fig. 8 represent part of a house of four stories, with a room *A*, built out from it. Let *B* represent a room on the top floor, communicating with *A* by the staircase, passage, and the door at *C*; *a* and *b* representing the high and low chimneys respectively. Let it be understood that when the outer doors and windows are closed, no free communication with the external atmosphere can exist except through the chimneys *a* and *b*; also, that the atmospheric pressure at the tops of these chimneys differs, in consequence of the difference of their levels, i. e. the pressure is least at the top of *a* and greatest at the top of *b*. Now, if we cut off the communication between the rooms *A* and *B* by closing the door at *C* (all other doors and windows being closed) we will find there is no current of air either in *a* or *b*,

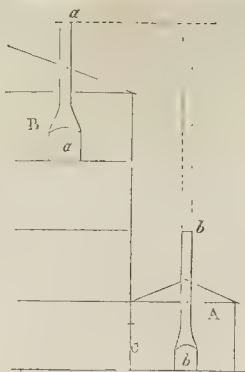


Fig. 8.

and that although the internal air is warmer, and therefore rarefied, or lighter than the external air, it is quite motionless, as already explained in the case of the engine chimney previous to cutting the flue opening. And when we consider that the volume of this rarefied air fills the whole building, pressing equally in every direction, and extending to the level of the top of each chimney, it will not be difficult to perceive that the air in the chimney *a* forms part of a column whose base presses against one side of the door *C*; whilst that in *b* forms part of another column, whose base presses against the opposite side; and as the atmospheric pressure is greater at the top of the column *b* than it is at *a*, it follows that the door sustains a greater pressure on the side of *b* than it does on that of *a*. If, then, we open the door *C*, we bring the two columns into contact, and the heavier one *b* preponderating, the rarefied air is forced upwards through *a*, and the current thus commences and will continue to flow down the chimney *b* to supply the higher chimney *a* so long as the communication between the two rooms remains unbroken. This result would not take place if the chimney *b* were raised to the same level as *a*, as shown by dotted lines, for in that case the atmospheric pressure at the top of each would be equal, and the two columns would therefore balance each other. T.B.A.

DOCTORING DAMP ROOM-WALLS.

GRIEVOUS home-discomforts may "a smoky house and a scolding wife" be, to those who have had the misfortune to experience such evils, but even these *paucres misères*, we dare say, would willingly exchange a damp house for a smoky one, and even a rheumatic wife for a scolding one, if as fully experienced in the one class of grievances as in the other,—more especially since the "rheumatiz" is not peculiarly a feminine infirmity, like the lingual lubricity complained of: neither is it the only, or even the worst, of the evils generated by that scourge of our sea-girt isle, the damp. That a little gossip, therefore, about doctoring damp walls, will not be unacceptable to our non-professional readers, we do not doubt. We shall first take a rapid revisionary glance over what has been already said or done, however, on this subject, limiting our remarks more particularly to the obviolation of the evil effects of damp on the health, in walls already built; inasmuch as we have already more fully and frequently discussed the subject in its professional than in its popular aspect. This we do without prejudice to the fact that it is infinitely better to go to the root of the evil—where that can, even *ex post facto*, readily be done—than merely to suppress its symptoms,—to prevent its access to walls, *ab initio*, than to doctor walls already steeped in moisture.

Various have been the appliances to the interior surface of walls, in order to prevent the evaporation of damp into dwellings, and to obviate the train of evils induced by the consequent dampness of bed and body clothing, beds, mattresses, sofas, carpets, and, in short, of all that will absorb moisture from the damp atmosphere—itself a constant source of injury, directly no less than indirectly, to the health, as well. Perhaps the oldest of these appliances are cements: the ancient tapestry was

obnoxious to the charge of harbouring the damp, which in many cases rotted it into tatters, in place of being any defence against it. It has been found, however, that pure cements at least, without some admixture of oleaginous or other water-repelling material, were incapable of entirely excluding damp from the interior surface of walls, or even from the walls themselves when laid at their foundations. Instances of their failure will be found recorded at p. 25, Vol. VII., of THE BUILDER. A "cement-stone," composed of lime, well slacked, and sand, in equal quantities, tempered with linseed oil to the consistency of mortar, and beat well in a trough, has been found, it is said, to do better than ordinary cement for such a purpose. In applying it to brick walls, the face of the brick should be chipped with a brick hammer, and drenched with a mixture of linseed oil and white lead till it will absorb no more. Dr. Ure gives the following proportions for a somewhat similar composition: twenty parts clean river sand, two litharge, one quick-lime (or additional litharge in place of quick-lime), made into a thin putty with oil. The proportion of sand, however, is surely a mistake: to make a cement of so much sand would seem to be a task even still more difficult than that of the "rope of sand" of olden celebrity. Besides coating brick walls, this "mastic," as it is called, is said to be capable of cementing and mending broken stones, such as steps or lintels.*

Another composite, or mongrel cement, has been recommended by a practical man, in the following instructions:—"Boil two quarts of tar with two ounces of kitchen grease for a quarter of an hour, in an iron pot; add some of this tar to a mixture of slacked lime and powdered glass, which has passed through a flour-sieve, and been dried completely over the fire in an iron pot, in the proportion of two parts of lime and one of glass, till the mixture become of the consistency of thin plaster. This cement must be used immediately after being mixed. It is not well to mix more at a time than will coat one square foot of wall, as it quickly becomes too hard for use, and continues to increase its hardness for three weeks. Great care must be taken to prevent any moisture from mixing with the cement. For a wall which is merely damp, it will be sufficient to lay on one coating of cement, about one-eighth of an inch thick, but should the wall be more than damp, or wet, it will be necessary to coat it a second time. Plaster, made of lime, hair, and plaster of Paris, may be afterwards laid on the cement."

In one of the Fine-Art Commission reports, an account is given of an appliance, by two French chemists, for the exclusion of damp from the interior surface of walls. To prepare the cupola of the Pantheon, at Paris, for painting on, the face of the stones composing it was heated, bit by bit, and a composition applied, consisting of one part wax and three parts oil, boiled with one-tenth of its weight of litharge. The absorption, it was said, took place readily by means of heat, and the liquid penetrated the stone from a quarter to half an inch. The composition acquired solidity as it cooled, and became hard in six weeks or two months. For ordinary purposes, as we have before remarked, resin might be substituted for wax: indeed, the composition thus modified has been employed with effect, by help of heat, in the protection of the interior of room-walls from damp, even where the damp arose from an impregnation of deliquescent salt, which had previously penetrated through a coating of stucco, laid on in the vain hope of smothering the deliquescence,† which rendered the place uninhabitable, even in summer. This "mastic" consisted of one part linseed oil, boiled with one-tenth part litharge, and two parts resin. It was necessary to dry and heat the walls by means of a portable furnace, and of course also to heat the composition.

Effectual as some of these cements and mastics may be, the application of most of

* Under the euphonious name of Oropholithe, a composition of this kind was some time since invented, and applied as a mastic plaster on coarse courses, forming a sort of caliche for roofs and other coverings, but not, ostensibly at least, for walls.

† For the permanent removal of such deliquescence, it has been recommended to wash the wall with a strong solution of alum. By means of alum, too, stone, such as damp hearth-stone, or kitchen pavement, we presume, inclusive, may, it is said, be rendered impermeable to damp, after soaking with soft-soap solution.

them is troublesome, and the cure rather a cumbrous and clumsy one. Such, too, is the application of melted asphalt (although very effectual), or other bituminous substances, with the additional drawback of a strong, and to many a disagreeable, though it is believed an innocuous, and even wholesome odour. So excellent a damp-excluder has the pitchy, bituminous, or asphaltic resin been found to be, however, not only from courts and areas paved with it, but from walls and roofs, that regret has often been expressed that the odour could not be subdued, in use for internal purposes. Of this we shall have something to say anon.

Pitch-papers may rank next in order, but are open to the objection just stated. These have been succeeded by the more recent papers rendered impervious by india-rubber or gutta-percha. A waterproof paper was also some time since invented by a M. Engle. It was prepared simply by plunging the unsized paper once or twice into a clear solution of mastic in oil of turpentine, and then drying gently by heat. The paper, without becoming transparent, is said to have, besides its power of resisting humidity, all the properties of writing paper, and to be specially adapted for workmen's books, passports, &c.—resisting, moreover, the inroads of mildew, insects, mice, &c. A solution of india-rubber has been said to produce the like, and even better, effects on unsized paper. In this case, too, an objection, which we were just about to point out, as affecting all applications of water-proof papers to walls by means of paste, is obviated by the mixture of the mastic solution with the paste itself, rendering it thereby, in fact, also water-proof. Such a paste may redeem such papers from perhaps the only valid objection to their use with common paste, which it is worse than useless to lay on damp walls with impermeable papers, as these will, to a certainty, fall off in a much shorter time than even unprepared paper: better to nail sheets of thin paper lead, as some one recommends, or even these impermeable papers themselves, on the walls with bits of copper.

The last order of appliances now to be noticed are simply fluid paints of such a composition as will lie at once even on wet walls,—rapidly dry,—and form a tough and integrated waterproof superficial film, on a body penetrating and incorporating with the wall. It was doubtless with this intention that a recent patent was taken out for a fluid or solution, said to contain chiefly india-rubber and gutta-percha, and intended to be used either as, or mixed with, paint, as preparative to papering. At the time of its announcement, we suggested that probably a little boiled oil constituted the medium whereby the india-rubber and gutta-percha were rendered capable of mixture with paint, or of being used as paint itself. We have since tried such a composition, but although we found that india-rubber in solution, by help of a little heat, will mix completely with boiled or lithargized oil and with gutta-percha solution, the composition does not possess the qualities requisite or desirable for ready and effectual application to damp or wet walls. A mere alcoholic solution of common resin, or other varnish, brushed upon a damp and even a very wet wall, we found to be far preferable. The wet was no obstacle to its fixture, and it rendered the wall-plaster not only perfectly dry on the surface, but much firmer in texture. The brittleness of resin alone, however, led us to think of a composition of far more fitting qualities in all respects, namely, a solution of resin, pitch, or asphalt, in oil of turpentine, with a quantity of india-rubber solution, or of gutta-percha solution, or of both, dissolved in the resinous solution. The amalgamation is a complete one, and the composition sticks to the wall like pitch itself. It is also remarkable, that when the composition is dry,—and it dries very rapidly,—not the slightest odour of pitch or bitumen remains. The volatility of its nature appears to be suppressed or fixed in the meshes of the india-rubber texture. To resin, however, even this temporary inconvenience does not apply. And if bleached resin be used, almost any colour, however delicate, may be mixed with it, and the whole used as paint. In papering, the composition itself may form the paste, and thus the paper may be applied almost simultaneously with the composition. A couple of coats, at least, however, are desirable; but

these may follow one another at an interval of a very few hours. One great advantage of such a composition compared with some of the "mastics" and "cements," already treated of, is, that, being in a spirituous solution, it may be applied cold, and to a cold wall, with a common paint-brush; thus obviating the trouble and tedium of heating the walls with furnaces or irons, as well as of keeping the composition itself in a heated state.

THE CHARACTERISTICS OF PALLADIO'S ARCHITECTURE.*

THE peculiar characteristics of Palladio, which may be derived from the examination of his works and the perusal of his treatise, as a whole and in detail, are:—

An arrangement of plan, suitable to the customs and habits of the nobility of the Venetian territory, generally classically designed, and displaying great convenience and accommodation (according to the rank of his patron) by the disposal of the kitchen and other household offices, either in the house under the principal apartments, or outside, communicating with it by covered colonnades, open at one of the sides only. The disposition of the apartments is managed with great regard to their correspondence and proportion to each other, on each side of the vestibules and saloons (a matter not so observable in his contemporaries), and more particularly so in his designs for *irregular situations*; to give, as he says, "due solidity to the whole, that the roof should not press unequally upon the walls," and occasionally some feature of use or decoration is introduced, to render the edifice more suitable to the purposes required.

An arrangement and decoration of the façade, pre-eminently adapted to the order selected and the class of the edifice, and conformable to the purpose of a town or a country-house, a basilica, or a church. Some of his most noble effects are obtained by the novel introduction and happy employment of two orders; the one, on a scale comprehending the entire height of the edifice; the other subordinate, comprehending about two-thirds of that height: in every case but that of S. Giorgio both orders rise from the same level, and in his grandest and noblest building, they are placed only on a small plinth, otherwise they are mounted on a high pedestal or stylobate. This principle of the double order had been employed by the ancients in the adjustment of side porticoes to the temples, as Palladio displays in his restorations of them: it was also used in the Propylæa at Athens; in which, the subordinate being 10, the principal is 15: amongst his own works in the Casa del Capitano, it is as 10 to 16½; the same in the Basilica; in the Casa Valmarana, as 10 to 20½. To this principle, says Mr. Cockerell, a great part of the secret of Palladio's magnificence may be attributed.

Another marked distinction in his designs from those of the preceding age, is the almost constant application of a pediment to the central part of the principal façade, and also to the ends of his colonnades, as a finish for the roof. "In all the houses," says he, "which I have built in the country, and also in some (very few) of those which I have made in towns, I have always placed a pediment where the chief entrance is, because it makes the principal entry to the house more conspicuous, and contributes very much to the magnificence and grandeur of the building. This gives the entrance façade a great advantage over the others, as it must for that reason be made higher: besides, it is much more proper to put the arms of the owner there, and they are generally placed in the middle of the pediment." The height is made to vary from one-fourth to one-sixth of the length of the horizontal cornice, and to depend inversely on the number of columns below it; a modification which renders the height nearly proportional to that of the building itself. At the Villa Pojana (as one example) we see a sad departure from ancient rules, in the want of the continuation of the horizontal cornice that should connect the lower extremities of the inclined mouldings,—a defect which has been too often followed by his copyists.

In the churches which Palladio erected, he

seems to have made an effort to preserve the general form of the Basilican or Lombard churches, and to adapt the Roman orders to it, instead of returning to the first form of a Heathen temple. In the Lombard churches, the nave has considerable elevation, and the side aisles are subordinate to it. This form he retained, but he changed the façade with its tiers of arches for a single order of columns, either on a plinth or mounted on a high pedestal, and supporting an entablature with a pediment above. On the sides of the portico are the extremities of the aisles or chapels, with their inclined roofs ornamented by a half pediment on each side of the larger one; and though a better taste may condemn this appearance of a double pediment, there is, at least, a reason for employing it.

Palladio scarcely ever repeated himself in any of his numerous compositions: he had at his disposal all the means, all the combinations which the elementary parts of architecture could furnish, and he had the art of moulding them to his use, without ever exceeding the just medium which the art permits. His orders are elegant, and he did not scruple to vary the proportions of an order according to the nature of the building to which it was to be applied: he generally made the heights of his columns, when used in a particular story only, equal to the width of his principal rooms; a circumstance probably accidental, but which might have suggested itself from the rule established by Vitruvius in the case of a circular temple, for making the heights of the column equal to the width of the cell: Palladio adapted the Composite and Corinthian orders to enclose two stories of apartments. He was extremely partial to the use of the Ionic order, yet the others, particularly the Doric, were frequently employed by him: he occasionally made use of insulating columns, a practice not to be recommended for adoption. If the front of the house in which Palladio lived be truly of his own design, he committed a great error in giving the Tuscan base to both the Ionic and Corinthian orders employed therein: it is true that it is used, at the Coliseum, in the Corinthian order, but in so immense an edifice, a small part being irregular is perhaps not of much consequence, as, from the elevated and combined situation, it appears no more than a speck; but where it is brought so much nearer the eye, as in a private dwelling, any irregularity must certainly be considered as a violation of the rules of architecture.

Palladio occasionally used insulated pilasters, and Inigo Jones rendered them much more familiar to us. Palladio left the columns and pilasters plain when used at the ends of porticoes, and most of the school have followed his example: he was generally particular in applying a single order to each story it was intended to decorate, though in large buildings he had no objection to introduce, at the angles, a tier of mezzanine windows, occupying perhaps four stories in height: the larger orders he retained for his entrance halls and courts, with small pilasters behind them to carry the floor of the gallery. His favourite display of the orders seems to be the Doric and Ionic; then the Ionic; and, thirdly, Ionic and Corinthian. Of the first, the Chiericato Palace affords a good example: the second appears mostly in the porticoes to the country houses: the third is shown in the house of Udine. He also used the Ionic alone with good effect on a rustic basement; and in the same way, the Corinthian. The upper orders are sometimes placed on pedestals and sometimes not, and the pedestals are as often found without plinths; both arrangements seeming to depend upon the position of the windows and the height of the story. The lower columns were placed upon plinths or subbases; the larger orders generally upon pedestals, to give additional height to them. These peculiarities of manner are only observable in the works themselves, for he has not left any directions concerning the composition or design of edifices,—the only glory of the architect: decorations, however they may affect the less educated, are least regarded by the judicious eye. In windows having columns for part of their enrichments, he generally used the order ranking under that employed as principal.

All these peculiarities are seen in the school, but after the time of Jones the lesser orders were not so generally adopted, but the larger

* Part of a paper by Mr. Wyatt Papworth, "On the Peculiar Characteristics of the Palladian School of Architecture," read at Institute of Architects.

were employed to decorate the whole height of the façade; while another characteristic of that period is the use of the space under the entablature of the Corinthian order, formed between the capitals of the columns and the continued necking, which space was usually decorated, sometimes extravagantly so, by festoons with masks and other ornaments. Palladio's designs, which have been such happy models for architects, abound, as has been shown, with various instances of the different dispositions of the orders, but he did not always trust to them for the effect he required: in some places he introduced arcades; and in others, even plain walls, under his skilful direction, make an elegant appearance.

In his grandest works, the entablature is generally proportioned to the order, and unbroken; but in many fine specimens by him, there are instances of happy effects obtained by the use of it broken by the projection of the columns. In the members of the cornice, he never lost sight of the character of the order employed: when used only as a crowning feature, he adapted it skilfully to the general character of the building; he was extremely particular in the adjustment of the profiles: the architraves were rarely sculptured: the friezes were too often made swelling; which method, however, in an entablature where little decoration is introduced, and on a small scale, as in windows and doors, may have a good effect, and may occasionally be permitted. In most instances he left the frieze plain, but when it was decorated, the ornament used was not of a very elegant description: the upper ornaments (in the cornice) were always carefully centered over each other. The pedestals were never decorated with panels, sunk or raised; though, in his treatise, the plates illustrating their proportions show panels: in one or two of his façades he introduced them, where they would have been better omitted, as upon a lofty substruction or arcade, which rendered them entirely useless. There are few instances indeed, in which pedestals can be admitted in the façade of a building without injury to the beauty of the composition, but he was not always able to keep clear of their use. His doors, windows, and niches were composed with great simplicity, and he introduced them in fewer numbers and of a larger size than usual in buildings of the time: their architraves were generally broken at the top after the ancient manner, a method which has been carried somewhat to excess by his many imitators and copyists: the pediments he used alternately angular and circular, but never broken: the enrichment of them by the addition of recumbent statues (imitated from the works of Sansovino or Michelangelo), though of great service in ornamenting a façade, is not strictly within the rules of propriety, and is therefore deserving of censure: the semi-circular window divided into three lights was adopted by him. In his arcades, he employed a simple semi-circular arch resting on piers, in conjunction with the trabeated arrangement adopted from the ancient baths; or else he divided the interval between the two piers into three parts by small piers or columns, with an arch only covering the central aperture,—a combination which seems to have been copied from some of the colonnades of Diocletian's Palace. The domes which he erected are almost invariably hemispherical.

No one has employed rustic work with more taste and with more reserve. Under the influence of his judgment, we can consider it a means of opposition, which gives value to the blank parts of the edifice, and causes the elegance of the columns and their ornaments to appear with greater brilliancy. At the same time that it shows, with more or less energy, the character of each kind of edifice, it has the advantage of giving an air of grandeur to the building; but then it was not made use of by him to that excess (as at Florence) which only seems to agree with walls of fortresses and prisons. By his management of its varieties, he produced an agreeable combination between the general mass and the detail, so that the spectator finds in these varieties as many beauties as in any other style, if not more, although the style itself seems to have less to spare than any other.

He was very particular in the position of his staircases, as well as in their form, of which he has left several designs in his treatise. In ex-

plaining one of his designs, he writes,—“there was no very great care in placing the two back-stairs, for the reception of a clearer light, as before directed, because these stairs serve only for the offices underneath, or for the granaries and other like places above, and which I have done in all other houses having only one grand story; but in those which have two fine ones, and handsomely decorated, I have taken care to manage it so, that the staircases are very lightsome and in convenient places.”

Interior architectural decorations he seems to have almost totally neglected: several passages in his treatise refer to paintings and other ornaments executed by various skilful persons, but in the works themselves we shall rarely find anything else than the orders used on the ground floor, or applied as decoration to the openings on the upper floors: occasionally the rustic work of the exterior elevation is continued through to the interior court, adapting itself skilfully to the various breaks and openings; but he seldom displayed the resources in the use of which at least one of his followers was so pre-eminent. He was never afraid of showing the roofs of his buildings, generally making them to commence at the edge of the cornice, and breaking forwards or backwards, according to the arrangement of the façade; thus depriving that generally obtrusive feature of most of its harshness of outline.

Of the followers of Palladio, the earliest who appeared, Vincenzo Scamozzi, designed the Palazzo Trissino and Trento, both at Vicenza: his later works exhibit the school of Sansovino, whose buildings he was employed to finish or alter. The above-named edifices present features adapted from his master's works. In the façade of the Trissino Palace, he set the first example of the use of the Composite order over the Ionic, contrary to Palladio's practice and precept. The Trento Palace is without columns: the façade, though nearly square, has the effect of being far otherwise, by the judicious arrangement of the basement. A Venetian window forms one of his favourite features, being often used to obtain that effect which Palladio derived by a wider intercolumniation. He has the merit of being the first architect, since the time of the ancients, to accomplish a disengaged trabeated portico of a large size, as in the church of the Theati.

Further specimens of the Palladian school are to be seen in the staircase in the Palazzo Capitanale at Padua, by Vincenzo Dotto; in the Carthusian Monastery near Padua, and other buildings by Andrea della Valle; in the various buildings in and round Verona, by Conte Alessandro Pompei, and Conte Giralmo del Pozzo; in the restoration of the Sala della Ragione, amongst the works of Conte Enea Arnaldi di Vicenza; in the buildings in Vicenza and other states by Ottavio Bertotti Scamozzi, who moreover published a valuable edition of Palladio's buildings; in the simplicity and elegance of the designs by Ottone Calderari, for Vicenza, his native city, as well as for Verona, who showed his knowledge of the true principles on which the beauty of architecture depends, by adapting the solidity, decorations, and majesty of Palladio to the internal economy of the time, and followed the general arrangements of the Chiericato, Barbarano, and Valmarano Palaces, though not always improving upon his prototypes. The Tiente Palace he has most successfully copied, in a magnificent manner, introducing, however, the Doric order in lieu of the Corinthian. The fronts of his temples present the peculiarities of those of Palladio's churches, but the plans are generally circular. The hall of the Seminario at Verona is a fine specimen of his skill and talent, with a good arrangement of plan in an irregular space.

PROPOSED PARK FOR FINSBURY.—A deputation waited upon Lord John Russell, on the 24th ult., at his official residence in Downing-street, to present a memorial agreed to at a meeting of nearly 3,000 inhabitants of Finsbury, on the subject of the new park so much desired in that borough. The members of the deputation having severally addressed his lordship, the noble lord remarked that it appeared to him the proposed park was desirable, and he would confer with Sir George Grey and Lord Seymour on the subject. The deputation having thanked his lordship, withdrew.

FOUL AIR IN WELLS.

MR. EDITOR.—On Thuesday last two of my men lost their lives by foul air in a new well, which they had sunk to the depth of 63 feet, through sand and black clay: they worked in the well all the day previous without inconvenience. All the usual means had been tried,—with water, slacked lime, gunpowder, &c.,—but all failed, and both bodies were not extricated until the following day, and then by means of grappling-irons.

I should feel obliged if any of your correspondents could inform me what are the best methods to adopt in such a case.

A SEVEN YEARS' SUBSCRIBER.

* * The power of quick lime, in such cases, to exhaust the foul air, will of course depend upon the nature and extent of the source whence the carbonic gas is poured into the well; for the cubic space of the well itself, and the quantity of lime necessary to exhaust that space, may constitute a very small proportion to the whole area of the choke damp. The addition of Glauber's salts to the quick-lime, as before recommended in our pages, would hasten and improve its effect. Failing that (and on every occasion of descent the workmen ought first to send down a lighted candle, carefully and slowly, so as to ensure the fact of its extinction being solely attributable to the foul air) the gas ought to be dealt with just as water itself would in a dry excavation,—that is, in a shaft, &c. where water was not wanted; for carbonic acid gas is so heavy, though invisible, as to be capable of being even poured like water out of one glass or vessel into another. The air-pump, therefore, or, it might be, an air-syphon first filled with similar gas and otherwise properly managed, might be tried. Should the quantity be still found inexhaustible, we can see nothing for it but to deal with it then as the diver does with the ocean depths,—that is, arm the workman, not exactly cap-a-pie, but with an air helmet and tube, so as to enable him to breathe pure air from above, while at work, even in the midst of it. There is another method than any yet alluded to, however, of exhausting the reservoir, but we know not if it be very likely to be generally applied in ordinary practice. A Mons. Faucille, at Vichy, as already reported in the *THE BUILDER*, erected a small boiler on the principle of the siphon, the tube from which reached to the bottom of the well. A powerful steam blast was kept up, which at first was opaque, from the gas, it is said, uniting with the lime contained in the water, but soon became transparent, and in thirty minutes the works could be proceeded with, although previously the gas had been evolved in large quantities. As for such a ventilation of well-excavations, in ordinary circumstances, as would obviate an evil like this, we do not think it could be of any practical avail to suggest or recommend that: better sink another well at once. We should be glad, as well as our correspondent, to be favoured with any further suggestion that might tend to the saving of the poor well-sinkers' lives.

ARCHITECTURAL COMPETITIONS.

BRISTOL AND WEST OF ENGLAND ARCHITECTURAL SOCIETY.

THE Rev. Mr. Carter, who seems to think that we did not make it clear last week that the “Bristol and West of England Architectural Society,” and the “Bristol Society of Architects,” are two distinct Societies, remarks, as to the discussion which took place,—“I followed Mr. Young by saying, that I had always set my face against competitions, as at present conducted, and on many grounds. First, on the unfairness of architects' drawings being submitted to a heterogeneous committee; secondly, on the outlay of time and labour on the part of the competing architects, for which no remuneration was paid; and, thirdly, on the opening given to private interest, unfair canvassing, &c. And I suggested, what I have often done, that it should be a rule in the profession, that no architect should ever put pencil to paper without being fairly remunerated for it, which I thought would remedy many existing evils.

It may seem out of the province of an ecclesiologist to enter upon what may appear so strictly a professional question, but I conceive,

Sir, that as long as the present system of competition continues, the most strenuous efforts to improve architectural science will be baffled, and that for the simple reason, that there is no competent tribunal to whom is committed the most difficult and arduous task of deciding on comparative merit. At present, indeed, there is no security that merit will be regarded at all, for the committees who for the most part sit in judgment on competition plans, have no notion of merit themselves. Architectural societies may judge fairly of the abstract merit and correctness of any plan, but I think their utility would be impaired if they were made use of for deciding on comparative merit. What is wanted, therefore, is some tribunal so notoriously competent that all the profession would bow to it, to whom all competition plans should be submitted; and until some such scheme is devised, I fear that architects will experience far more evil than good from the system of competition."

NOTES IN THE PROVINCES.

THE bronze casting of the Rutland Statue for Leicester, by Mr. Davis, has been completed, it is said, successfully. The erection, however, according to the local *Journal*, will be delayed, as the new market-house is not yet finished: meantime the cast will appear at the International Exhibition.—A new organ, built by Groves and Mitchell, of London, has been built in St. Paul's Church, Cambridge, and was opened on Sunday before last. The *Cambridge Chronicle* speaks highly of its performance.—A plan for a proposed public park at Houndwell, Southampton, was lately submitted to the council by Mr. Guillaume, and there appears to be every prospect of the project being carried out.—A poor man was suffocated, in the course of last week, in the stove vault of St. Mary's Church, Basingstoke. He had been two years in attendance on the hot-air apparatus for warming the church, and went as usual on the Saturday night to light the fires, when he appears to have been suffocated by an accumulation of carbonic acid gas—prevented, doubtless, from diffusing itself by want of proper ventilation. In vaults, above all places, the utmost precaution is requisite in the use of stoves.—It is said that the restoration works at Wells Cathedral, which have been for some time past in abeyance, will be resumed forthwith, the dean and other dignitaries of the church having provided the necessary funds.—An organ has been purchased for use in the palace chapel of the Wells Theological College. Mr. W. Sweetland, of Bath, was the builder.—The Government is about to give assistance to the establishment of a Government School of Design at Stourbridge. One hundred pounds a year is to be given, besides art-examples, school furniture, &c., if suitable rooms are provided.—A "Stourbridge, Brierley-hill, and Kingswinford Waterworks Company" is about to be established by joint-stock shares, and an Act of Parliament applied for. Plans have been prepared by Mr. G. Bate, C.E. The water is to be conveyed from the Clent hills, and will rise of its own accord to the tops of the houses throughout the district to be supplied.—More than 550*l.* have been collected for a monument in Hereford Cathedral in honour of the late Mr. Joseph Bailey, jun., M.P.—A new police station has been built at West Bromwich: Mr. E. Hardland, contractor; Mr. Smith, of Stafford, architect.—About 300*l.* have been subscribed by the working classes of Macclesfield, almost in separate pence, towards the establishment of a public park and free library there. A machine-maker, Mr. Frost, has offered to provide palisading for the park, and do any kind of iron-work necessary in carrying out the undertaking, free of charge.—The house at Preston where Richard Arkwright, the barber, neglected his decent business, and allowed it to go all to sticks, notwithstanding the strenuous endeavours of his industrious and admirable wife to prevent him meddling with "stuff and nonsense" that he, the barber, had nothing to do with, has lately been destroyed, we are sorry to hear, in the progress of alterations for a new north entrance into the town.—The Dumfries Burns Club are soliciting subscriptions for the restoration and completion of the Burns Mausoleum, and the

protection of the sculpture which it contains from further dilapidation. The plan of the monument was never completed.—The suspension-bridge over the river Oich, at the east end of Loch Oich, and the summit level of the Caledonian canal, has just been completed, and is now open for traffic. It has a span of 145 feet 6 inches. The pillars upon which the chains rest are 34 feet above the low-water level, and built of rock masonry. Within the last thirty years two timber bridges and a substantial granite stone bridge have been destroyed by the mountain torrents. The present erection is on Dredge's principle. Twenty tons of cast-iron were used in its construction, and its cost is said to be less than that of a rough wooden bridge. The Caledonian Canal, by the way, is now getting into great use for vessels crossing Scotland through its lakes and cuts, in place of sailing round by the Orkneys.

LANDLORD AND TENANT.

DISTRAINING MACHINES.

In the case "Elwall v. Eastwood," tried in the Court of Exchequer, the question which the Court had taken time to consider was, whether certain spinning machines, some of which were screwed into the floor and others into lead, let into stone, were distrainable for the rent of the mill in which they were used. The Court considered it plain that before they were fixed they were in their nature distrainable. The question, therefore, was, whether they lost that character by being fixed in the manner mentioned. At common law, things fixed to the freehold, or directly connected with it, as keys or windows, and also those things which could not be returned in the same condition as that in which they were taken, were not distrainable. It was plain that these machines might be brought back without any damage to themselves: the fact that they must be taken to pieces was immaterial—four-post bedsteads and similar articles of furniture cannot be removed bodily, but they are not the less liable to distress, nor does it make any difference that expense would be incurred in putting them together again. The only question that remained was whether these things were part of the freehold. This must depend on two considerations: first, the mode; second, the purpose of the annexation. In neither of these respects were these machines part of the freehold; they were not attached *perpetui usus causa*, they could be removed without injury to the building. They were only fixed for the purpose of steadying them, and could no more be considered fixtures than carpets which are fixed to the floor with nails, or looking-glasses, or any other ornamental articles which are usually slightly attached to the building. For these reasons the Court was of opinion that the machines in question were liable to be taken as a distress.

DOINGS NEAR HEREFORD.

BUILDERS AND BOARDS OF GUARDIANS.

THE following may possibly serve to instruct your readers. At a county town not one hundred miles from Hereford, where some money was left about the close of the last century by a charitable individual for the benefit of the place, after fifty years of misappropriation, compunction of conscience, or rather fear of Chancery proceedings, induced the trustees, in the eleventh hour, to appropriate what was left to the object originally devised by the testator; and, in pursuance of these intentions, to erect schools for 600 children, with residences for master and mistress. After the preliminary arrangements of selecting an architect from the various candidates who offered, deciding upon what sort of plans they should adopt, tenders were at length advertised for, and on the day fixed opened; when, as is often the case, there was great discrepancy, the highest being 2,600*l.*, the lowest 1,200*l.* (The interest and excitement of these matters consists in opening one tender double the amount you have to expend, with the prospect of obtaining another so low as to leave a large balance in hand.) Soon, however, it was discovered that the lucky contractor had omitted a figure at the wrong end of his cast, and was, consequently, 1,000*l.* gross under his own calculations in detail. He, accordingly, refused to sign; was threatened with legal proceedings; but, for the payment of a few guineas, to be applied to charitable purposes, was let off. The committee were thrown on their back, and consulted their architect as to the next move on the board: the following ruse was the consequence. They

advertised for tenders with the rather amusing stipulation that they must not exceed 1,500*l.* Again the juggle of opening tenders is gone through, when the lowest comes up to 1,670*l.* the others varying above 2,000*l.* With this reduced estimate the building will be executed at 1*½*d. per foot, or one-third the price of a pauper lunatic asylum or workhouse, with a façade of late Tudor decoration of the genuine *Pancras-cum-Bloomsbury* description.

The first part of this account will instruct your readers how tenders are calculated utterly at variance with the common rules of arithmetic; and the last will suggest to committees and to architects a mode, at once simple and ingenious, of escaping themselves out of the mire by wiping their boots on the backs of the builders.

OLD HICKORY.

THE ART-UNION OF LONDON.

THIS society have issued, as usual, their sheet almanac, and the same in pocket form, which may be obtained gratuitously by every subscriber. It contains much useful information, and shows, amongst other striking facts, that more than 135,000*l.* have been subscribed by the society for the benefit of art and artists.

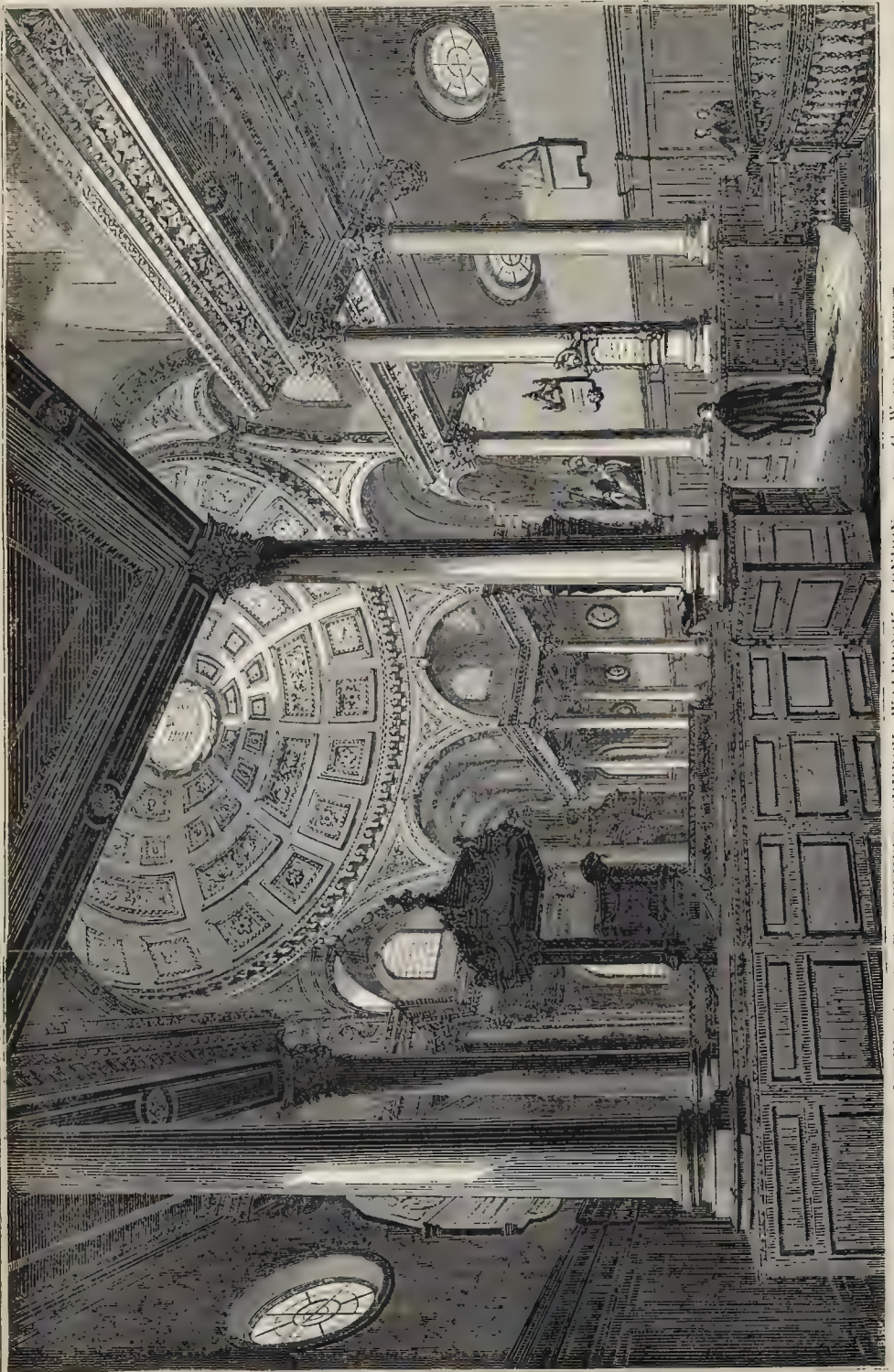
We have received an early impression from a plate of "The Villa of Lucullus," engraved by Mr. J. T. Willmore, A.E.R.A., in his best manner, for the Art-Union of London, with an intimation that these prints are now being delivered to the subscribers of the current year. The engraving is one of the best produced by the society, and a very effective translation of the fine picture by Mr. W. L. Leitch, which our readers may remember in the Academy Exhibition of 1844. A new feature has this year been introduced by the council, that of giving each subscriber the choice between two prints. The alternative print with the one above named is "The Burial of Harold," by Mr. F. Bacon, after the original picture by Mr. F. R. Pickersgill, A.R.A., which gained one of the premiums of 500*l.*, given by the Royal Commission in 1847. The delivery of this print has been delayed, with a view to the introduction of certain effects, decided upon by the council on consultation with the painter and engraver, which will add greatly to the artistic value of the production.

The council, in continuation of their efforts to carry out the principle constantly advocated in their reports, of bringing high art to the aid of our manufactures, have commissioned the production of a tazza in fine cast iron. The form selected is one of the most graceful in the Etruscan room in the British Museum, and it is intended to ornament the interior of the bowl with figures in low relief, which have been very successfully modelled by Mr. E. Wyon, after a design from a vase in Sir Wm. Hamilton's collection, representing Hercules and the Hesperides.

A certain number of the tazzas will be given as prizes in the distribution of the current year.

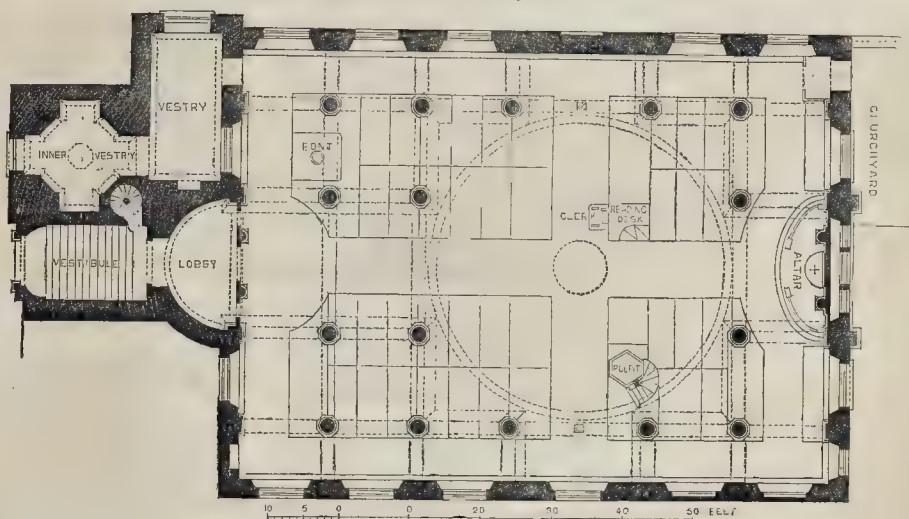
DECORATION OF THE BUILDING IN HYDE PARK.

Will you allow me to inform "Sum Quicque," who assumes that I have taken, without acknowledgment, from Mr. Gilbert French's "Hints for the Arrangement of Colours," printed in your journal of the 11th of August, 1849—the opinions expressed by me at the meeting of the Royal Institute of British Architects on December 16th, that these opinions were formed by me in Egypt and the East generally, twenty years ago; that they have been my constant guide in practice ever since; that I printed them partially nine years ago, and delivered them in a lecture at the Royal Institution seven years ago, very much in the same words I used at the Institute on December 16th. How far my views may coincide with Mr. Gilbert French's "Hints for the Arrangement of Colours," I cannot say, as I have but a very imperfect recollection of his paper: I read it in your journal when it appeared, but have no copy of it. One thing is certain, that I can owe nothing to Mr. Gilbert French, and if "Sum Quicque" will make himself known to me, I will furnish him with abundant proofs of what I advance.—OWEN JONES.



INTERIOR OF ST. STEPHEN'S CHURCH, WALBROOK, LONDON. — SIR C. WREN, ARCHT.

PLAN OF ST. STEPHEN'S, WALBROOK.



RESTORATION OF ST. STEPHEN'S, WALBROOK.

So long ago as the early part of 1847, we made an appeal in favour of the reparation, if not restoration, of St. Stephen's, Walbrook,* and showed the miserable condition into which the church had fallen. Since then we have often recurred to the subject, and we are glad now to record the completion of one instalment of the works required. The sum of money at the disposal of the churchwardens was small, and they adopted the (questionable) course of advertising for proposals and estimates from architects. Seven or eight architects responded, and Mr. John Turner was selected to conduct the repairs.† Tenders were then obtained from builders, and one by Mr. Young at 1,088*l.*, was ultimately accepted.

The lead has been set right; the walls have been coloured, the stone-work scraped, and the interior fittings made complete. The total cost is about 1,200*l.*†

We may briefly say, as to the early history of the church, that according to Dugdale, Eudo, steward of the household to King Henry I. (1,100 to 1,135), gave this church, which then stood on the west side of the brook, to the monastery of St. John, at Colchester. In 1428, Robert Chicheley, mayor of London, acting as the executor of Sir William Standon, mayor, purchased of the Grocers' Company, and presented to the parish, a piece of ground on the east side of Walbrook, in order that they might build a new church; and in the following year he laid the first stone of a fabric 125 feet long and 67 feet broad, which was finished in 1439; he himself giving a sum of money in aid of the works. After the destruction of this church by fire in 1666, the present building was erected on the same site. The first stone was laid on the 16th of October, 1672, and the church was mainly completed in 1679. Other works in the vestry, &c. were done in 1682, as we shall presently see. The church, we should mention, is for the use of the united parishes of St. Stephen and St. Bennet Sherehog.‡

Sir Christopher Wren, as all the world knows, was the architect of St. Stephen's. It is stated that the church was "rebuilt at the public expense, except the wainscoting, which was given by the Grocers' Company, the patrons of the living."§ The church records, while they bear out this statement in the main,

show that money was also subscribed by individuals for the rebuilding of the church, and that a sum of money was lent (if not paid) by the parish to "the Chamber of London" for the same purpose. Our dip into the parish chest was short and hurried, but it sufficed to show that it contains some very curious and interesting documents: these should forthwith be put into order and methodically examined.* According to the "Parentalia" (as quoted by Elmes), Wren's services to the parish church "were given for a salary of only 100*l.* a year;" he had no direct payment from Walbrook. In the book of payments, anno 1680, are noted various sums paid for work in connection with the church,—supplementary to the main outlay, which does not appear,—including a small sum to Mr. Strong. Sir Christopher's master-mason, by whom the church was built,† There is one entry,—to Mr. Edy, bricklayer, and Mr. Cooke, the surveyor, 10*l.* 14*s.* 6*d.* The next entry shows the kind feeling entertained towards Wren by the parish. It is as follows:—"P*d.* for a hoghead of Claret w^{ch} was p^{re}sented to S^r Christopher Wren £009, 10*s.* 00*d.*" Mr. Ward, in his "Lives of the Gresham Professors," gives the following extract from an old parish vestry book,—communicated to him by the Rev. Dr. Wilson, then rector of St. Stephen's:—"August 24. Ordered that a present of 20 guineas be made to the lady of Sir Christopher Wren, as a testimony of the regard the parish has for the great care and skill that Sir Christopher showed in the rebuilding of our church."

In a MS. list of miscellaneous papers belonging to the church, we noticed an entry, "Drafts and Schemes for building the Church:" these should be looked for.

Amongst the bills is one for "Joyner's Worke," begun Jan. 7, 1678, and ended June 7, 1679, in which appear these charges:—"For the pulpit, "made ready and finished," 75*l.* 5*s.*; altar-piece, 54*l.* 10*s.*; and communion-table, 12*l.* 10*s.* These charges, if we noticed correctly, did not include the carving. The bill of William Newman, carver, dated April 27, 1680, contains, amongst other items, these:—"for the King's Arms (at that time part of the altar-piece), 8*l.* 10*s.*;" "for carveinge ye Communion Table, 6*l.*" For eight small figures on the font-cover he charged 6*l.*, or 15*s.* each.

Amongst the papers there is an agreement of one moiety of the sum thus raised, was applied to the rebuilding of parochial churches and one-fourth to St. Paul's.

* Amongst these papers are two grants from Henry VI. for a perpetual chantry nigh the north porch of St. Paul's; also a third document, dated the thirty-sixth year of the reign of the same king (1457), which has a very interesting initial letter.

† The cost of the church is stated to have been 7,622*l.* 13*s.*

for certain works between John Whiteing and James Darrell, churchwardens; Thomas Creether, joiner; and William Newman, carver. This is dated Dec. 8, 1681, and contains an arbitration clause:—any difference that might arise was to be settled by "City Viewers or Surveyors."

We must now, however, look to the church itself, of which we give an engraved plan and a view of the interior, looking towards the south-west.

	Feet.	Inches.
The length of the church, exclusive of the vestibule, is.....	83	0
The width is.....	60	0
The height from the paving to the top of the order.....	28	2
The height to the base of the dome.....	40	6
The height to the base of the lantern.....	60	7
The lantern is, in height.....	9	5
And the total height is.....	70	0

The church, it is said, will accommodate about 800 persons: we should not have guessed so.

An error has been very generally fallen into with respect to the dimensions of this church: in some descriptions of it the length is stated to be 75 feet, and the width, 56 feet.

The plan is a parallelogram, and is divided by four rows of columns; the two central columns between the third, fourth, and fifth intercolumniations are omitted on each side, and afford an area of 43 feet square, over which expands the dome, surmounted by the cupola, or lantern. By this arrangement a cruciform effect is given to the design; the intercolumniations of the base, transepts, and chancel being equal in width, viz., 17 feet.

The spaces between the walls and the columns on the north and south sides are not more than 6 feet 6 inches in width, whereas the intercolumniations are 11 feet, which may be considered to detract from the goodness of the plan.

The columns employed are of the Corinthian order, crowned with an enriched entablature of more peculiarity than beauty, from the cornice of which rise the vaulted and groined ceilings, and the walls of the clerestory.

The square area at the intersection of the transepts is brought into a circle by means of light arches, springing from column to column; the spandrels formed by the arches are filled with shields and ornaments of uncertain form. The dome itself rises upon an enriched composite cornice, and is divided into four panels in height, sixteen at the base, eight in the second tier, sixteen in the third, and eight in the fourth, making altogether forty-eight panels. The ornaments in the second tier of coffers consist of very boldly relieved palm-leaved branches and rosettes,

* See Vol. V. p. 273.

† An immense number of graves under the floor of the church have been arched over and sealed with concrete.

‡ On the north side of Pancras-lane is a small inclosed piece of ground, and upon a stone let into the wall of a house adjoining at the west end of the ground is inscribed the following record:—"Before the dreadful fire, anno 1666, stood the parish church St. Bennet Sherehog."

§ Elmes's "Memoirs of Wren," p. 314. Money was raised for rebuilding the city by tax on coals: three-fourths

Rosettes fill the centres of all the other coffers. The apex of the dome at the base of the lantern is decorated with a band and leaf twisting round, the decoration terminating with a flower upon the ceiling of the lantern. The north and south walls of the church above the wainscoting are finished in plaster, and, with the exception of the elliptical openings for light, were formerly perfectly plain: the monuments now arranged and fixed against the walls give them a more finished appearance.* The upper part of the altar-screen was taken away, and the east window of the chancel closed up, about the year 1796, to make room for a painting by the late Benjamin West, representing the death of St. Stephen, that was presented to the parish by the then rector, the Rev. Dr. Wilson.

The altar-screen has been (in the late repairs) restored from a drawing preserved in the church having the name of *Davis* attached to it, the carpenter employed by Sir C. Wren at the building of the church, and the east window has been again opened. The picture, which is amongst the best of West's works, is now placed on the north side of the church in the transept, and is seen to far greater advantage than heretofore; it would have been still better seen if hung more sloping.

The fittings of the church are all executed in oak, the arms of the Grocers' Company being carved on the panels of the wall wainscoting. Two seats in the body of the church, under the dome, on the north and south sides, have been lately appropriated, one bearing the arms of the city, and the other that of the Grocers' Company. There are carvings of flowers in festoon upon the west screen. The altar-piece, railing, and the table, also contain some fair examples of the style of carving then prevailing.

The pulpit is hexagonal in form, supported upon a plain oak column; the panels and angles of the pulpit being carved with festoons of fruit and flowers introduced. The inlaid sounding-board, surmounted with enriched mouldings and canopy, having angels at the angles supporting wreaths of flowers on either side, is supported on a square Ionic pilaster, panelled and carved at the sides. The font cover is octagonal, elaborately carved; the upper parts are ornamented with vases filled with flowers, angels' heads and festoons, and small figures of the virtues. Previous to the late restoration of the church it was clogged with paint, which has now been entirely removed, and the cover is restored to its original state.†

The organ, made by England, was subscribed for and put up in the church about the year 1765. The organ-case, which is of oak, is fully carved, but conveys all the elements of a later style, and is very different in feeling from other parts of the church. The arms of Charles II., which formed the centre ornament of the pediment over the altar, were placed, previous to the late repairs, over the entrance to the vestry. They now surmount the pediment to the screen of the organ gallery, and thereby form a sufficient screen to the organist and supersede the necessity for curtains.

The vestry is situated at the north-west angle of the church, and leads into an inner room in the tower, used for the purpose of keeping the records of the church, &c. The window of this room, especially as seen externally, is a great eyesore.

The principal entrance to the church is from Walbrook, and is situated at the south side of the tower under an arch, pleasingly designed, having an elliptical opening over it for light, decorated with wreaths and foliage. The walls of the vestibule are faced with Bath stone, and the church is approached by a handsome flight of stone steps.

There is an entrance from the passage at the back of the Mansion-House through the church-yard at the east end of the church, and

doubtless, previous to the removal of the old Stocks Market which stood upon the site of the present Mansion-House, built by Dance, there was an entrance into the north transept on that side of the church. Many views of the church show this entrance, and one also on the south side, but that is very questionable. Some plans prepared for arranging the pewing, now existing among the records of the church, show an entrance on the north side, but none on the south; indeed, it is very probable that contiguous buildings as now always existed on that side, and would have prevented such an arrangement being carried out.

The tower and spire are built with Portland stone; windows towards the west light the monument-room, singing-loft, and apartments over. The belfry is vaulted over in stone work, and carries the stone spire, and is lighted by four semi-headed openings filled in with louverboards, which afford sufficient light to the apartment. The tower is about 20 feet square and 83 feet 6 inches high from the pavement to the top of the balustrade, and the spire rises about 44 feet 6 inches above that to the top of the base of the vane: like many of Sir C. Wren's towers in the city of London, it is almost free from architectural embellishment, but the proportion is good, and the spire, which is similar to that of St. James's, Garlick-hill, has much variety in its detail and composition, and is deserving of study for the effect produced.

It is much to be regretted that the church has been covered with composita, and that the old house at the corner of Charlotte-row and Walbrook, on the north side of the tower, is allowed to remain. By its removal, an entrance to the church from that public and more convenient street might be made, which would show the tower to far greater advantage, and terminate the vista from the Poultry. About once a month we receive a letter urging the desirableness of removing this house, not merely in point of appearance, but because of the risk of fire to which the church is in consequence subjected, and we do hope that before long this improvement will be made.*

Without going to the full extent of the encomiums which have been lavished by competent judges on this church, all must admire the novelty and elegance of the general arrangement, and appreciate its harmonious proportions and its beautiful effect.

Quatremère De Quincy, in his "Histoire de la Vie et des Ouvrages des plus célèbres Architectes," says, "Amongst the monuments of Wren which have acquired celebrity, and which even now is pointed to as amongst those most noticeable for art and taste, although the work be but of comparatively small importance, must be placed the church of St. Stephen, Walbrook." Afterwards he says, "If we give to this church that praise which is due to it, it is necessary to remark the exaggerated admiration with which d'Argenville, upon the faith, without doubt, of Wren's grandson, asserts that there is not in Italy, a modern edifice that can be compared with it for taste and beautiful proportions."†

As we said in a former article on the subject, if St. Stephen's belonged to our neighbours, the French, the columns would be polished, the walls would be covered with paintings in fresco or encaustic, the cupola and ceiling would glow with colours and gilding, varied marbles would form the pavement, and the windows be filled with stained glass. It would be one of the glories of the capital, and an added inducement to strangers of all nations to resort there.

ELECTRO-TELEGRAPHIC PROGRESS.—The telegraph, says an American paper, now gives notice of storms. For example, the telegraph at Chicago and Toledo notifies ship-masters at Cleveland and Buffalo, and also on Lake Ontario, of the approach of the north-west storm. The result is practically of great importance. A hurricane storm traverses the atmosphere at the rate of a carrier pigeon, namely, sixty miles an hour. A vessel in the port of New York, about to sail for New Orleans, may be telegraphed, twenty hours in advance, that a south-west storm is advancing on the coast from the Gulf of Mexico.

* Even while it remains there is no reason why the whole side of the church should be made into a book-stall.

† Vol. II. p. 250. De Quincy's brief description of the church, by the way, and his dimensions, are erroneous.

THE CARPENTER'S SONG.

A JOKE FOR CHRISTMAS: BY ONE NOT AFRAID OF DR. JOHNSON, NOR ACQUAINTED WITH LINCOLN MURRAY.

Nick Timberbe a joiner was,
A poplar lad was he,
And Nick he had a heart of oak,
Which a deal too soft might be.

Nick's eye beamed fire when he found,
He could some money hoard,
Because he lodged in Chisel-street,*
And there he took his board.

The staple of Nick's heart was love,
Awaiting which oft racks,
And tenderness to Nick's poor heart
Was a very heavy task.

It avers well for Nick's designs,
And adze much to his praise,
That he resolved to marry, when
He aul the brads could raise.

Just opposite there lived a maid,
And she was worth the having:
She'd such a frame—and then her sash,
Caught Nick's eye while a-shaving.

He met her by design one day,
And he began to stammer,—
Says he, "Are you the girl I love?"
Says she, "Yes, sir: I hammer."

Now, Nick, he was a polished blade,
And just the man to win, sirs;
He snapped his fingers, and he cried,
"I don't now care a pincers."

Then they were married in a trice,
All present showed their wit,
And wedding-cake for absent friends—
To each was *centred*.

With gluetinous food he grew quite sleek,
She would not let him fret;
And, being spoiled, a house he sought,
Which the landlord he did *begimble*.

The landlord took him in, he found,
And blame he had all who can;
The doors were all their hinges off,
So Nick was a *hinger'd* man.

Then Nick complain'd unto the law,
Which nearly drove him wild,
For lawyers told him that there must
A Chancery bill be *filed*.

The lawyer measured well his ground;
Poor Nick soon had his fill;
For 'though he found the lawyer filed,
He could not cut his *bill*.

He saw the judge upon the bench,
(The lawyer being cool)
And when my lord his judgment gave,
It was "to take a *rule*."

Poor Nick, he had so much to pay,
Before he could cry "holt!"
That to avoid both locks and bars,
He was obliged to *bolt*.

THE IPSWICH GRAMMAR SCHOOL COMPETITION.

IPSWICH, once the hot-bed of bribery and corruption at political elections, is likely still to retain its reputation, through the impurity of its architectural competitions.

You, no doubt, will remember the insult the good people (!) of that town offered to the profession, some three years since, by advertising for their five-guinea plan for the Mechanics' Institution. Well, scarcely has this odious transaction (which stunk in the nostrils of all England through your help) departed from among us, when another advertisement makes its appearance, soliciting designs for a proposed new grammar-school. This time, however, after considerable discussion, the Ipswichians "stretched a point," and offered the magnificent sum of 25*l*. for their new hobby. In due time the advertisement brought forth its fruits, and was safely (?) delivered of fifty-two sets of designs, most of which were from London, and were the production, as I have reason to know, of several architects of good standing. So far so good. The committee meet, and at their first sitting cut the number down to something like a dozen. This you will say was a sharp three hours' work; but the quick perception of the common councilmen of that town is not to be laughed at. They again meet, after a respectful interval of time, and a few more hours' work soon reduces the number down to two. "The plans to be entertained" having now "got small by degrees and beautifully less"—the committee determined to take breath, and again adjourned. The third meeting commenced at the early hour of nine o'clock last Tuesday fortnight, and the disputes about the two selected plans grew very hot and very lengthy. At last

* The oldest monument in the church is one of John Lilburne, who died Oct. 1678, aged 49, and is affixed to the southern column, nearest the altar. It is shown in our engraving. On the corresponding column is a monument to Robert Marriot, SS., T.P., who died in 1686. Against the south wall is a tablet of some elegance by Bacon, put up in 1803, to the memory of George Griffin Stonestreet, Esq. Sir John Vanbrugh, the wit and architect, lies buried in this church. Sir Samuel Moyer's monument, and Mrs. Mary Wilson's monument, which were affixed to the pillars on either side of the altar, have been moved to the south side of the church.

† Nearly all the original figures mentioned in Newman's bill had disappeared.

* Qy. Chiswell-street F—PRINT. DEV.

symptoms of its being put to the vote began to appear, when in walked several members of the committee, who had never attended before. It was put to the vote, when, to the surprise of those gentlemen who had devoted some little time to the subject, the new-comers commenced voting for and carried the adoption of one of those which had been put aside! This was pretty well. But all is not yet told. The committee, anxious to be impartial, issued strict orders in their instructions that each design should have a mysterious motto accompanied by a sealed letter (mark how careful they were! A wafered or adhesive envelope might have betrayed the secret); and yet when they came to the vote upon the three plans, they did not vote, as you would of course imagine, "for the plan bearing the motto" so and so, but actually voted by name for the three different architects whose productions they were! Yes, Sir, not ashamed of this, they each wrote down their particular protégé's name on a piece of paper and handed it in. Here is glorious secrecy! Another curious feature was, that all these plans were by Ipswich architects, although, as I said before, I know that some gentlemen of good standing in London were foolish enough to be competitors.

The chosen plan, the production of a Mr. Woolrough, as stated in your last week's publication, they find, cannot be executed for less than 6,000*l.*, although strict instructions were given that it was not to exceed 3,000*l.*, or just half that sum. The committee are consequently in a great fix, and scarcely know how to proceed. They have, however, I understand, hit upon an expedient of extricating themselves which is only equalled by their previous immaculate transactions. Another competitor, who sent in a design which he openly stated could not be erected for less than 5,000*l.*, has been allowed to withdraw his plans, or, at any rate, to send in a fresh design—after letting him inspect all the other fifty-one. This gentleman (who, by-the-by, was the successful competitor in the five-guinea institution) is, I believe, therefore to submit his revised plan next Saturday to the committee.

These facts speak for themselves, and therefore require no comment. I have heard that a London architect has placed the matter in the hands of a solicitor. If this is true, I sincerely trust he will make these Ipswich gentlemen pay for their whistle: it is high time something of the sort was done.

* * * * *

ENGINEERING WORKS IN IRELAND.

THE directors of the Dublin and Belfast Junction Railway Company have advertised for tenders for the erection of a viaduct over the river Boyne, together with other works between the temporary station at Newfoundwell and near to the terminus of the Dublin and Drogheda Railway. The total length of work to be contracted for will be about 3,950 feet. The railway will be carried over the river, at a height of 100 feet, on a lattice bridge of three bays, resting on stone piers about 15 feet wide at plinth; the centre bay is 150 feet wide, and the other two 125 feet each; it then extends on fourteen arches, of semicircular form, each 60 feet span, and resting on piers 33 feet 6 inches by 12 feet at plinth, and 31 feet 6 inches by 8 feet 6 inches at springing, the arches to have architraves; internal spandril walls to be six in number and 15 inches thick, covered with flagging, a packing of dry rubble to be behind the abutments. The viaduct is to be set out from the wall north of the Beaulieu-road. The pier being 4 feet south of it at the top of plinth; height to springing of arches 55 feet. The Newfoundwell viaduct consists of five arches 60 feet span, and in every respect similar to those above described. The masonry to be of limestone.

The Commissioners of National Education purpose erecting a model agricultural school at Terose, in the county Limerick, according to plans by their architect, and have advertised for tenders for same.

The entire of the works on the Cork and Passage Railway are nearly complete. Some masonry at the Quay wall at Passage, and the masonry behind it is being finished; but the entire will be complete in about a month. Sir John McNeill is the engineer.

A Bill will be applied for next session to make a railway from the Ulster Railway, at Armagh, to the Ulster Canal, at the town of Caledon. Mr. Dargan, who is now almost the sole proprietor of the canal, is the promoter of the railway; and the works will be prosecuted at his own expense. The distance is seven statute miles.

The Waterford, Wexford, Wicklow, and Dublin Railway Company have publicly expressed their intention of applying to Parliament next session to alter and reduce their capital, to authorise the cancelling of shares not issued, to issue new ones, and to arrange for the division of the share capital, to reduce the number of the directors, alter the title of company, and abandon the proposed line between the point of junction of the main line with the diverging line at Wicklow, at the seventh furlong of the twenty-ninth mile.

It is said that the University of Dublin are about to spend 30,000*l.* or 40,000*l.* for the erection of buildings connected with Trinity College.

Dr. Cullen lately convened a meeting of the building committee of Armagh Roman Catholic Cathedral for the purpose of making arrangements for resuming, at an early period, the works commenced by the late Primate Croll. Subscription lists are opened for this purpose.

The town council of Belfast have forwarded plans, and estimates received, for the erection of a new custom-house there, to the Lords of the Treasury for their approval.

A new front, and other works, are about being erected at the Mansion-house, Dublin, to render the building suitable for the incoming Lord Mayor. Plans for same were prepared by Mr. Hugh Byrne, City Architect, who is now receiving tenders for the execution of the works.

THE MARBLE ARCH AT CUMBERLAND GATE.

At length the question of location for the Marble Arch has been decided, and this angle of Hyde-park has been fixed on by authority for its re-erection: excavations and hackings have been begun, and a brick and mortar office has been erected, to make a permanent and quiet layer within an extensive hoard, for leisurely operations, such as may be observed within the encircle of all public works, from Buckingham-palace to Nelson's Column.

Several sites have been submitted through THE BUILDER, more appropriate than Cumberland-corner: one at the end of the long walk in Regent's-park, on the highest point of elevation, showing from Portland-place the back-ground of Highgate-hill; another, as illustrated about two months back, forming an opening into St. James's-park from Charing-cross; a third at the end of Pall-mall, at or near the proposed junction of that thoroughfare with the Green-park. Any of these would be preferable to the position selected by the Chief Commissioner on the WAY-SIDE at the top of Oxford-street,—a spot chosen certainly not from any aptitude to the exhibition of any structure of fair proportion; for close on two sides bastions of very lofty and not very modern houses (though of the first class) form a screen on one side, and not a very pleasing back-ground on the other.

In that situation the Arch will not stand, as it ought, across the course of a great causeway, nor will it be in a line with Cumberland-place; but it jars with every recognised rule of architecture, save only the practice of the Latins, who placed their tombs, as at Pompeii, on the road-side! The *Arc de Triomphe* at Paris gives a fair idea of the proper position; here the noble arch occupies the highest eminence at the extreme of the majestic avenue of the *Champs Elysées*, and, as viewed from the Tuileries, forms a most imposing *coup d'œil*. Foreigners must admire our amazing proneness to misplace fine structures: in the nascent year of Exhibition, what shrugs and reflections will the unhappy dislocation of sumptuous performances in art not occasion?

The fixture of a colossal equestrian statue above the chimneys on one corner, may excite the apostrophe, "Voilà la Sculpture Anglaise!" At the other cunning corner a hoard, enclosing (and likely for two years more to enclose) some

* This also was suggested by one of your correspondents.

fifty workmen hammering at marble blocks, will surely be (in the absence of a commissioner) designated "L'Exposition d'Industrie à l'Anglaise;"—then the unhappy swamp wherese is placed, *hors de vue*, the stupendous and elaborate Parliamentary Palace of Westminster! while, spite of the fountains and column, foreigners will be tempted, when near Trafalgar-square, to jeer at our regardlessness of the finest opportunity for a grand foundation.

There are, however, other considerations which should sway those in power (or office) in choosing sites for colossal monuments such as the Marble Arch,—not only the appositeness of the locality to the erection, but of the erection to the locality. It is no light thing to obscure, darken, and prejudice eight or ten first-class houses by the obtusion of a barrier, 50 feet wide by 60 in height. With reference to the Duke of Sutherland's, or Lord Ellesmere's, this point would have been considered; then why not as relates to ten mansions of private gentlemen?

But it is time that competency and taste should step in to avert further spoliation and frivolity in public matters such as the allocation of public works, and that men whose education and practice fit them to judge in the like cases should be commissioned to determine, when men take upon them to act whose only qualification for the office they too often abuse is just that amount of parliamentary or family interest which can procure an admission to place and 2,000*l.* a year—so far as the toilet such a one may be installed the "Arbiter Elegantiarum," but as to discrimination in proprieties for great and lasting monuments, they might as well attempt (as no doubt they would undertake it) the construction of another Menai Bridge.

QUONDAM.

THE CLOISTERS OF WESTMINSTER.

ALLOW me, through your columns, to make a few suggestions relative to the preservation of the Cloisters of Westminster Abbey, which I am sorry to see allowed to remain so sadly out of repair. Would it not be advisable, now that plate glass is so exceedingly cheap, to fill the tracery of the bays, and so exclude the damp atmosphere? this would effectually prevent the decomposition of the groined ceilings and would also make it a fit receptacle for monuments, also enabling the Abbey authorities to clear out many of those now contained within the interior of the sacred edifice, which are totally devoid of interest to the present generation, and at best were but ostentatious displays of some worldly-minded capitalists. If this were done, and the incrustations and disintegrations removed from the present internal portion of the cloister, it would be far less likely to decay, as its present rough surface is like a sponge, holding the moisture, and every hour adding to the decomposition of the structure.

Perhaps, if parties so desirous were allowed to erect several windows in stained glass, as fittings for the traceried divisions of the bays, it would not only add to the effect, but would be a good start in the right direction, viz., in encouraging the manufacture of that article; this would apply to the present bare windows of St. Paul's and the interior of the Abbey, as it would, if permitted, soon be responded to by the public, and prove the value they placed upon the privilege. With one more remark, I conclude for the present. Surely something more suitable, and less likely to decay, could have been substituted for the iron bars cased in tin, and strengtheners to the mullions, and also to the columns within the Abbey. Copper or galvanised iron, in my opinion, would have been preferable, for many evident reasons: one glance at those in use would be enough to satisfy the most dubious.*

H. B.

THE LATE MR. COTTINGHAM'S MUSEUM OF MEDIEVAL ARCHITECTURE.—A catalogue of this museum, to which we have before drawn attention, has been issued by Mr. Henry Shaw, with fourteen or fifteen illustrations. From this we learn that, in the event of the collection not being disposed of by private contract, it will be sold by auction by Messrs. Foster in April next. The dispersion of this collection would be matter for lasting regret.

* Should they be there at all?

A SAXON DWELLING-HOUSE.



THE HOUSES OF THE ANGLO-SAXONS.

THE current number of the *Art-Journal* contains the first of a series of papers by Mr. Wright on the "Domestic Manners of the English during the Middle Ages," illustrated by Mr. Fairholt, and we glean from it the following particulars of Saxon dwellings. The writer says,—

We have only one record of the manners of the Saxons before they settled in Britain, and that is neither perfect nor altogether unaltered—it is the romance of *Beowulf*, a poem in pure Anglo-Saxon, which contains internal marks of having been composed before the people who spoke that language had quitted their settlements on the Continent. Yet we can hardly peruse it without suspecting that some of its portraiture are descriptive rather of what was seen in England than of what existed in the north of Germany. Thus we might almost imagine that the 'street variegated with stones' (*stret was stān-fāh*), along which the hero *Beowulf* and his followers proceeded from the shore to the royal residence of *Hrothgar*, was a description of a Roman road as found in Britain.

It came into the mind of *Hrothgar*, we are told, that he would cause to be built a house, 'a great mead hall,' which was to be his chief palace or metropolis. The hall-gate, we are informed, rose aloft, 'high and curved with pinnacles' (*hædh and horn-gæp*). It is elsewhere described as a 'lofty house;' the hall was high; it was 'fast within and without, with iron bonds, forged cunningly;' it appears that there were steps to it, and the roof is described as being variegated with gold; the walls were covered with tapestry (*wæb after wagum*), which also was 'variegated with gold,' and presented to the view 'many a wondrous sight to every one that looketh upon such.' The walls appear to have been of wood; we are repeatedly told that the roof was carved and lofty; the floor is described as being variegated (probably a tessellated pavement); and the seats were benches arranged round it, with the exception of *Hrothgar's* chair or throne. In the vicinity of the hall stood the chambers or bowers, in which there were beds (*bed eftur būrum*).

These few epithets and allusions, scattered through the poem, give us a tolerable notion of what the house of a Saxon chieftain must have been in the country from whence our ancestors came, as well as afterwards in that where they were finally settled.

The writer considers that this arrangement continued nearly the same down to a late period.

The most important part of the building was the hall, on which was bestowed all the ornamentation of which the builders and decorators of that early period were capable. Around, or near this, stood, in separate build-

ings, the bed-chambers, or bowers (*būr*), of which the latter name is only now preserved, as applied to a summer-house in a garden; but the reader of old English poetry will remember well the common phrase of a *bird in burs*, a lady in her bower or chamber. These, and the household offices, were all grouped within an inclosure, or outward wall, which, I imagine, was generally of earth, for the Anglo-Saxon word *weall*, applied to an earthen rampart, as well as to masonry. What is termed in the poem of *Judith*, *wealles geat*, the gate of the wall, was the entrance through this inclosure or rampart. I am convinced that many of the earthworks, which are often looked upon as ancient camps, are nothing more than the remains of the inclosures of Anglo-Saxon residences. * * *

We have unfortunately no special descriptions of Anglo-Saxon houses, but scattered incidents in the Anglo-Saxon historians show us that this general arrangement of the house lasted down to the latest period of their monarchy. Thus, in the year 755, *Cynewulf*, king of the West Saxons, was murdered at *Merton* by the atheing *Cyneard*. The circumstances of the story are but imperfectly understood, unless we bear in mind the above description of a house. *Cynewulf* had gone to *Merton* privately, to visit a lady there, who seems to have been his mistress, and he only took a small party of his followers with him. *Cyneard* assembled a body of men, entered the inclosure of the house unperceived (as appears by the context), and surrounded the detached chamber (*būr*) in which was the king with the lady. The king, taken by surprise, rushed to the door (*on þa dūru eode*), and was there slain fighting. The king's attendants, although certainly within the inclosure of the house, were out of hearing of this sudden fray (they were probably in the hall), but they were roused by the woman's screams, rushed to the spot, and fought till, overwhelmed by the numbers of their enemies, they also were all slain. The murderers now took possession of the house, and shut the entrance gate of the wall of inclosure, to protect themselves against the body of the king's followers who had been left at a distance.

These, next day, when they heard what had happened, hastened to the spot, attacked the house, and continued fighting round the gates (*ymb þā gatū*) until they made their way in, and slew all the men who were there. Again we are told, in the 'Ramsey Chronicle,' published by Gale, of a rich man in the Danish period, who was oppressive to his people, and, therefore, suspicious of them. He accordingly had four watchmen every night chosen alternately from his people, who kept guard at the outside of his hall, evidently for the purpose of preventing his enemies from being admitted into the inclosure by treachery. He lay in his chamber or bower. One night,

the watchmen having drunk more than usual, were unguarded in their speech, and talked together of a plot into which they had entered against the life of their lord. He, happening to be awake, heard their conversation from his chamber, and defeated their project. We see here the chamber of the lord of the mansion so little substantial in its construction that its inmates could hear what was going on out of doors. At a still later period, a Northumbrian noble, whom *Hereward* visited in his youth, had a building for wild beasts within his house or inclosure. One day a bear broke loose, and immediately made for the chamber or bower of the lady of the household, in which she had taken shelter with her women, and whither no doubt the savage animal was attracted by their cries. We gather from the context that this asylum would not have availed them, had not young *Hereward* slain the bear before it reached them. In fact, the lady's chamber was still only a detached room, probably with a very weak door, which was not capable of withstanding any force.

The Harleian Manuscript, No. 603 (in the British Museum), contains several illustrations of Anglo-Saxon domestic architecture, most of which are rather sketchy and indefinite; but there is one picture (fol. 57, vo.) which illustrates in a very interesting manner the distribution of the house. Of this an exact copy is given in the accompanying cut.* The manuscript is perhaps as old as the ninth century, and the picture here given illustrates *Psalm cxi.*, in the Vulgate version, the description of the just and righteous chieftain: the beggars are admitted within the inclosure (where the scene is laid), to receive the alms of the lord; and he and his lady are occupied in distributing bread to them, while his servants are bringing out of one of the bowers raiment to clothe the naked. The larger building behind, ending in a sort of round tower with a cupola, is evidently the hall—the stag's head seems to mark its character. The buildings to the left are chambers or bowers; to the right is the domestic chapel, and the little room attached is perhaps the chamber of the chaplain.

It is evidently the intention in this picture to represent the walls of the rooms as being formed, in the lower part, of masonry, with timber walls above, and all the windows are in the timber walls. If we make allowance for want of perspective and proportion in the drawing, it is probable that only a small por-

* Strutt has engraved, without indicating the manuscript from which it is taken, a small Saxon house, consisting of one hall or place for living in, with a chamber attached, exactly like the domestic chapel, and its attached chamber in the above cut. This seems to have been the usual shape of small houses in the Anglo-Saxon period.

[We are indebted to the *Art-Journal* for our illustration.]

tion of the elevation was masonry, and that the wooden walls (*parietes*) were raised above it, as is very commonly the case in old timber houses still existing. I suspect that the Roman houses in this island were built just in the same manner, which will account for our finding the walls of Roman villas always nearly, if not quite, level, at a no very great altitude. Had they been the remains of higher walls of stone and brick broken down, the top would have been much more uneven. The greater portion of the Saxon houses were certainly of timber; in Alfric's colloquy, it is the carpenter or worker in wood (*se treo-wyrhta*) who builds houses; and the very word to express the operation of building, *timbrian*, *getimbrian*, signified literally to construct of timber. We observe in the above representation of a house, that none of the buildings have more than a ground floor, and this seems to have been a characteristic of the houses of all classes. The Saxon word *flor* is generally used in the early writers to represent the Latin *pavimentum*. The term upper floor occurs once or twice, but only I think in translating from foreign Latin writers. The only instance that occurs to my memory of an upper floor in an Anglo-Saxon house, is the story of Dunstan's council at Calne in 978, when, according to the 'Saxon Chronicle,' the *witan*, or council, fell from an upper floor (*of ane up-floran*), while Dunstan himself avoided their fate by supporting himself on a beam (*upon anum beame*). The buildings in the above picture are all roofed with tiles of different forms, evidently copied from the older Roman roof-tiles. Perhaps the flatness of these roofs is only to be considered as a proof of the draughtsman's ignorance of perspective. One of Alfric's homilies applies the epithet *steep* to a roof—on *ðam sticelan hrofe*.

The collective house had various names in Anglo-Saxon. It was called *hūs*, a house, a general name for all residences great or small; it was called *heal*, or hall, because that was the most important part of the building—we still call gentlemen's seats halls; it was called *ham* as being the residence or home of its possessor and it was called *tūn*, in regard of its inclosure

RAILWAY JOTTINGS.

It is reported that the Great Western Company contemplate raising by loan a sum of 94,000*l.* to finish the Great Western Docks, in order that Plymouth may become the packet station, by which the railway will be greatly benefited.—In the Court of Queen's Bench lately, a person, named Elam, obtained a verdict with 900*l.* damages against the North-Western Company, for compensation for the loss of some valuable property which had been delivered at an address different from that given by the plaintiff when he despatched the goods. Some dishonest persons had received it and escaped with it.—Vice-Chancellor Rolfe has appointed the first day in the ensuing term for delivering judgment on the appeal of Capper in the Direct Birmingham and Oxford Company, which, short of the decision of the House of Lords, will settle the great question of the liability of allottees. His Lordship intimates that his impression is in favour of the non-liability of allottees in unformed companies who have not paid any deposit or done any act after making application for shares. Should it be so decided this will release from the lists between 1,000 and 2,000 persons in the Direct Birmingham and Oxford, and consequently several thousand persons who were mere applicants for shares during the mania of 1845.—The amount of damage done by a fire at the station at Fives, near Lille, is estimated at 40,000*l.*—An Anthracite locomotive is said to have been successfully experimented with on the Philadelphia and Reading railway, U.S. The American *Miners' Journal* thus describes it:—"Dimfel's boiler has no inserted tubes in the water cylinder, but the outline of the boiler in a sort of figure of 7 shape, with free water-pipes connecting the back and top parts, and penetrating the main boiler-box, so that the ends are up in the water instead of in the fire. In this way the fire plays around and amongst these tubes or water-pipes, giving unusual circulation to the boiling water, and exposing no lapped parts to be unfurled and burned off by the

intense heat. The boiler is equally applicable to marine engines."—On the London and North-Western, during the four days preceding Christmas-day, the number of parcels and packages sent "outward" was little short of 25,000, and "inward" of 10,000. By the Great Western there were 15,000 parcels outward, and 10,000 inward bound. By the Great Northern, "in and out," there were about 10,000, exclusive of goods trains, as was the case on the Eastern Counties, of corn, meat, &c., from the agricultural districts. The London and South-Western, South-Eastern, and Brighton had a larger complement than usual of Christmas traffic.

LEADEN CISTERNS.

SIR: I find that the bottoms of my leaden cisterns are spotted over with a whitish fungous substance, which is rapidly eating into the lead. I am told it arises from there being a quantity of calcareous matter held in suspension in the water. This is exceedingly annoying, as I have lately put up, at considerable expense, a very convenient bath and some house-maids' and other closets. My plumber recommends painting the cisterns when perfectly dry, but acknowledges he does not know what they should be painted with, as any of the paints in which lead is a basis will wash off after being kept a considerable time covered with water. May I request your advice as to what they should be painted with, or would any solution of gutta-percha be more effectual?

A BUILDER.

. Is our correspondent certain that the white spots are of a fungoid nature? Calcareous salts in water will not only stain but cover leaden cisterns altogether with a whitish mineral film, which will tend to preserve the lead in place of destroying it; and instead of being removed, therefore, ought to be allowed to remain, as preferable to any paint that could be laid on. Should the stains referred to really be of a different nature, and painting or other coating be considered advisable, we would recommend a perusal of what we have said on the subject of paints, cements, and mastics, in an article "On Doctoring Damp Room-walls" in our present number. Much of what is there said will be found to be useful to others than those interested in damp walls merely, and to our correspondent among the number. Should none of the paints or cements there described prove a satisfactory palliative or cure of the evil complained of, we would recommend the substitution of slate. Asphalt by itself, we may add, has been used for painting or smearing the interior of cisterns, but of its influence on the water in respect to taste and odour we cannot speak. For baths, closets, &c., taste or even odour might be of little consequence. See, however, as to odour in the article alluded to.

SCENERY AND PANORAMAS.

The *Colosseum, Regent's-park*.—The view of Paris, which has been exhibited here for some time past, has given place to a panorama of the Lake of Thun, taken from an eminence to the northward of the town. It is executed in *tempora* by the Messrs. Danson, and gives a truthful idea of the beautiful country it represents. It wants force in parts, but is nevertheless a fine work. We would suggest to the proprietors to continue their city series; Edinburgh, treated as London was, would make a very effective exhibition. The Colosseum should be visited by all our friends from the country when they come to London. When Mr. David Montague, the proprietor, applied recently for a licence, Mr. Wilks (one of the magistrates) said with justice, that the Colosseum was an ornament to the island on which they lived. It was one of those sights which persons coming even from the most remote parts of the civilized world visited and gazed at in astonishment. Whether, therefore, he considered the vast amount of capital which had been invested on this building, or the taste which had been displayed in its arrangement, or the reputation it had usually borne, or the high character of Mr. Montague, he could not but feel that it would be an act of injustice to refuse the privilege.

Burford's Panorama, Leicester-square.—Mr. Burford has painted, as a Christmas novelty, a view of the Lake and Town of Lucerne,—

"That sacred lake withdrawn among the hills,
Its depth of waters flanked as with a wall
Built by the giant race before the Flood."

It is exhibited in place of "Pompeii," and one grieves that the latter instructive picture should be doomed to be painted out. Mr. H. Selous has aided Mr. Burford in producing a charming picture. The *Hotel des Suisses* looks out of sight.

The *Lyceum Theatre*.—The crowds that flock to the Lyceum every night to see Mr. Planché's Christmas piece, *King Charming*, are already sufficiently large to render further recommendation unnecessary. It is a well-deserved success. Messrs. Beverley and Meadows have ably worked up to the author in the greater number of the scenes. The "Abode of the Fairy," an Alhambraish interior, with arches on crystal columns with jewelled capitals, and the last scene of the first act, (seen too transiently) the Fan-Sea Islands, are exquisite pieces of painting; while in the last scene of all the artist and machinist have coalesced to produce an effect which we have never seen equalled.

The *Haymarket Theatre*.—The witty burlesque here ("The Second Calender") terminates with an interior view of the Exhibition building, which, if not quite so minutely correct as that we give to-day, is still effective. Our great artist, Macready, here, must be seen now by those who would see him at all.

The *Princess's Theatre*.—Here the pantomime ends with a well-painted view of the outside of the Exhibition Building, which looks all the better for having glass in the lowest story, as originally intended, instead of boarding, as now. One of the cleverest effects is the "Rising of the Sea." If the efforts of Messrs. Kean and Keeley at this theatre are receiving the reward they merit, they should endeavour to improve the plan of the dress-circle. The form now is such, that in two boxes on each side the stage cannot be seen.

HYDRAULIC MORTAR,

AS MADE AND USED AT THE DOCKS, LIVERPOOL, 1850.

Few engineers or architects who have visited Liverpool will have neglected to examine the docks, constructed under the direction of Mr. Hartley, and if they have noticed the character of the recent work, they will have observed that the river walls, entrances, and dock-walls are principally of rubble masonry. The strength of this work in a great measure depends upon the good quality of the mortar used. From inquiries we obtained the following particulars as to the mortar, which may be useful to some of our readers. The dock works at Birkenhead are constructed with similar mortar. In fact it has been made principally by men from the Liverpool works. The stone is obtained from Halkin mountain, near to Holywell, Flintshire, North Wales: it is shipped in the river Dee. Price of stone delivered upon the quay at Liverpool, per ton, 7*s.* 3*d.* When it is requisite to burn the stone quickly, coke is used, at per ton 16*s.* When not required quickly, coal is used, at per ton 8*s.* 6*d.* The stone can be burned quickly for as little money with coke as it can be burned slowly with coals. But it is very expensive to burn quickly with coals or slowly with coke. The proportion of coke is generally one bushel to six bushels of stone.

Cost of burning the Limestone.

Tons. Cwt.	Per Ton.	
4 10	of limestone, 7 <i>s.</i> 3 <i>d.</i>	.. £1 12 7½
	labour on do. 1 <i>s.</i> 6 <i>d.</i>	.. 0 6 9
1 10	of coke .. 11 <i>s.</i> 0 <i>d.</i>	.. 0 16 6
		£2 15 10½

Produce: Lime, 3 tons, at 18*s.* 7½*d.* per ton £2 15 10½

Mortar from the mill costs, per cubic yard, from 9*s.* 6*d.* to 10*s.* 6*d.*

N.B. Various quantities of sand are used, from two to five, to one of lime by measure. Smiths' ashes, or furnace ashes, are used to mix with the lime and with much advantage.

The sand is obtained out of the river Mersey, generally from the great banks above the town.

The lime-kilns stand close to the mortar-shed: the lime is drawn fresh from the kiln mouth, is slaked, and thrown at once into the

mortar-pans (which are driven by steam power). The mortar is used fresh, generally on the day it is made. It sets rapidly, and in a few months the rubble becomes one solid mass. Grout is used plentifully, made from the same mortar.

ARTISTICAL INSTITUTIONS AT MANCHESTER.

ON Monday in last week the second social meeting of the pupils and friends of the School of Design was held—chairman, Mr. Bazley, who, in his address, remarked that only a few days ago, in the Town-hall, a distinguished stranger, the minister from the United States, observed that, in taste, he believed England would prove herself inferior to the nations of Europe, and especially to France, Germany, and probably Switzerland, at the great exhibition of 1851. It was very gratifying that in Manchester they had, as it were, the nucleus of a most important school, from which an improvement in public taste might be expected to arise; but the teaching, in his opinion, ought to extend to the people without the walls of the school; for, unless there were an appreciation of high art and of refined taste among the people at large, they would only be "casting their pearls before swine." Mr. Brotherton, M.P., Mr. Hammersley, the head master, Mr. Cobden, M.P., the Mayor, and Mr. Letherbrow, one of the students, also addressed the meeting, which was well attended by ladies as well as gentlemen. Mr. Cobden said that he did not think it would require more than a half-penny in the pound in Manchester to raise a sum of 2,000l. a year. The assessment, he thought, was nearly 1,000,000l. a year. [The Mayor said it was 1,200,000l.] Well, that was 2,500l. a year; and taking Salford into partnership, they might, he believed, by this half-penny rate get upwards of 3,000l.; which would not only support a school of design, but a museum also.—The annual Christmas party of the Mechanics' Institution drawing classes was held on Thursday evening in last week, when about fifty of the male and female pupils met for social recreation and amusement. The walls of the room were crowded with several hundred specimens of drawings, in oil, water-colour, and chalk, mechanical drawings, artistic designs, &c. The pictures displayed every possible stage of artistic progress, for all the specimens sent were admitted. The two drawing classes, according to the *Manchester Spectator*, at present number about 140 pupils.—The social *soirée* of the Athenæum, too, has just been held. Mr. Cobden presided. The assemblage of ladies and gentlemen was a numerous one. The chairman said that the number of members had, he believed, increased from fifteen to twenty during the last year. He thought the number of the members of this institution was not so great as it ought to be in Manchester. He did not think they had more than 250 or 300 members under twenty-one years of age, and probably the majority were upwards of forty. He exhorted young men of twenty to twenty-five to prize such an institution a great deal more than they seemed to do. A dramatic and musical entertainment followed the address.

Books.

The Elements of Descriptive Geometry: being the First Part of a Treatise on Descriptive Geometry, and its Application to Shipbuilding. By JOSEPH WOOLLEY, M.A., LL.D. London: John W. Parker, 1850.

If we were to set before our readers a simple statement of the enormous sums of money which have been wasted in our shipbuilding departments through ignorance, they would be startled, and would admit the necessity of efforts to supply knowledge to those who pursue this branch of construction. Dr. Woolley's work is arranged with this end in view, and has been published by direction of the Lords of the Admiralty. The writer observes, in his preface, that "The scarcity of works on this subject in the English language has encouraged the author to hope [he should say, leads the author to fear] that much of the contents of the present volume will be new to the English student; that not only the naval architect and engineer (who is especially inter-

ested in this branch of mathematics) will find it of use, but also students in the universities, to whom the principles of the geometry of space are usually accessible only in an analytical form, will find this subject rendered much more distinct and clear when seen by the light which the more palpable methods of descriptive geometry enable us to throw upon it."

The book is the work of one who is master of the subject, but is scarcely adapted for minds which approach the subject for the first time,—the previous study of some more elementary "Elements" will lighten the effort. A valuable atlas of diagrams accompanies the volume, and will be found valuable, beyond assisting the student in comprehending the problems solved, as an introduction to the theory of laying off ships on the mould-loft floor,—a subject that is to be fully treated of in the second part of the work.

A Progressive Course of Inventive Drawing, on the Principles of Pestalozzi. By HERMANN KRIEST and W. J. WHITAKER. Ramsay, Brompton-row, 1850.

This little volume is addressed by the authors especially to teachers, with the view of assisting them to develop a power of design. The means adopted are, making the children produce a graduated series of figures of their own creation. The children being taught a few geometrical forms are made to combine them according to their own fancy. "Childhood is the age when the power of combination is most active. To direct its operations in systematic progression leads to their application to inventive art, and prepares the ground for original conception in the higher regions of the arts." The idea is a good one, but practice in copying forms set before them must be superadded.

The British Almanac and Companion for 1851. London: C. Knight.

The general information given in the present issue of this very excellent and now well-known publication includes papers on Some Points in the History of Arithmetic; Railways of the United Kingdom; Supply of Cotton; and Industrial Associations. From the second named of these we find the following concise note of

"The Tyne and Tweed Railway Bridges.—So important are the means by which the east coast railways have been enabled to span the valleys of the Tyne and the Tweed, and so beautiful are the viaducts at these spots as works of engineering skill, that they call for a little separate description.

When the Newcastle and Berwick Railway was planned, it was felt that a junction with the Newcastle and Darlington line could be effected only by the construction of a very lofty bridge over the Tyne at Newcastle; because the banks of the river at that spot are very steep, and the general level of the railways would not permit of a crossing at a relatively small height above the water. It had long been wished by the inhabitants to have a "high-level" bridge, since the old bridge was adapted only for the low or water-side districts of Newcastle and Gateshead; and Mr. Robert Stephenson boldly planned a scheme which should meet this requirement, as well as the requirement of the railway companies. He drew up the scheme for a double bridge, with a railway line over a common road; the companies assented, an Act was obtained, and the works are now nearly, if not quite, finished.

In order to understand the arrangement of this bridge, we must briefly notice the course of the railways through Newcastle. The Newcastle and Carlisle Railway had, till lately, its terminus at the western margin of Newcastle; the Newcastle and North Shields had its terminus in Pilgrim-street, near the eastern suburbs; the Newcastle and Berwick started from the last-named railway, at a point beyond the limits of the town; and the Newcastle and Darlington terminated at Gateshead, on the south bank of the Tyne. It was deemed advisable to merge all these termini in a new station on a magnificent scale, built in the heart of the town. This fine structure was illustrated and described in the *Companion* for 1850, p. 247. The Carlisle line has been extended beyond its former terminus, and carried on a bold curve to the central station; the Shields line (and consequently the Berwick

line which runs into it) has been carried at a great height over Pilgrim-street and Dean-street, to the central station; while the Darlington line, shooting past its former terminus at Gateshead, is brought to the central station by the magnificent bridge now under notice.

The Tyne bridge has two piers at the margin of the river, and four others in the stream itself, besides minor piers to support the land arches. These piers are of massive masonry. The distance from pier to pier is about 124 feet, and this determines the span of the arches. At a height of about 90 feet above the level of high water runs a level bridge for carriages, horses, and pedestrians; and at a further height of about 25 feet above this roadway runs the railway itself. The entire height of the masonry and iron work, from the bed of the river to the parapet of the railway, exceeds 130 feet. The whole length of the structure, from the high ground of Gateshead to the high ground of Newcastle, is nearly 1,400 feet. There are nearly 5,000 tons of iron-work in the structure. The masonry in and over the river has cost more than 100,000l.; the masonry and brickwork in fixing the land arches, about an equal sum; while the iron-work has cost a still larger sum.

The Tweed bridge has been opened for traffic in the autumn of 1850, on the occasion of her Majesty's journey to Scotland. It is one of the finest and largest railway viaducts ever constructed. The old bridge over the Tweed was built in the reigns of James I. and Charles I.; it is nearly 1,000 feet in length, and consists of fifteen arches. When a junction became desirable between the North British and the various English railways, a viaduct over the Tweed was necessary; and Mr. Robert Stephenson planned the structure which has been lately opened. In order that the traffic might be accommodated, a temporary timber viaduct was built, to be used while the permanent viaduct was being constructed. This timber viaduct was itself a clever and even elegant structure; it was 1,200 feet in length, and contained nearly 300,000 cubic feet of timber. The permanent stone viaduct consists of twenty-eight circular arches, each 61½ feet span, springing from lofty piers 8½ feet broad. The total length is 2,160 feet; and the greatest height, from the bed of the river to the parapet, is 126½ feet. One-half of the length is over the river; the other half is over the low shore on the south bank. The breadth between the parapets is 24 feet. The land portion of the viaduct has a graceful curve towards the east, on a half-mile radius. The roadway is on an incline, ascending towards Berwick. There are 1,250,000 cubic feet of masonry, and 2,500,000 bricks. Southward of the viaduct there is an embankment more than half a mile in length, in some places 60 feet high, and containing 700,000 cubic yards of earthwork; so that the entire lofty structure to connect the English with the Scotch railway is very little short of a mile in length. The cost of the viaduct has been about 200,000l.

In the paper on "Industrial Associations," it is urged "that under a law of partnership with limited liability—under a law in which the principal of a concern would not incur risk in assigning small shares to his assistants—a more harmonious arrangement of interests and duties might be effected than we now can hope to effect, and the talents and industrial virtues of the employed more extensively called forth."

From the chapter on "Public Improvements," we take the writer's view of

The Question of Copyism.

"In the table of places where new churches are building, besides a column stating the date when each was begun, and another, that on which it is expected to be finished, we have a third, devoted to the "style and character," i. e., the date represented, whether in the 13th, 14th, or 15th century. Thus we find

Place.	Style and Character.	First Stone laid.
Stockport, district of Portwood.	Perpendicular, about 1320.	22 Aug. 1849.

and so on through the schedule. Now a plain man naturally asks, was this, then, the practice of those you profess to imitate? Did the designers, in the three centuries of "Christian Art" itself, take a review of some bygone system of art, then choose their period and adhere

so it? No, they made use of all former experience, and erected buildings the best that the science and art of their *own* time permitted. They were in no difficulty about mixing the features of different dates, because all the features they used were suggested by the requirements of their *own* date,—none adopted to imitate the character of another age.

This will, we hope, guard the reader against the effect of a most erroneous expression now much used. We constantly hear of modern designs imitating the *spirit* of the ancient; and this is generally said of those whose spirit is most directly opposed to it. For the spirit of the thirteenth century designers was to do their best; but that of the nineteenth is to ape the thirteenth century's worst. We say their worst, because modern means necessarily require us to seek out chiefly the simplest (as they are called)—i. e., cheapest—features of each kind for which we can find precedent; so that the whole must needs be, after all, but a very poor imitation, very pinched and starved, with meanness stamped on everything. It cannot but be of that kind referred to by the poet, when he says, the '*apish* nation *limps* after in *base* imitation.' Again, the spirit of the early Gothic designers (or those we chiefly profess to imitate) was to decorate only with useful or necessary features, to make nothing merely for ornament, whereas in our imitations there is not a single ornamental feature, from the sham belfry that costs hundreds, down to the sham buttress, or waterspout, that is of any use whatever to the construction or purposes of the building; as, on the other hand, every useful or necessary object is so unsightly that we use every effort to dispense with or smuggle it away.

If, then, we admit the arts of the above-named section and period of the Church to be right, and the only Christian art, the question still arises, how can our present imitation of them be right also; seeing that the two are diametrically opposed in their leading principles, objects, and spirit? We can only conclude that the truth now aimed at, consists in imitating the letter and outward form or dress of Gothicism (or rather of the Anglo-Romish church-building, for this is only one small branch of Gothicism)."

Miscellaneous.

THE SHOP-BLIND NUISANCE.—A correspondent, "Vérité," recalls attention to this great street-nuisance, of which we have taken repeated occasion to complain. If there be, in the police force, any "proper men," as strapping six-foot fellows were wont to be called, they must have had their attention forcibly called to the fact that the awnings and tackle complained of are a nuisance—of a high order, we were on the point of saying; but the point is precisely the reverse: were the police to compel them, one and all, to be hoisted high enough to be clear, not only of what "Vérité" calls the "domes of thought" of all and sundry her Majesty's lieges, but of the tiles and chimney-pots with which it is usual to cap these lofty "domes," we should care little about the other improvements in them suggested by our correspondent, who is as gallant enough to desire that the tackle should be capable of being handed over entirely to the personal management of the feminine gender—why, we cannot readily imagine; neither can we clearly make out why the police allow such nuisance at all,—within even four or five feet of the pavement, which they sometimes actually are,—as we have ourselves had frequent occasion to know, by actual measurement of the height of our dome-tile at least, if not of our whole architectural framework, on the pavement.

"PATENT" REFORM.—The committee of the Society of Arts have prepared the heads of a Bill to be sent to the Board; they agree with the recommendation to which we have already given publicity. The *Journal of Design* recommends the presentation by the local committees for the '51 Exhibition, and others, of a memorial to the Queen, and petitions to both Houses of Parliament.—Following in the wake of the Adelphi Committee, a Patent-Law Reform Association, for the recognition of inventors' rights by legislative enactment, and the total abolition of the present anomalous

routine of patent-law protection, has been formed at Manchester, Mr. Fairbairn, F.R.S., president. The Association have already memorialised the Board of Trade on the subject, and they propose to petition Parliament, and otherwise to assist in urging "a vigorous and united effort" to shake off the horrid incubus by which invention is rough-riden and oppressed in these united realms of mechanical genius and inventive talent.

THE LIGHT, AIR, AND HEALTH TAX.—A determination is being come to throughout the country to get rid of this abominable tax first thing in the opening session. The Ministry, it is said, are willing—to be forced into the public views by a pretty smart agitation. Surely it is incumbent on architects and builders to unite in the necessary clamour. Let the recollection of the adverse but ever ominous majority of one last session reinforce the movement no less than the hope of all.

IMPROVEMENTS IN ENGINES.—Mr. Newton, of Chancery-lane, has taken out a patent in which he claims a method of regulating the packing-ring interposed between the steam-wheel and head of the cylinder, or outer casing, of rotary engines, by combining with the said packing-ring a series of segmental wedges, operated simultaneously in manner substantially as described.—Mr. J. H. Vries has just patented some improvements in working engines by atmospheric air. The engine which forms the subject of this patent embodies certain new principles said to have been discovered by its inventor, and to be applicable to all motive purposes for which steam is at present employed. Various modifications of it are shown as adapted to stationary, marine, rotary, railway, and common road locomotive engines; but the patentee, nevertheless, lays no claim to any particular mechanical arrangement for carrying his invention into effect.

THE METROPOLITAN FEVER-STILLS.—A correspondent points out the graveyard of St. Andrew's, Holborn, as one of those pits of corruption lately re-opened, and where the dread work goes on as energetically as ever. Some far-seeing philanthropists have been sniffing all sorts of coming pestilence in the portmanteaus of our miscellaneous visitors of this eventful summer. They did not contemplate the possibility, we dare say, of such a revival in the manufacture of the home-made article as this. May the industrious manufacturers run just a narrow escape from being stuffed into their own sweet workshops: we wish them no worse anathema than this, although it must rejoice their own hearts to think how abundant their supply of the raw material will be when the corpse-field is fertilized with the manure they are now laying into it as a stimulant to this year's overflowing harvest.

WINDSOR CASTLE.—Notice from the Lord Chamberlain's office has been issued, to the effect that the works connected with the State apartments being now completed, these apartments are to be open gratuitously to the public from the 1st inst., on Mondays, Tuesdays, Thursdays, and Fridays; tickets obtainable on application to Messrs. Colnaghi, 14, Pall Mall East; Mr. Moon, 20, Threadneedle-street; Messrs. Ackermann, 96, Strand; Mr. Mitchell, 33, Old Bond-street; or Mr. Wright, 60, Pall Mall. The hours of admission are eleven to three from November 1 to March 31, and eleven to four from April 1 to October 31.

STREET BRIDGES.—In your number for the 28th ult. there is a suggestion to erect light bridges over the principal crossings. The same idea occurred to me long ago, but it is one which I think could not be realised to any useful extent. Such a bridge would require to be high enough to admit of all kinds of vehicles passing below it, and some of these when loaded, such as waggons of bales and other light goods, reach too high to induce people to mount a bridge under which such loads could pass. But were there a legislative enactment to prevent piling goods on waggons to the dangerous extent now permitted, and to keep all advertising vans and omnibuses considerably below their present elevated standard, there might be some hope of getting from one street to another by means of such a bridge, without endangering our lives. I cannot help remarking, while on this subject, that there are no such objections to the erection of one

or two temporary bridges at different points of the drive in Hyde-park. At the east end of the Serpentine especially, the crowds of people who even now flock to see the Building, and the number of equipages constantly whirling along, renders the erection of a bridge at this place highly desirable. I have, on several occasions, seen persons all but knocked down by galloping horsemen whose silent tread cannot be readily heard over such soft ground. Here, also, a bridge could be erected to run in a line with the road in the park to the north, and to terminate at the south end by a flight of steps.—P. F. K.

THE IRON TRADE.—Preliminary meetings have been held by the Quarterly Meeting Masters; but, besides mutual assurances, of no great novelty, that the good time was coming, we have little to report at present. Recent disasters among the Scottish masters, and in North Staffordshire, are engrossing no little interest and attention; and the late attempt to break up the scrip system among the former, as remarked by a contemporary, has shown to what a perilous extent such illegitimate aid has been relied on, and that if a sudden abandonment of it be persisted in, it will be accompanied by the most crushing results. Even the greatest sticklers for the nominal price announcements at Quarterly Meeting have become ashamed of the humbug, and declare they "will be no party to the adoption of any general or fixed rate, but leave iron in a legitimate way to find its own value in the market." Great expectations are entertained by some sanguine hoppers, of something like a new era in architecture—the Ferro-crystalline style may we call it?—to arise throughout the world at large, when our industrial visitors to the International Exhibition return to tell all "at home" of the wonders they have witnessed.

THE THREATENED STRIKE ON THE NORTH-WESTERN RAILWAY appears to be in a fair way of being entirely settled by the adhesion of the great body of the men to the cause of the directors. Already, however, have symptoms of the results we pointed out been making their appearance. "Upon the northern division of the line," says the *Times*, "applications for the situation of driver have been received from no fewer than 230 men, and 26 new hands have actually been engaged, and are now employed in the workshops of the company. Upon the southern division applications have been received from 128 men, and 42 have been already engaged. Should the present drivers and firemen consent to remain in the company's employment, there will be no desire to dismiss them; and although so many new hands have already been engaged, ample employment will be found for all, in the shops and elsewhere, as it is calculated that about eighty additional drivers will be required in May next, in consequence of the Great Industrial Exhibition." The men upon the southern division would indeed appear to have no ground of just complaint. A reference to the pay-list of the past week shows that out of forty passenger-drivers from the Euston terminus, eleven of them have received upwards of 3*l.* per week each in wages; and that upon the Banbury branch—the work upon branches being notoriously easy—two men have received respectively 3*l.* 15*s.* 4*d.* and 3*l.* 16*s.* as wages for the past week (overtime included). It is customary, moreover, to make an annual gratuity of 5*l.* to the drivers, and 3*l.* to the firemen, as good conduct premium. The matter thus happily rests *in statu quo*. The three months' notice upon the northern division has been generally assented to by the men, and the fortnight's notice upon the southern division has not been disturbed.

MARVELS OF THE CORNISH MINES.—Some of the mines are truly grand undertakings. The Consolidated mines, the largest of the Cornish group, employ upwards of 3,000 persons. One of its engines pumps water from a direct depth of 1,600 feet, the weight of the pumping apparatus alone being upwards of 500 tons; the pumping-rod is 1,740 feet long, and it raises about 2,000,000 gallons of water in a week, from a depth equal to five times the height of St. Paul's.

EFFORT.—Thus it is that God wills man to be great—that God wills man to be happy—*Effort* is the condition, *effort* the means, *effort* the vehicle and the hope of all that he is ever to be.—Rev. G. Armstrong.

STEEL PENS.—The following interesting particulars are condensed from the *Morning Chronicle*:—Steel pens are almost entirely manufactured by women and young girls; and it is probable that out of the 2,000 persons or upwards now engaged in the business, not above 100 or 150 are of the male sex. The manufacture of pen-holders, and that of pen-boxes, give employment to an additional number of women and children, variously estimated at from 200 to 400 persons. About the year 1820 or 1821 the first gross of "three-slit" steel pens was sold, wholesale, at the rate of 7½ ds. the gross. In 1830 they had fallen to 6s., and in 1832 to 6s. the gross. A better article is now sold at 6d. per gross. One factory alone in Birmingham produces them at the rate of no less than 40,000 gross, or 6,760,000 in a week—very nearly a million, or 960,000 per working day, or 289,528,000 per annum. At the very lowest calculation, Birmingham produces 1,000 millions per annum. The cheapest pens are sold as low as 2d. per gross, wholesale; and the price rises, with the elasticity and finish of the pen, up to 3s. 6d. and 5s. per gross. Birmingham produces them all, and one establishment has the distinctive marks of 500 different dealers in all parts of the country, as well as on the continents of Europe and America, for whom he manufactures, according to order. The sheets of steel, received from Sheffield, are reduced to the requisite tenacity by successive transits through the rolling-mill operations, tended by men and boys. When reduced to the thinness of a steel pen, length about 2 feet, breadth 2½ to 3 inches, the sheets are ready for punching out the blanks. This process is performed with great rapidity—one girl, of average industry and dexterity, being able to punch out about 100 gross a-day. The next operation is to place the blank in a concave die, on which a slight touch from a convex punch produces the requisite shape—that of the semi-tube. The slits and apertures to increase the elasticity, and the maker's or vendor's name or mark, are produced by a similar tool. Previously, however, the pen undergoes a variety of other processes. When complete all but the slit, it is soft and pliable, and may be bent or twisted in the hand like a piece of thin lead. Being collected in "grosses," or "great grosses," the pens are thrown into little iron square boxes by men, and placed in a furnace, where they remain till box and pens are of a white heat. They are then taken out, and thrown hissing hot into pails or tanks of oil, when they may be broken like so many wafers: after draining, they are made to revolve rapidly in a perforated cylinder.

ARCHITECTURE.—What are those gay and glittering piles which rise under a brighter sun, and into a clearer atmosphere, on the banks of a smaller river? Yonder dark and heavy towers arose amidst the austerity of Gothic taste, and were loaded with the riches of Roman Catholic superstition; they have witnessed the march of the Crusaders and the coronation of Henry IV.: that gilded tomb attests the magnificence of Louis XIV., and covers the bones of Turenne: projecting into the stream is the ancient Tour de Nesle, the theatre of licentious tragedy; that beauteous row of columns conceals the windows from whence the massacre of St. Bartholomew was ordered; that red obelisk marks the spot where Louis and Marie Antoinette, and Danton and Robespierre, were executed; that perfect peristyle was begun by Napoleon for the Temple of Glory; that majestic arch in the distance was erected to the honour of the Grand Army. Ascend the Tower of the Capitol, and survey the mingled wreck of ages by which you are surrounded. You stand on the massy battlements which defied the arms of Brennus: the Roman senate-house, the palace of the Cæsars, are at your feet: that vast circular tomb on the banks of the Tiber contains the ashes of Adrian: yonder stupendous dome, which rises like a mountain in the west, covers the bones of St. Paul; it was reared by the genius of Michelangelo, and adorned by the pencil of Raphael: the sculptured pillars, which surmount all modern edifices in their vicinity, were erected to the honour of Trajan and Antoninus, the greatest and best of the emperors: that massy pile which still survives, like the skeleton of a world, the ruin of all its contemporary structures, was reared by the

captive hands of the Jews: under those arches the triumph of Aurelian, the captive Zenobia, have passed. It is this wondrous and overwhelming concentration of historical interest into one focus, this presenting of it in actual objects to the senses, which constitutes the grand, the unequalled charm of architecture, and gives to genius, in that department, a lasting hold of the admiration of mankind, which the sister arts will seek in vain to attain.—*Alison's Essays.*

VISITORS TO PUBLIC MONUMENTS.—According to a recent return, the number of visitors to the armoury of the Tower of London, from 1st February, 1845, to March 31, 1850, has been 249,338; amount received, at 6d. each, 6,233l. 9s. The annual number of visitors to the jewel houses, from January 1, 1845, to January 1, 1850, has ranged from 46,737 (in 1846) to 41,482 (in 1849); receipts, at 6d. each, 1,163l. to 1,037l. The number of visitors admitted without charge to the gardens and Palace of Hampton Court during 1849 amounted to 168,195, the largest numbers being May, June, July, August, and September, ranging from 49,476 (in August) to 14,505 (in September). The number of visitors admitted gratis to the Botanical Gardens at Kew in the same year was 137,865, from June to September. The Royal pleasure grounds at Kew, open from Midsummer to Michaelmas, were visited by 41,455 persons. The total yearly amount of money taken at Westminster Abbey from 1845 to 1849 inclusively has ranged from 1,306l. (in 1845) to 968l. (in 1849): admission gratis to nave, transepts, and choir; 6d. to chapels. The yearly amount received for admission of visitors to St. Paul's, at 2d. each during same period, ranges from 589l. (in 1845) to 429l. (in 1848).

DIFFUSION OF KNOWLEDGE.—A Newcastle paper gives the following interesting fact, illustrative of the rapid spread of intellectual culture among a large and deserving class of the population of that district:—A bookseller in the market, in this town, recently had upon his stall ten copies of Emerson's work on Fluxions, all of which he sold at 7s. 6d. a copy to pitmen. He said they were by far his best customers, and that a standard mathematical work never laid long on his stall, being secured by them as a prize. On a subsequent day, at the same stall, there were three men; one bought a work on algebra, another requested a Greek delectus, the third was perusing a Spanish grammar. These men were all hewers of coal.

THE SCULPTOR'S ART IN ROME.—The fine arts are receiving some impulse from the numerous visitors to Rome. The talented Prussian sculptor, Wolf, who is well known in England from having executed, besides many classic groups, some busts of the royal family and a statue of Prince Albert as a Greek warrior, has just completed an exquisite figure of Paris, in which the feminine beauty of

"The woman warrior with the curling hair"

is admirably portrayed. His four statues, personifying the seasons, have been purchased by an English amateur. Mr. Gibson is commencing the models of two very important works, Queen Victoria on her throne between two allegorical figures, representing Justice and Clemency, for the House of Lords, and the colossal statue of Sir Robert Peel.—Rome correspondence of the *Daily News*.

METROPOLITAN SANITARY ASSOCIATION.—On Friday last week a deputation from this association waited on Lord Seymour, as Chief Commissioner of Woods and Forests, to represent to his lordship the necessity of certain alterations in the existing Act of Parliament for the suppression and prevention of nuisances, and also to pray the Commissioners to adopt some strenuous and efficient means of rendering the poorer districts somewhat fit and decent for the approaching visit of hundreds of thousands of artisans, mechanics, and others, to the metropolis, during the continuance of the International Exhibition. His lordship promised his careful consideration of the subject, in connection with documents to be laid before him by the Association.

CORNISH GRANITE.—A very large block of granite, upwards of 20 feet long, and of the finest quality and colour, has lately been raised by the Cheesewring Granite Company, at their quarries, on the Cheesewring-hill,

near Liskeard, which is intended to be sent to the Great Exhibition of 1851. The mass of stone, of which this formed a portion in the quarry, contained by measurement the extraordinary quantity of above 4,000 cubic feet, or about 300 tons in weight.

ROOFING THE AREA OF THE ROYAL EXCHANGE.—The principal objection to the roofing-in of the Royal Exchange appears to be, that it would destroy its architectural character. To obviate this, I would propose to cover the area with a light roof of cast-iron and glass, having its support several feet inside the parapet. I have no knowledge of the roof plan of the building, but should think this would not be difficult of execution. The character of the structure would thus remain precisely the same, the roof not appearing to form part of the building.—*CRITICUS.*

THE REGENT'S PARK.—One part of Regent's-park boasts the names of some of the most celebrated spots in Venice. St. Mark's Church will soon be commenced,—the waters of the Regent's Canal will bathe its walls. There is an unsightly old canal bridge that a very little outlay would render a second *Rialto*. Perhaps this may be a valuable hint to others from A LOVER OF THE PICTURESQUE.

TENDERS

For four houses and shops on the site of a part of the Old Goal, Manchester, as advertised. Mr. R. Gover, architect.

H. and M. Macklin and Brown.....	£2,396 0 0
Newman and Smith (accepted).....	2,150 0 0
For painting and glazing only.....	
Willis and Son (accepted).....	308 10 0

For a chapel at Stoke Newington. Mr. Wilson, architect.

Norris.....	£3,770 0 0
Ashby.....	3,320 0 0
Hayworth.....	3,135 0 0
Holland.....	2,906 0 0
Jay.....	2,984 0 0
R. and G. Curd.....	2,884 0 0
Smith.....	2,460 0 0

[A trifling difference.]

For alteration and repairs to a house, No. 53, in St. Mary Axe, for the City of London Union. Mr. Tress, architect.

Carter.....	£1,290 0 0
Mursh.....	1,275 0 0
Gumman.....	1,230 0 0
D. King.....	1,163 0 0
Curtis and Son.....	1,172 0 0

TO CORRESPONDENTS.

"Agricola," "B. B.," "F. G.," "G. W.," "R. S.," "G. C.," "A. Lumber," "A. Peer," "R. E.," "W. M.," "A. Competition" (declined with thanks), "J. C.," "J. P. S." (not our custom, paper having been read publicly shall be happy to see it), "J. J. L.," "C. B.," "Mr. W." (One of the Honourable Competitors), "T. L. Finlin." (The drawback of duty is usually obtained by the party building, and not by the contractor.) "A. Smith," "H. W.," "J. W.," "R. K.," "A. Constant Observer," "T. T.," "Mr. Carter, College-green, Bristol," "J. L. in London," "M. M.," "A. Competitor," "C. P.," "J. C.," "J. K. C.," (will see that Mr. Jones has replied), "J. T. W.," "P. F. D.," "Anti-Puff," "P. J. M.," (no contribution treat of ventilation, but cannot now reply to a special case), "A. Builder" (two concrete), "A. host of correspondents must excuse us," "T. M.," "Brevity," "T. B. L.," "A. Papi" (it is not usual to make pupils find lead pencils for their master's work), "J. J.," "R. M. P.," "T. L." (thanks).

"A Subscriber" (the subject of drying clothes has been fully discussed in vol. 219, 245, and 335; see also pp. 177, 209, and 273, same volume).

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editor, and not to the Publisher.

ADVERTISEMENTS.

ST. GEORGE'S CHESS CLUB.
5, CAVENDISH SQUARE, in connection with the ROYAL POLYTECHNIC INSTITUTION.—Parties desirous of joining the Club, to be present at the ROYAL POLYTECHNIC INSTITUTION, to 1851, are requested to lose no time in sending their names, as the few vacancies are being rapidly filled up. Annual subscription, Three shillings. Tickets, admission to all the Public Lectures and Exhibitions. Subscription to Country Members, One Guinea. For particulars, and a list of the members, may be obtained on application to Mr. R. I. LUNGBOTTOM, Secretary.

PAPER-HANGINGS, the cheapest in London. at CROSS Wholesale and Retail Warehouse, 28, Great Portland-street, where Builders and the trade can select from a stock of 60,000 pieces, at the following reduced prices:—Good Bed-room Papers, from 9d. per yard. Painted Marble, Granite, and Oak Papers, from 6d. do. Superior Dining and Living-room Papers, from 11d. do. Superior Bed-room Papers, from 9d. do.

PAPER-HANGINGS at E. T. ARCHER'S
Manufacture for English and Warehouse for English and French Paper-hangings, and all materials connected with the trade. The "painted" decorations are fitted up on the walls of an extensive range of show-rooms, where at one view a drawing or dining-room furnished fit for occupation.

Painted marble, granite, and oak papers.....	1d. per yard.
Superior bed-room papers.....	9d. "
Painted marble papers for bed-rooms, dining and sitting rooms.....	10. "
Good bed-room papers.....	9d. "
Painted marble, granite, and oak papers.....	6d. "
Superior dining and living-room papers.....	11d. "
Superior bed-room papers.....	9d. "

E. T. ARCHER, 42, OXFORD-STREET, LONDON.
January, 1, 1850.

The Builder.

No. CCCCXIV.

SATURDAY, JANUARY 11, 1851.

IN London city there is movement: people all seem prosperous and busy: a good spirit is abroad, active and wider-seeing than formerly, and we venture to prognosticate, that such things will be done there one of these days as will make the world wonder and admire. With the power and revenues possessed by the corporation, they only need *opinion* to make London and Londoners the glory of the universe,—and that opinion is growing, though it may be slowly, and against opposition. However, we will not get on stilts, purposing simply to allude to some of the works and inquiries just now going on in the City.

The new thoroughfare by way of Cannon-street is being rapidly proceeded with: the Committee, we understand, have determined that the houses shall be all cleared away, and the street be paved through by the coming May-day, which, it is to be expected, will stand in history in opposition to the "Evil May-day" of 1517, as the "Good May-day" of 1851. Just opposite St. Swithin's Church and London Stone, an ancient vault, or crypt, of considerable length, was opened, and still remains so. It has stone cross-springers, forming a pointed arch, and is vaulted with chalk. The city architect, Mr. Bunning, who has ever manifested a most laudable desire to save such remnants and marks of Old London as fall within his control, will doubtless interfere for the preservation of as much of it as may be practicable, and will map its position for the benefit of topographical investigators. The new road, when opened, will relieve the narrow gorge known as the Poultry,* but will not effect all that is needed in that respect.

The conjoint station at London-bridge, or rather the assemblage of stations, for we have here the Brighton, the South-Eastern (including the North Kent), and the Greenwich, is fast approaching completion. Its appearance, as a whole, is anything but an improvement on that of the old Brighton station. The central buildings belong to the South-Eastern; the Brighton is on the south side; and the Greenwich is put somewhat out of the way, next Tooley-street. There is a covered way, on iron columns, around the South-Eastern, which is glazed to the extent of the pathway, so as not to darken the rooms on the ground-floor. A portion of the covering projects beyond the line of the columns, so as to further screen the pathway from rain: this is solid, with a high cornice and fascia, and there seeming to be nothing to balance it (the rest of the covering being of glass, as already mentioned), it has not a pleasing effect. We must find fault, too, with the cement decorations of the central clock, which seem to us coarse and heavy. The architect (Mr. Beazley) would probably show that the faults were the executants'. The departure and arrival platforms have a wooden roof of large span (nearly 100 feet we should say), mentioned some time since. A considerable portion of the covering is of "rough plate glass," in sheets, 8 feet

* So called because of the poulterers, who anciently lived there.

long, and 3 feet 6 inches wide. Such spaces between the principals as are not glazed are plastered and panelled. Rough plate glass offers great facilities for roofing.

The front of the Brighton Station has stone dressings, but little beauty. The booking-office, which is ill-shaped (perhaps unavoidably so), has a large circular light in the ceiling.

As we left the station the other day, we had a striking evidence of the want of some such arrangement for crossing from one side of London Bridge to the other, as that proposed by Mr. Dawson, and already alluded to by us: a mass of vehicles jammed up the road, and rendered crossing impossible for at least half-an-hour, and even then only with danger. We understand that a memorial to the Common Council, praying them to form a tunnel from one side of the road to the other, as proposed, has been signed by 2,000 persons.

We have repeatedly deplored the erection of the structure, called Hibernia Chambers, at the foot of the bridge on the west side, as blocking up the river banks, and have shown how one step of that sort leads to another. The evil is still growing. Adjoining the building in question, a large structure is now being erected farther westward.

It is not to be expected that individuals having rights will yield them to their own loss; but it behoves the authorities to make such arrangements with individuals as may tend to the general good.

From the time of the great fire, the importance of keeping open and embanking the river side has been urged. Charles the Second, in his proclamation forbidding rebuilding in the City previous to general arrangements being made, provided for a quay on the river side, and set forth that buildings should not be erected next the river within certain limits. In that same reign an Act "For rebuilding the City of London" was passed, which sets forth "that no house, outhouse, or other building whatever (cranes and sheds for immediate use alone excepted) shall be built or erected within 40 feet of such part of any wall, quay, or wharf, as abounds the river Thames, from Tower Wharf to London Bridge, and from London Bridge to the Temple Stairs." This will serve to show the opinion entertained then on a subject whereon none can differ now, except in cases where their own private interest may be concerned.

Nowhere is a fine river so ill-treated as in London,—its banks degraded, and its bed befouled: in return it has often produced disease and misery, where otherwise it would have given health and pleasure: "And thus the whirligig of time brings in his revenges."

Looking from London-bridge into the pool, one may well ask—

"Where has commerce such a mart,
So rich, so thronged?"

From here, too, the City'spires and towers, St. Paul's, also, somewhat in the distance, are seen to advantage, and the throng of pedestrians and crush of carriages,—a flood of life and energy,—conspire to give an idea of the immensity and importance of the modern Babylon.

As we returned, St. Paul's came nearer to us, and looking in, at the cost of twopence, we observed that workmen are now painting white the stonework of the nave. We may say, as to the outside, that all that the dean and chapter required the corporation to do at the gates to the churchyard previously to opening

them during the day to the public is finished, and that the public now wait the fulfilment of the arrangement on the part of the chapter. In the amended "City Sewers Bill," the Commissioners have introduced a clause (48) which provides that the ground, area, and space, in the west front of St. Paul's Cathedral, may be laid into the public street, and that it shall be lawful for the commissioners to act and to agree with the Archbishop of Canterbury, the Lord Bishop of London, and the Lord Mayor of London, and the trustees for the fabric of the cathedral, for such purpose. This is to provide for the hoped-for improvement.

We alluded just now, in passing, to the health of the City, as affected by the befoulement of the Thames. Let us mention, in connection with this subject, the recent report of their medical officer, Mr. Simons, an able document, deserving the most serious consideration. Mr. Simons says, that during the fifty-two weeks, dated from Sept. 30, 1849, to Sept. 28, 1850, there died of the population in the City, 2,752 persons. The rate of mortality, estimated from these data, for a population of 125,500, would indicate somewhat less than twenty-two deaths (21·92) out of every 1,000 living persons. Last year, from the ravages of pestilence, the death-rate reached the alarming height of thirty in the 1,000.

The decrease, beyond that to be referred to the absence of cholera, he attributes in no slight degree to sanitary measures. He maintains "That the main conditions which constitute the unhealthiness of towns are definite, palpable, removable evils; that dense overcrowding of a population; that intricate ramification of courts and alleys, excluding light and air; that defective drainage; that the products of organic decomposition; that contaminated water and a stinking atmosphere—are distinct causes of disease and death; that each admits of being definitely estimated in its numerical proportion to the total mortality which it contributes to cause; that each is susceptible of abatement or removal, which will at once be followed by diminution of its alleged effects upon the health of the population."

With reference to the conditions determining the local preference shown by the cholera, there are the following striking observations:—he says,

"If you now look to the disease as it raged within your own jurisdiction, you will observe its fatality in two especial directions. First, in the line I have indicated to you, northward from Blackfriars-bridge, in a band of two or three hundred yards width: there, in the parallelogram which lies along the main road, from Stonecutter-street to Bridewell Hospital, were 76 deaths; there, in the little clump of houses, forming the angle of Farringdon-street and Holborn-hill, were 17 deaths; there, in a square space behind twenty-seven shop-fronts in Fleet-street, were 57 deaths; there, in the small parish of St. Ann's, Blackfriars, were deaths at the rate of 25 to every 1,000 of its population. This was incomparably the most afflicted portion of your territory. Those who are acquainted with the ancient geography of the City will readily conjecture a reason; they will remember when 'the course of water running at London under Old-bourne Bridge and Fleet Bridge, into the Thames, was of such breadth and depth that 10 or 12 ships, navies at once with merchandises, were wont to come to the foresaid bridge of Fleet, and some of them unto Old-bourne Bridge; they will remember how this broad river (like the Thames of our day) was thronged on both sides with population; how (again like the Thames) it was a draining river, probably with wide banks of putrifying mud; how many fruitless attempts were made to cleanse and

preserve its channel; but how (in Stowe's day) 'the brooke, by means of continual incroachments upon the banks, and casting of soylage into the stream, was become worse cloyed than ever it was before.' Where that soylage was cast, and where, since the days referred to, so many habitations have arisen that no sign of stream remains visible to the wayfarer above ground, its traces still remain below. Throughout at least a large portion of this district, the subsoil (your surveyor informs me) consists of black mud, the bed of the ancient river, in which are set the foundations of the modern houses. The river, which centuries ago fulfilled for a large population those vile uses which now pollute the Thames, has gradually yielded its foul banks to the residence of a growing population; and the sanitary relations of that population are exactly such as might be imitated, if the volume of the Thames were henceforth slowly reduced, and if those banks of mud which are now exposed only at low water, were simultaneously converted into the site of permanent habitations."

The sentence in the report to be ever kept in view is this, that in spite of all exertions, untimely and preventable death still prevails most largely in the population; and that if the deliberate promises of science be not an empty delusion, it is practicable to reduce human mortality within their jurisdiction to nearly the half of its present prevalence.*

In the present state of the public mind it would be needless to insist upon the fact, that the one great social question, in reference to the material well-being of the labouring classes, is, the state of their dwellings, the supply of water, and other allied circumstances. The rapidly increasing recognition of this great truth, when viewed in connection with the course of recent legislation, plainly evinces that the realization of sanitary reform is a question only of time; its ultimate triumph being assured, humanly speaking, beyond the possibility of doubt. Although, however, the final consummation of that for which, during a long period, a limited number of individuals have never ceased to struggle, is placed beyond the risk of failure,—vigorous, sustained, and influential efforts are demanded to shorten the interval during which the industrious classes—inhabitants of our great cities and towns—will continue subjected to the indescribable and almost inconceivable evils of their lot.

Selfish, but powerful interests, ignorant prejudices, and apathetic indifference, may be ex-

pected to obstruct and clog in future, as they have done in the past, the onward course of principles involving the happiness of millions. In face of this combined opposition, it must never be forgotten that the actual sufferers, the industrious workmen of this and other cities, are themselves powerless. The owners of small houses, unfit for human habitation, can make themselves heard, in an adverse spirit, when measures of amelioration are canvassed at parochial boards; the rate-payers can speak in still more authoritative terms, and can bias, if not control, even the legislators from whom the remedial enactments are to come; but the poor artisan, whose family perish around him, and whose energies, on which his daily bread depends, are sapped and undermined in the impure air he is condemned to breathe, finds no organ to proclaim his wants, or to rescue him from his misery.

There is no public body to which the advocacy of this great question can be entrusted with more promise of successful results than the Metropolitan Sanitary Association, including among its members a large number of men whose names are a guarantee to the public that whatever measures they sanction will be deserving of general support, and we do hope that the public will give that assistance to the Association which it needs, and without which it, of course, can do nothing.

It is needful that the public should be reminded of the great evils which are continually smouldering beneath the surface, because former memorable examples prove that men are prone to forget even the most terrible calamities, unless a salutary recollection of them be repeatedly renewed in their minds. It is the special province of this Association to afford such warning, as well as to indicate the legislative measures which are so imperatively demanded; and we feel satisfied they will do their duty if enabled by the provision of funds.

THE DECORATION OF THE BUILDING IN HYDE-PARK.

ACCORDING to the request of Mr. Paxton, that I should write down the remarks that I had made to him on the subject of the decorative colouring of the building for the Exhibition, I now apply myself to the task with no feeling of capricious criticism, but from the wish to offer my own opinion, as many others have offered theirs, as to what will be the most judicious principle of colouring for giving effect to the building.

Before speaking of the experiments already made, I will commence by saying that no one could have brought to this subject a better knowledge of principles, or expressed it in more clear and elegant terms, than has Mr. Owen Jones in his interesting paper, read before the Institute of British Architects.

I maintain, however, that it is not a question of colours alone, or a philosophical arrangement of them, but the application of that system of colour that best carries out the constructive features of the building, and conveys to the mind the reality of what it is.

For this reason particularly I object to the columns being painted yellow, white, and blue. This colouring gives me the idea of their being wood. I cannot think of them, so coloured, as iron columns.

I next consider this colouring with reference to its effect on the eye, and I do believe it will disappoint the expectation of those who now advocate it. The yellow is separated from the blue by a white line, which white, at a short distance from the eye, disappears, softening into the yellow as light, and into the blue as shadow.

Again, as regards the effect of this colouring when thrown into masses: as the columns range in perspective, the yellow outlines will altogether vanish after a certain distance, or, if they are visible, will present the effect of a

yellow wall. Nor will the blue stripes prevent this, because in certain situations they will scarcely, if at all, be seen. It may be considered, however, that in many of the spaces between the columns there will be drapery of dark colouring: if these are of subdued tones (which many exhibitors will prefer to set off their goods), the columns will certainly be well defined, but will, I fear, have an appearance of gaucherie.

I now proceed to the consideration of the girders and roof, if I may so call the upper part of the building: here the colouring differs materially from that of the columns, being blue and white, with broad bands of red. If I feared that the colouring of the columns might have an appearance of feebleness, I think that the effect of the masses of red in the girders will have too marked a contrast. In the one case there is no red, in the other there is no yellow; hence there appears a want of sympathy between the columns and the girders, which, as they are both of iron, ought surely to be associated in the colouring.

As regards the roof of glass, which rests like a network on the iron framing, I think it desirable to avoid the heavy marginal lines of red; not being part of the substantial iron construction, but simply a covering, I would have it coloured far more lightly.

Having thus spoken freely of the experiments already made, I offer my own opinion of what the colouring should be. To convey this by writing alone will be somewhat difficult, but I will endeavour to explain the arrangement of colours I propose.

I would have the flats of the columns a pale bronze green, and the circular parts of maroon red,—such a colour as is often given by antirustic paint to ironwork. I separate these two colours by a subdued gold colour line. On the girders I would carry out the same principle, making the framing bronze green, and the braces maroon red, both relieved by light lines. The roof of glass I should like to have nearly untouched by colour, only on the framing would I paint a line of green, sufficient to lead the eye to the parts, without defining them too strongly; on the glass I would put no colour.

The above is what I suggest as the principle of colouring, but in the detail many slight modifications might occur to those who would execute it.

I have devoted much time towards carrying out the objects of the Exhibition; I feel the greatest interest in its success; and, a decorator myself, I hope I may be held excused for thus stepping forward to differ with the experiments of a very able man.

JOHN G. CRACE.

Permit me, from respect to Mr. Owen Jones, to reply to his remarks in your last publication, without the intervention of your friendly correspondent, "Saum Cuique."

To what extent Mr. Owen Jones's proposal for the decoration of the great Exhibition building coincides with my "Hints for the arrangement of Colours in Ancient Decorative Art," may be readily ascertained by a comparison of the report of his lecture, in which the proposal is developed to the Royal Institute of British Architects, with my brochure, of which I will gladly transmit a copy to any of your professional readers who may take so much interest in the subject as to apply to me for it.

Mr. Jones states that his opinions, as expressed in the lecture, "were formed in Egypt and the East generally twenty years ago;"—"partially printed nine years ago; and delivered in a lecture at the Royal Institution seven years ago." This effectually disposes of the questions of priority of discovery and publication, as my attention has not been directed to the subject longer than six years. I cannot, however, help expressing my regret that these opinions have not been more extensively disseminated for the benefit of British manufacturers, who have laboured to the present time in ignorance, or at least in disregard of them; and though the reason is one of infinitely less importance, that I might have escaped much troublesome and expensive research, in illustration of a subject which I certainly believed that I had restored to modern art, and the mortification of appearing to intrude upon pre-occupied ground. Mr. Jones

* Mr. Simons suggests the following as *desiderata* in the new Act which the City Commissioners are about to obtain:—

1. A clause which would give you control over the supply and distribution of water, would enable you in your corporate capacity to contract with any person or any company for the total service of the City, and would authorize you to defray the expenses of such contract at certain specified rates.
2. A clause empowering you to require that every trade or manufacture practised within the City shall be carried on with such precautions, and with such available improvements, from time to time, as shall reduce to the lowest practicable amount whatever nuisance or inconvenience to the neighbourhood is apt to arise therefrom.
3. Such a change in the definition alluded to in your flat clause as would render this operative for the regulation and improvement of a larger number of houses; and such addition to the clause as would enable you, on the joint certificate of your officer of health and surveyor, to enforce the opening of additional windows where requisite for the proper ventilation of houses.
4. A clause permitting and empowering you, on sufficient medical testimony, to remove, or to call upon the board of guardians to remove, from any lodging-house within the new definition of your Act, any person diseased with fever or other infectious malady, whose continuance there would endanger the lives of other inmates.
5. A clause prohibiting the occupation of underground cellars for the purposes of dwelling.
6. A clause prohibiting the keeping of cattle in or under dwelling-houses.
7. A clause vesting in the commission a right to purchase houses by jury valuation, in any case where they shall determine that such houses are permanently unwholesome and unfit for human habitation, or that their alteration or removal is necessary for the public health.
8. A clause enabling the commission to control all further encroachments on spaces which are now open within the City, so that on ground now (within a certain number of years) unoccupied by buildings, no future erection shall be made, except with the sanction of the commission.
9. A clause to protect the purity and wholesomeness of human food, as sold within the City, by affixing penalties to its exposure for sale in any adulterated, decayed, or corrupted condition, which may impair its fitness for consumption.

offers to supply your correspondent with abundant proof of what he advances: permit me to say, that so far as I, at least, am concerned, Mr. Jones's word can require no corroborative evidence.

Bolton. GILBERT J. FRENCH.

THE NEW IMPERIAL MUSEUM AT ST. PETERSBURG.

THIS splendid conception of M. de Klenze, of Munich, is nigh its completion, and will be opened to the public next spring. Its idea arose with the Emperor Nicholas, when on a visit at Munich in 1838, when Klenze conducted him through the spaces of the Pinakotheka. The architect received next year an invitation to St. Petersburg, and the orders to make the plan for the building of a museum, which should comprise objects of art of every kind—ancient and modern sculptures, vases, cameos, coins and medals, pictures, copper engravings, drawings, a collection of old illustrated MSS., and even a library of works on art, and other costly books. The spot for the building, near the imperial Winter Palace, was selected by the monarch, for which a great many large buildings had to be purchased and pulled down. The plan itself was entirely left to M. Klenze, who chose the principle of classic antiquity. According to locality, it was on the east side, where the main entrance of the building was to be placed, which is very suitable, as the street (the great *Million*) has a breadth of 90 to 100 feet. The north side, situated in a pretty broad canal street, presented obstacles of a particular kind, which, however, led to a most fortuitous solution. There existed here a sort of clumsy gallery, erected by the Italian architect Guarenghi, which, however, contained very faithful and beautiful copies of the Loggie of Raffaele, in the Vaticana. They had been executed in Rome quite in the same proportion and the same colours as the original, and are now the more valuable, as many parts of the paintings, which have become unseemly in the original, have here preserved their former splendour. On close examination, however, it was found, that these paintings were spread on frames, and could be taken off. Hence, M. Klenze obtained permission to remodel and rebuild the exterior of the gallery, in accordance with his general plan, without, however, interfering in the least with the Raffaellan Loggie.

The ground plan of the new museum forms a parallelogram of 515 feet by 375 feet. A diagonal wing transects the whole, and forms two squares of equal breadth, one of which is again divided in two by the elevation of the staircase. Thus a general length of 1,840 feet has been acquired for the area of the whole building. The entrance from the great *Million* is practised by an outer doorway. This doorway is formed by eight pilasters, on which are leaning ten Telamones, which, with the pedestal, rise to a height of 22 feet: they are monoliths of the fine gray granite of Sondobol. This porch leads to a vestibule, in which sixteen columns of red granite of Finland support the ceiling. Thence, in a straight line we reach the principal staircase, which being composed of steps of Carrara marble 22 feet long, lead to the first story of the building. To the left of the vestibule are two halls for the reception of ancient sculpture. The second of these halls forms the corner, through which we pass along the southern longitudinal façade in a gallery, destined for modern works of sculpture. Next follow three halls situate in the middle of the façade, of which the first will be the work-room (*Arbeits Zimmer*), for the directors of the marble department; the second receive antiquities of all kinds; the third, together with an adjacent apartment, contains a collection of sepulchral and other vases. This lower story will be occupied as well by the library, the painted MSS.,—in fine, by those antiquities which have been found at *Kertsch*, the ancient Pantikapeum, and which national remains will form a separate collection.

On the first floor we reach by the great staircase the large ante-hall and a gallery. Here the compartments are placed on the outer and inner façade,—one for the paintings of the Russian school, one for the paintings of Rembrandt, one for Wouvermann; saloons for the Italian and Spanish school; five apart-

ments for the numismatic collection; three galleries for the Cameos and Intaglios, and the Loggie of Raffaele. Like in the Louvre it is proposed also to erect a long ornamented gallery (*Fest Gallerie*), where on great occasions a communication from the Winter Palace to the theatre of the Eremitage is to be effected.

Continuing now with the exterior of the Petersburg Museum, we may state, that some of the sculpture have been executed by the Russian Sculptor Terebenieff, after a small model by M. Klenze. As the squares of the building are even broader than the adjacent streets, the architect has chosen to light the ground-floor by the former, and to place on the street façade niches instead of windows, where statues of artists of every branch are to be placed. Above the windows of the first, are basso relievos, in the middle of which appears a figure of life-size, representing some of the various attributes of art, or the geni of fame. On both ends are pavilions, which form the beginning of the lateral façades. The socle of the buildings is composed of a reddish Finland granite, resembling Sienite; the remainder of the façade consists of a yellowish grit from Habsal, in Courland. As the sculpture is of a grey polished granite, all the other statues, relievos, and ornaments present also the same colour. They have been made of copper by a galvanoplastic process, and then covered in the same way with a solution of zinc, which imparts to them a stern, grey appearance, beautifully tallying with the tone of the granite work. The railings of the balcony, of the roof, and the sashes of the windows are of greenish bronze, or a like composition. It is yet to be observed that, according to the orders of the Emperor, with the exception of some part of the flooring and the internal doors, no wood has been employed in the building. The whole framework of the roofing, and all flat ceilings, whose area amounts nearly to 80,000 feet, are of iron, and the ornaments of galvanoplastic copper,—a costliness of construction without example in our time. The walls are either made of marble or of a stucco resembling it, and the 140 columns supporting the interior, monoliths of the finest marble or granite. The floors are made either of plates of marble, or of a mosaic of costly and showy woods. According to the will of the Emperor, M. de Klenze had to furnish accurate drawings of every ornament, and even piece of furniture, which, at the considerable distance between Munich and Petersburg, presented some difficulty; the architect, however, inspected the work every second year.*

THE ARCHITECTURAL ANTIQUITIES OF TREVES.

IN the last part of the *Collectanea Antiqua*, just now published, Mr. C. Roach Smith has commenced a series of notes on some of the antiquities of Treves, Mayence, and other places on the Moselle and Rhine. As this work probably gets into the hands of very few of our readers, the majority will thank us for letting them see Mr. Smith's account of Treves, the more so, too, as engravings of some of the monuments mentioned by him have appeared in our previous volumes.†

Mr. Dawson Turner, in the preface to his translation of Wytenbach's 'Roman Antiquities of Treves,' observes that, 'the greater number of those who are well acquainted with the beauties of the Rhine itself, and its thermal districts, and Frankfurt and Heidelberg, are far from being aware that, at a distance little greater than those from its banks, there lies, on the opposite side, a city abounding in objects of so deep interest as Treves,' and he adds,—'in five days' easy travelling they may pass from the shores of the Thames to a spot where they may have the opportunity of at once satisfying their curiosity, and gaining instruction by the contemplation of specimens of Roman workmanship, so grand in character, so varied in object, and so perfect in condition, as probably no other locality beyond the Alps would be able to exhibit; specimens which also convey a full idea of the features distin-

guishing the monuments that adorn the ancient capital of the world.'

These observations were published in 1839. The railway from Ostend to Cologne, to which at Malines is united the French line from Calais, has now lessened the time of transit from England to three, or even to two days; and yet it is doubtful if this noble old city has in consequence become much better known, even to the few who by education or taste are disposed to deviate from the well-beaten roads and more popular places, to seek, at the expense of trifling personal toil, the works of ancient art. Of the thousands who weekly sail up and down the Rhine, only a small number turn aside at Coblenz* to see the beauties of the Moselle; and of these only a small fraction stay longer at Treves than is necessary to secure their passage by the return of the steamboat, contenting themselves with visiting some of the more striking ancient monuments, or probably in passing them by altogether. Much more, perhaps, is not to be expected from the great body of tourists who travel for fashion's sake, for relaxation from business, or to kill time and *ennui*. But it is rather remarkable that antiquaries themselves should not have become better acquainted with the ancient remains of Treves and its neighbourhood, and have sought to open a communication with literary societies, or with individuals of the country devoted to the study of national antiquities. Yet so little of scientific intercourse between the two countries has existed, that in the extensive library of Treves not a copy of the *Archeologia* is to be found, and this our largest antiquarian work is also unknown in the libraries of other large cities in Germany.† As the Treves library contains a considerable number of duplicate volumes, for exchange, this lamentable example of the absence of friendly communication between the antiquaries of England and this important city should not be suffered to exist longer. The French, who generally in matters of science are in advance of us, have not overlooked Treves. In 1846 an archaeological congress was held there by the *Société pour la Conservation des Monuments Nationaux*, a report on which is published by M. de Caymont, in his *Bulletins Monumentaux*. But a city of an extent so vast, with suburbs filled with remains

* Those who have time to spare, and can walk from twelve to fifteen miles a-day, may take the road from Aix-la-Chapelle to Treves (a distance of about ninety-three miles), and pass through a country of peculiar interest, but little visited by travellers. The towns on this road are, Montjoie, Prüm, and Bittburg; there are also several villages; and although the accommodation they afford is somewhat rude, the pedestrian English antiquary may himself to it with pleasure and safety. The novelty of the scenery, and of every thing around him, will supply him with continual and varied objects of attraction, which will more than compensate, in mental excitement, the weary as well as of some physical exertions and home indulgence. The neighbourhood of Bittburg is the *Vicus* of Antoninus, the first station in the route from Treves to Agrippina (Cologne)—is full of Roman remains. At Eilsheim, about three miles from Bittburg, a villa was discovered in 1833, an account of which is published by Herr Schmidt. It contains many tessellated pavements of rich and chaste designs, and the walls of several apartments had been ornamented with paintings and with thin slabs of marble. Fragments of statues and other relics, shafts, vases, and capitals of columns in stone and in marble, were also found. Villars, equally interesting, have also been discovered at Pöckelsheim, at Ackerburg, and at other places around Bittburg. Treves may be visited from Bonn or Remagen, through the Eifel, to Aachen, Andernach, Adenau, Kell, and Datteln. From the list of these places the Treves and Coblenz road can be traced either at Lutzerath or at Wittlich. This route, like the former, is through a wild country, of volcanic formation, peculiarly attractive to the geologist and naturalist; but it can only be recommended to the pedestrian who has time at his command. The usual mode by which travellers reach Treves is from Coblenz by the *Schnellpost*, which leaves daily at an early hour, and arrives in the evening: or by steamer up the Moselle,—a voyage which requires two days, but which from Treves to Coblenz is accomplished in one.

† There is, unfortunately, a general indifference in the antiquarian societies, both in England and on the Continent, to creating or sustaining friendly intercourse; and this fact is proved by the defective state of their respective libraries. Had the Society of Antiquaries, before selling their stock of the *Archeologia*, presented copies (as far as they could have been made complete) to the continental societies, we should, without feeling the cost, have conferred an inestimable benefit on foreign antiquaries, and secured for ourselves their goodwill and co-operation. At present the whole system of so-called foreign intercourse and foreign honorary membership is of little or no value, although the Society of Antiquaries have a list of nearly fifty honorary fellows. It would be difficult to justify the election of many of these gentlemen, or at least their being allowed to remain on the list year after year, without corresponding, or in any way showing any sympathy with the objects of the society which has paid them this honourable compliment. There are, no doubt, men of the highest literary and antiquarian qualifications, who would do credit to their election into the Society of Antiquaries, and who would not consider it a *sinecure*. I believe, of these fifty foreign associates, not more than one or two have made communications to the society. Dr. Conrad Leemann, of Leyden, is one exception; but I cannot, upon recollection, mention a second.

* Particulars and Engravings of this great modern structure are to be found in M. Klenze's 'Architectural Sketches' (Architektonische Entwürfe), 5th Part, with twelve plates, just published at Munich.

† See especially vol. V. pp. 13 and 20.

not yet half explored, requires a long residence, and patient and quiet investigation, to unravel the obscured vestiges of antiquity, and to explain the many anomalies which exist in architecture of various epochs blended together.*

The present walls of Treves, like those of many towns of Roman origin on the Rhine, exhibit a mixed style of architecture, consequent on successive reparations at various periods. There are reasons for supposing that they were, in part at least, dismantled in the Roman times by the barbarian invaders; and, in the middle ages, they seem to have suffered still more severely. As we now see them, it is only here and there that portions may be detected of pure Roman construction; but it is very probable that the line of circumvallation has been but little altered, and that even the towers still mark the sites of those of the Roman period, although it has been supposed by some, that the walls of ancient Treveris extended much beyond those of modern Treves, in the direction of the church of St. Matthias, beyond the bridge. This does not, for many reasons, seem probable; at the same time there must have existed, or possibly still exist, in that district, foundations of buildings to give rise to the notion that the city walls extended thus far. From inscriptions, bas-reliefs, and other antiquities (now in the museum of the Porta Nigra, and in the library), discovered along the sides of the road to St. Matthias, it is very evident that many spacious and rich villas covered this quarter of the suburbs of Treveris. The banks of the footpath leading along the side of the river to St. Matthias are almost composed of the debris of Roman buildings, and the path itself is chiefly made of the old materials. About midway there appears to have been a pottery, indicated by layers of fragments of earthen vessels of various kinds. Matthew Merian, in his view of Treves,† on this side of the city places two stupendous fragments of architecture, which must, to all appearance, have been portions of an edifice equal to some yet remaining within the walls, which, for their preservation and extent, are unsurpassed by any Roman provincial works. This view is well executed, and gives an excellent idea of the city and its chief buildings, as well as the bridge, the churches of St. Barbara and St. Matthias on the one side of the city, and those of St. Maximin and St. Simeon on the other; also the large mill upon the river, and other buildings which will be easily recognized. The walls entirely surrounded the city when this view was taken, two centuries ago; but at the present day only parts of that on the side of the river remain. But we are more indebted to the *Annals of Treves*,‡ by Brower, with notes by Masenius, for preserving notices of antiquities, of which, at the present day, there is no trace whatever. Some of the plates are rudely executed; but others, such as the church of St. Simeon (the Porta Nigra), and the monument at Igel, are good works of art. To this work, Wytenbach has made constant reference; and, indeed, it may be said to have afforded the groundwork of his excellent *Guide*. The most important buildings, now destroyed, which are to be found in Brower, are that of a supposed triumphal arch of Valentinian and Gratian, without the walls of the city, near the bridge, between that and the church of St. Barbara; sculptures, found in the amphitheatre; a richly-sculptured sarcophagus, found in the church of St. Maximin; a hypocaust, at the supposed palace near the bridge; the western side of a tower near the bridge, and the bridge itself; the Porta Nigra, transformed into the church of St. Simeon; the electoral palace, now commonly called the palace of Constantine; a stone, found in the castrum of Neumagen, representing a *tabularium*, or rolls of manuscripts in a library; and a view of the castrum at Neumagen (*Noviomagus*). Wytenbach states that the *Luxemburgum Romanum* of Wiltheim (a considerable portion of which is devoted to the Roman history of Treves), independently of ancient inscriptions, contains three hundred and twenty figures of different objects of

antiquity, the greater part of which have now disappeared, and of some we do not know even what they were!

With these and other witnesses to the destruction of the architectural antiquities of Treves, comparatively within a few years, we have the evidence of the city itself in its present state, and of its museums, to corroborate the statements of the historian, and to testify to the ancient grandeur of the place. To convey to the stranger any correct notion of the remains which are yet extant would be impossible within the compass and means of these notes; and my efforts must therefore be directed solely to draw attention to some particular monuments, and to give, from my notebook, a few of the remarks with which it is stored from two brief visits made within the last four years; my object being to assist in pointing out a fertile district for archaeological research but little known to my countrymen, although by no means distant or inaccessible.

The entrance to Treves from the Coblenz road is through the Porta Nigra, a colossal Roman structure, facing the street which leads to the market-place and the inn called "Röthe Haus," formerly the town-hall. The Porta Nigra, or Porta Martis, seen from a distance on this road, and gradually approached, strikes the traveller with surprise and admiration. Its towering height, vast and classic proportions, and dark colour, bespeak at once its origin and character, and the architectural genius of the people whose edifices seem built for eternity. For nearly eight hundred years this gate was destined to the purposes of a Christian church. In one of its towers a Greek monk, in the early part of the eleventh century, secluded himself from the world, and earned the posthumous honour of sainthood. To him, under the title of St. Simeon, the building was dedicated. The entrance, on either side, was covered up with earth; and to the eastern side was added a choir, which is still standing. It was only in 1817 that the Prussian government removed the church, which had suffered from the French revolution, and cleared away the accumulated dirt and extraneous buildings, so as to leave the Roman gate, as we now view it, almost as fresh and perfect as it stood fifteen centuries ago. The building is oblong, flanked by two wings also oblong, and terminated on the side looking towards the country by semicircular towers. The ground-floor, on both sides, is double-arched, each arch being fourteen feet wide, and about twenty-three high, including several feet buried by the raising of the level of the street.

In the exterior arcades, the grooves in which the portcullis worked are still apparent. The two wings had each a postern entrance. The basement is surmounted by two rows of semicircular windows in the central part of the building, and by three rows in the right wing; the third stage is wanting in the left wing. Each window is about three feet wide, and six feet in height. The height of the building in the central part is about seventy feet; that of the right wing about ninety-four feet; the entire length being a hundred and fifteen feet. The exterior of each story is surrounded by columns of the Doric order; in the interior, and on the sides of the wings, plain pilasters are substituted. The walls of the towers are nearly six feet in thickness at the base, decreasing in proportion to the elevation. They are formed of blocks of grey sandstone, varying from four to nine feet in length, by from two to three in width, placed upon each other without mortar, and cramped on the inside with iron. Many of these fastenings have been industriously extracted, for the sake of the metal. The left wing still exhibits where it was connected with the city wall, constructed of the same materials as the gate. The marks of the masons are visible throughout, as sharp as ever; they are, ACE; SEC; and MAR.

From the plan and dimensions of this grand structure, it is very evident it was intended for other purposes than that of a gate solely. It was constituted probably to serve as a fortress or *propugnaculum* and armoury, while in time of peace its spacious rooms may have been adapted to various public services. The date of its erection is one of those questions which admit of wide speculation, without any decisive evidence, either historical or monumental, to determine it. The inquiry has taken an ex-

tensive range: on the one hand, it has been assigned to a period anterior to the Christian era; on the other, to the sixth century. We shall certainly less err in placing the period of its construction somewhere midway between these extremes. Wytenbach refers it, with some show of probability, to the time of Constantine; but the testimony of Eumenius, on which he mainly rests, is by no means conclusive, and we are left to regret the absence of inscriptions, or of any marked peculiarity in the architecture, such as would point with unerring hand to the precise period of its origin. In northern Europe, perhaps, the Porta Nigra is the finest work of its kind extant. The two gates of Autun in France, the *Porte d'Arroux* and the *Porte St. André*, are the only similar works which merit to be compared with it. In solidity and mode of construction there is considerable analogy; but the details are different, and besides two main arches for carriages, these gates have two others for foot-passengers, which are wanting in the Porta Nigra. In our own country, the only examples of Roman architecture which can be compared in some respects with this at Treves, are those yet remaining in the walls of Chester.

The spacious rooms in the Porta Nigra are now adapted for a museum of local antiquities.

The buildings at Treves, commonly called the Palace of Constantine, and the *Therma*, next demand consideration. They are both situated on the south-east side of the city, in an open quarter, at no great distance from each other, and near the walls,—the *Therma*, indeed, forming an angle of the ancient fortification. The palace of Constantine was turned into a barrack by the French; and, until very recently, it has been used for that unworthy purpose since their occupation of Treves. Previously it served for the archiepiscopal palace, and in anterior times it appears to have been occupied by some of the Frankish kings. In Brower's *Annals* is a plate giving a bird's-eye view of the building as it stood two centuries ago, when it formed one side of a square edifice, open in the centre. It is now being renovated by order of the Prussian government, and, it is reported, will ultimately be converted into a church.

This building, which, without any authority, has been called the Palace of Constantine, seems to have been originally a *basilica*, and is certainly one of the finest and most perfect examples extant. Above ground it is composed entirely of square red tiles, 15 inches in diameter, and 1½ inch thick, with layers of mortar equal in thickness to the tiles. The entire elevation is nearly 100 feet, and its length is about 225 feet. In form it is an oblong square, terminating in an apse, which is separated from the nave by a grand arch, of a span of 60 feet, formed of three rows of tiles laid edgewise, the rows being separated by a band of tiles laid in a contrary direction; the arch is 8 feet thick. The sides and apse contain two rows of semicircular-headed, open arches, the upper being ornamented with three concentric rows of tiles, the lower with two. The pavement is said to have been of marble, supported upon a hypocaust, and the walls of the interior are also reported to have been covered with marble and paintings. The substruction is composed of large blocks of sandstone. During the two visits we paid Treves, we were unable to obtain more than a stolen glance at the interior of this building. It is to be hoped that the reparations now being made are under the superintendence of Herr Schmidt, or some other architectural antiquary competent to take advantage of the discoveries which must necessarily be made during the progress of the works, and apply them to the further development of the details of the construction of this magnificent building, and, possibly, of its early history.

Crossing the parade, we arrive at the so-called *Therma*, to the interior of which a fee obtains ready admission at all times of the day. It would be almost entirely fruitless to attempt to give any person a notion of the interest of this vast and complex edifice without the aid of drawings and plans on a large scale. As far as can be determined by the excavations made in 1816, and since, it presents the form of a parallelogram of about 400 feet in length, and 350 in width, terminating, towards the country, in a semicircle, with an apse on either

* An architect of the city, Herr Schmidt, is at the present moment engaged in publishing a work on the more important buildings.

† *Topographia Archiepiscopatus Moguntinensis*, Treverensis et Colonienis, fol. 1646.

‡ *Antiquitatum et Annalium Treverensium*, auctoribus P. C. Browero et P. J. Masenio. Leodii, M.DC.LXX. 2 vols. folio.

side: the walls, from 60 to 70 feet high, are composed of squared stones and tiles, the latter of which are increased in number at the angles, and in the windows and arches, which are numerous throughout. The façade is no longer standing, but the foundations remain, and the plan of the entire edifice can be tolerably well comprehended by the visitor. The external walls are pierced with two rows of semicircular windows, encircled with triple rows of tiles, and tiles in double and triple rows alternate throughout with the squared stones: some of the large arches are turned with wedge-shaped stones and tiles. The rooms on the ground-floor must have been at least from twenty to thirty in number, and many of them are still almost perfect. A grand hall, supported by two rows of columns, and terminating inwards with an apse, is one of the portions of which the upper parts have been dismantled.

The term *Therma* seems to have been given to this edifice in consequence of the hypocausts discovered, and for no other reason. By a strange mistake, it was usual to associate the hypocaust in all cases, with baths, with which, at least in the north of Europe, they seldom had any connection. The spacious dimensions of this building, the number and variety of the apartments, and the architectural elegance, may sanction our transferring to it the appellation of "Palaces," heretofore applied to the Basilica noticed above. In some of the rooms, it may be remarked, were found vestiges of tessellated pavements; and the walls, in a few instances, appear to have been covered, to a certain height, with foreign marbles, and above, with frescoes in wide parallel bands of different colours, upon a red ground. It was at Treves, in the tricladium of *Æolus*, where Ausonius saw the beautiful fresco painting of Cupid crucified by the nymphs, which excited his admiration and suggested the theme of one of his poems. This is only one of numerous allusions, in ancient writers, which might be quoted in evidence of the beauty and grandeur of buildings which formerly existed at Treves, some of which, we can suppose, may be traced in the remains yet standing.

In the vicinity of Treves, at about a quarter of a mile from the building mentioned above, is situated the amphitheatre. The high road conducts to one entrance, a path across gardens and fields to the other. It has been excavated out of a small hill, the sides of which, now covered with vines, were thus made to serve the purpose of artificial walls. The approaches, on both sides, were adapted both for carriages and foot passengers, with vaulted passages—a large one, and two of narrow width leading to the seats; and to these entrances semicircular towers were attached, of which, on the south side, considerable portions are yet standing. The entrances are opposite to each other, at the distance of about 220 feet, which is also that of the greater axis of the ellipsis of the amphitheatre, the smaller being 155 feet. The walls which surrounded the area and fenced in the spectators, and the cells allotted to the regulators of the sports, are still well preserved; and a hollow, walled cave, to which is an opening through the hill, on the city side, indicates the avenue by which the combatants were conducted to the arena. The concave sides of the hills show where rows of seats rose one above another; but no traces of them, or very few, are now to be distinguished. The area is well paved with slate, and a water-course runs below round the edge. This channel is conducted beneath the south entrance and the high road, and empties itself, through an exceedingly perfect stone arch, into a valley. Though inferior to amphitheatres in the south of France and in Italy, in architectural features, it must still be regarded as a work of grand design, and when in perfect condition, which now we can only well comprehend from restored views, must have presented an imposing appearance, vast and peculiar, and not devoid of elegance, if we consider the decorations, of which some examples are preserved in the *Porta Nigra*. Its construction was admirably adapted for hearing, as, at the present day, in its dilapidated condition, a voice pitched to an ordinary conversation tone, can be distinctly heard across the longest part of the area: a fact suggestive of no pleasing ideas, recalling to the imagination no strains of melody or harmony delighting a refined and

humane audience, but shocking the mind with the discordant sounds of misery, appropriate to this place of cruelty and death. The Roman men and women, who by thousands enjoyed the bloody spectacles of the amphitheatre, must have enjoyed with their ears, as well as with their eyes, the details of scenes which we shudder to think upon, and to which even the bull-fights, the prize-fights, and the horse-races of modern times present no parallel. No cry of despair, no groan of the dying, no shriek of the lacerated could have escaped unheard by the remotest spectator; and when the ferocious Constantine turned such numbers of his helpless Frankish prisoners loose into the arena that the beasts stood still, satiated with slaughter, the audience, doubtless, returned home, if not with perfect satisfaction, at least with but few qualms of conscience. The court sycophants and panegyrist of the day lauded these atrocities as noble and famous acts; but no age ever yet produced a tyrant without begetting also men to praise him.

Some little light is thrown on the approximate date of the amphitheatre from a votive altar found on the spot, dedicated to Jupiter and Juno, for the health of Trajan, by a centurion of the sixth legion. But although this inscription shows the building was standing in the time of Trajan, it does not prove its non-existence anterior to his reign. Like most of the other great edifices at Treves, its erection has been attributed to the time of Constantine; but more importance is to be attached to the testimony of the stone which the honest soldier set up for the health of Trajan than to the hyperboles of Eumenius, who sought more to flatter his patron than to write unexaggerated facts.

In 1211, the Archbishop of Treves gave the Roman amphitheatre to some monks for building materials. The argument of the archbishop was, that the ruins were of little or no account to the state, and that they had, for many ages, been useless.* In the deed of gift he speaks of them in the profoundest ignorance of their origin, although at that time, before the monks began to despoilate, the ruins must have preserved many of their finest features, and the seats were probably perfect. The prelate's mode of reasoning on the utility of ancient monuments, was, in 1211, much the same as that of the corporation of London in 1843, when they gave up the remains of old London-wall, on Tower-hill, to be pulled down. Both were ruins; and, in the eyes of the owners, were merely useless rubbish. The nations who scourged the tyranny and the misguided government of the Romans, doubtless, in the intemperance of invasion and conquest, injured and dismantled public and private buildings; but, possession obtained, it is difficult to conceive the object of the indiscriminate destruction commonly laid to their charge. It is to acts such as those referred to above, done in times of quietude and peace, that the extermination of the works of ancient art should be attributed. We cannot understand why the Franks and Saxons should, for no obvious reason, wage war against their own property, but we have abundant evidence in historical records, and in recent events, to enable us to comprehend why prelates and corporations should order the destruction of what they considered useless.

To the grand edifices of the Roman epoch yet extant at Treves, must be added the cathedral. It will hardly be allowed that this sacred edifice was, as has been supposed, a Christian church, built by order of Constantine. The man who could lead out his captive Frankish princes, and his other prisoners, to the beasts of the arena, was not likely to be so much influenced by the doctrines of Christianity, to which his deeds and his monuments show he paid but little, if any, respect. Neither is it certain that the building is of the age of Constantine, although it is unquestionably of Roman origin. The adaptation of some important pagan edifices, whether it were a palace, a temple, or a basilica, to a Christian church, is immediately apparent, while the internal arrangements, and parts of the façade, may be assigned to the eleventh, and subsequent centuries; and no-

where, perhaps, on this side the Alps, can there be found so fine and interesting an example of the kind. The north and south walls, pierced with windows, are entirely Roman. They are composed of squared stones and tiles, in alternate layers; those of the tiles having two rows; the stones, in rows of three and four. In certain parts, however, this arrangement is modified, and the corners are turned wholly with tiles; these walls are about 130 feet in length, and 5 feet thick. The interior is divided into three divisions by four Corinthian columns, 46 feet high, and 4½ feet in diameter. Opposite to these, on the walls, are pilasters. The columns have all been encased in masonry, but parts of the capitals protrude, indicating at once what is concealed beneath. It is probable, also, that in the façade a good deal of Roman work may be found: in the tower we noticed arches, one of which is of large span, and 4 feet thick. On the north side of the cathedral, some interesting Roman substructions have been recently exposed. They consist of the remains of a hypocaust, and the bases of columns, which seem to indicate some lateral appendages to the original Roman edifice; but to decide whether they are contemporaneous with it, or subsequent, I must refer to the valuable architectural work of Herr Schmidt, now in course of publication.

C. R. SMITH.

TURNPIKE TOLL-BARS.

No plan could be devised more obstructive of building, of the increase of houses, and the consequent enhancement of land near London than the establishment of toll-bars: the custom is perhaps indispensable in the country, where the charge of repairs is more equitably laid on those wains which pay according to the traffic; but in a town or city wherein all the inhabitants are chargeable with paving and lighting there seems to be slight reason for their continuance. Every inhabitant of a town is interested in the carriage causeway, whether he ply on it or not, inasmuch as his *quantum* of provisions is drawn thereupon, and as he is concerned for the free intercourse of the drift-way; but the regulation of charge or liability to be rated is calculated justly on the rental of the tenement.

Whether the scale of imposition throughout the country be just or not does not interfere with this question, and the glaring inequalities of charge on some roads, together with the frequency of the extortion, would argue that it was not; but the unfavourable position of some suburban districts where there are bars as compared with others where there are none, shows great mismanagement, or heedlessness, or indiscretion.

As the population increases the habitations multiply: the town grows outward, for it cannot be more compressed within. The villas erected far a-field are ultra-passed by others more distant, and then the intervals are filled in until one continuous street extends six miles in every direction from St. Paul's: some of the diverging lines are even longer; that to Stratford and by Hammersmith is a continued extension of the main arterial street, and yet within the distance of one mile from Hyde Park-corner one way, and from the Bank the other, we are arrested by a toll-collector, who makes you *stand and deliver*.

When the groves of Brompton were the haunt of nightingales, and Mile-end or Bow the delight of the rustivating artisan, these modes of levying contributions might have been requisite; but now that all the surrounding region is built upon and traversed by streets, with their squares and crescents, it would appear that such *remanets* of antiquity are miserably out of place.

Why should Transporta Lodge, just twenty yards beyond the toll, have to pay 6d. a cargo for coals or pleasure parties more than No. 3, Beaumarché-terrace, which is twenty yards at this (the town) side of it? So far as the distance traversed, there is none; and perhaps the sensible calculator (within bounds) who rents the latter, is the better able to pay. The hardship is, however, much greater in the proprietor of houses and building-grounds beyond the toll, for not only is the cost of the toll taken into account by the candidate tenant, but the rate of omnibus fare is a main object for consideration on taking an abode. If the toll-bar

* "Nos itaque considerantes, quod per illos muros parum vel nihil utilitatis in posterum universitati possit succedere, sicut a multis retro sæculis inutilis fuisse constabat," &c.—*Annal. Trev.*, tom. ii. p. 110.

intervene, the bus charge is 6d., or, as at the Pine-Apple-gate, Edgeware-road, the inhabitant above bar (at Kilburn) has to walk beyond the gate, for the 3d. bus goes no farther; and if the day be wet, or other circumstances induce him to ride from his door, he must take the long bus and pay 6d., and this, perhaps, for only a few yards farther.

It would appear to persons like me, not over intimate with municipal regulations, that the toll-bar would be better placed completely beyond the bounds of the town, city, and precincts; say, at least half-a-mile extra the mass of habitations, or what civic authorities may (for aught I know) call "the bills of mortality."

Quite certain is it that Kensington, Notting-hill, Kilburn, and such other places as are situated within the trust bounds, and without civic immunity, are subjected to grievous disadvantages, and that the sooner the unseemly restrictive and onerous imposition of these barriers is removed the better for all parties.

These bars are the *ne plus ultra* of barbarism, a plague to the man of business or pleasure-seeker; a sort of prison bound to the shopkeeper; of great public annoyance on Derby and such festive days; and, so far as Kensington is concerned, likely to be unfavourable to free intercourse towards the Exhibition of 1851. Do, Mr. Editor, cry out against them, and get the press to echo a *requiem* to such *incumbered* legacies of our forefathers, as ill suited to our occasions and our day as are the subjects of many other changes suggested by

QUONDAM.

LEICESTER SQUARE.

WHETHER there be any native inhabitants domiciled in this busy square, or parallelogram, or trapezium, seems to be a matter of doubt, since it would appear that in such case their eyes must be opened to the desolation in which the fair field of St. Martin's is fallow. No: this is the quarter of strangers; and the shopkeepers of the vicinity having suburban villas, retire from town by nightfall, having no time in the day to spare a glance from their business. The shopkeepers are literally and solely shopkeepers; and the real occupants are the alien visitants to the metropolis.

In this state of things it has happened that an irruption of the Goths has overrun the turbary, and prostrated the whole forest of arborage within the once florid *enceinte*.

It is a wonder, that in the pressure for patronage, our ministry have never appointed a *ranger* to so important a public domain: no *custos* nor even a parish beadle! Surely it may be considered royal property, since George II. has ridden the high horse in bronze there for above a century. Were such an officer appointed (and it would be quite as natural as a ranger at 1,200l. a year to Hyde-park), then this little member of the urban lungs might be clear of turbercles, healthy and free breathing as ever!

To a loyal subject it is matter of deep concern to witness the indignity done to a glorious deceased potentate. Why, it was only yesterday that a ragged urchin (I suppose a disloyalist from St. Giles's) was riding *en croupe* behind the stately effigy, and mocked defunct royalty with grimace and antics which none observed, save the French denizens of that quarter, and your own horror-stricken correspondent. It was useless to reprove the raggamuffin, for the attempt would have been instantly resented by fifty others, his companions, and my fate, however unmerited, must have been worse than Mr. Sloane's, as there was a sea of mud on the spot to submerge or pelt me. All I could do was to ask a shopkeeper opposite something about the square. He comprehended me not, but replied something about a square silk handkerchief, which he said was 5s. 4d. the square!

In this dilemma I addressed myself to a cabman looking lugubrious on his stand, and leaning on the *broken rails*. He had had sufficient time for observation, for he had rested there, as he said, on his luck, three hours a day; and, struck by my concern for the condition of the green, complained that the householders about, if they did as they ought, should make a free cab-stand of the whole space, adding that he should bring in a favourite donkey to browse, and that, if that throve, he might try a few geese; "for," said he, "a drunken man fell against the railing a

month back, and so weak was it that he stove it in."

The cabman's reasoning was not amiss, for then the loose would be of use to somebody.

But really, although this may appear trifling, it is strongly characteristic of the neglect and misapplication of fine sites in London. Our sensitive neighbours are fully alive to our failings, or rather want of taste and feeling, in these respects; and in 1851, when John Bull is to receive so many visitors, his house ought to be swept and garnished. I will almost venture to affirm that Mr. Anderson, Mr. Henderson, or some other of our horticulturalists, would (if they did not plant the space with limes and laurels) at least sow it with mignonette, for the glory of England!

To give plans for a right application would be useless, as THE BUILDER has before given them: those plans hitherto promulgated in the same way (like the *Enclosure of the New Forest*, recommended two years back in THE BUILDER), are seldom acknowledged, even when acted on. Another mode of dedication, however, now occurs to me, which is, to cover the space simply with glass, for a flower or beauty market, in any kind or sort that may be popular or useful.

H. * * Our correspondent, "The Idler in London," has sent us an article with a similar suggestion to this last, but we are not disposed to aid in enclosing the site permanently. We are anxious to see carried out the suggestion made in our pages some time ago to remove the railings, and pave ornamentally the whole area.

FATAL ACCIDENT AT KING'S-CROSS TERMINUS.

ON Saturday last two men lost their lives, and two others were seriously injured, at the present temporary terminus of the Great Northern Railway.

In addition to the extensive coal depôts in Maiden-lane, the company are having constructed an immense granary. This building is on the south side of the station, abutting on a spacious dock constructed on the northern side of the Regent's Canal, and immediately facing the dock and works of the Imperial Gas Company. In the building a large number of workmen in the employ of Mr. Jay, the contractor, were at work in various departments, and in a creek on the east side of the granary were employed a number of carpenters, sawyers, &c., the latter, it is stated, working on a kind of floating saw-pit. Some workmen were employed in raising an iron girder to one of the upper floorings, by means of sheer legs. This girder, it is stated, is in weight from five to six tons, and the men had raised it to the fourth story, when suddenly the guide-rope broke, and the ponderous mass fell with a frightful crash, crushing everything in its progress downward to the creek, and killing one man (Kendal), a carpenter, and severely injuring other two men (Green and Rolfe), one of whom has since died. Another man was also injured. Some idea may be formed of the weight which fell, when it is stated that two large logs of timber placed across the creek, as a protection to the sawpit, were completely snapped asunder.

An inquest has since been held, and the jury has returned a verdict of "Accidental death." The guide-rope was said to have been 1½ inch in diameter, and quite sound; but it broke by an accidental jerk in hoisting.

RE-OPENING OF THE METROPOLITAN GRAVE-YARDS.—Between 8th October and 24th ult., it is said, 137 dead bodies have been added to the Spitalfields fever-still. The re-opening of the St. Andrew's, Holborn, nuisance is justified on the ground that it is requisite, in order to horrify the Board of Health and the public, and so to compel them to "pay up" the vested interests in the nuisance. The leech that ever cries, "give, give," only feeds upon living blood, and often to the benefit of its victim; but vested interests in such loathsome sinks of corruption as town and city grave-yards, are a foul and tainted blot upon humanity. With insatiable maw they are ever crying "fees, fees," and ever feeding upon death and corruption, to the utter pollution of the breath of life, and to the destruction, not the benefit, of the living.

THE SALFORD PEEL TESTIMONIAL COMPETITION.

SURELY you have misinterpreted a portion of the particulars furnished to competitors for the Peel Testimonial at Salford. You say that "all the designs sent in are to remain the property of the committee." Now, if you look to the particulars sent out by the honorary secretaries, I do think (and hope) you will agree with me, that, although capable of *double entendre*, yet, taken with its context, it infers that the whole of the selected designs are to be retained by the committee, and not that, without any payment for trouble and time, or any recognition of the money actually expended on the various drawings and models, the Salford people are to possess themselves of the entire collection.

Surely, if they do act in this manner, it will be downright robbery. I can assure you, for myself, that had I entertained the least idea of such an intention, the Salford Peel Committee would not even have had from me an application for particulars.

The practice of architecture does to me appear to be in a most fearfully deplorable state, and in an exceedingly unhealthy and unsound condition. Competition is universally the order of the day: cheapness the shrine at which all offer up their homage. Without competing a young architect stands no chance whatever of getting anything to do in his profession. He is, accordingly, forced to sanction, by his own actions, a system, the corruptness, iniquitous proceedings, and unartistic result of which are repugnant to his whole nature.

We juniors are, of a truth, pretty high as badly off as the *poor sempstresses*, and sadly do we require the help of another *Tom Hood* to embody for us the spirit and power of the "Song of a Shirt" in another and a novel form.

A COMPETITOR.

* * The wording of the particulars admits of the construction put upon it by our correspondent, but of the intention of the committee there is no doubt. Our own strong opinion upon the subject we have already expressed. We have received several letters from competitors complaining of the communication on this subject signed "X," but cannot print them.

ARCHÆOLOGICAL INSTITUTE OF ROME.

ON the 13th December the anniversary of Winckelmann's birthday was celebrated as usual in the library of the above institution, which occurrence had not taken place but nominally since the year 1848. Still, the activity of the Italian archæologists seems not to have abated, in proof of which several interesting works in the process of publication were lying on the table, such as the "Monumenti Inediti," the "Annali Archæologici" for the current year. The most striking performance, however, was the plan of the Via Appia, from Rome to Albano, destined to form several plates for the "Monumenti Inediti," which is the first accurate survey of the course of that road, the adjacent villas, tombs, &c. It has been made by M. Rosa, under the immediate superintendence of Canina. The meeting was opened by the president, Councillor Kestner, who, in a short speech, prefaced the various papers to be brought before the society. A paper of Dr. Braun, the secretary, then followed, having for its object the central group of the frieze of the Parthenon, in which Mr. B. recognises, besides Demeter and Triptolemos, the heroes of the primeval history of Attica. Dr. Schmidt, of the University of Bonn, then exhibited a vase, purchased at Naples for the museum of the University, with a representation of Bellerophon returning to Iabates, after various adventures; a subject not often met with on vases. Dr. Braun then spoke on the marble discs of the Campana collection, found near Rome. It is ornamented with Bacchic sculptures of great excellence; and Dr. B. explained the use of such reliefs for the porticos of ancient houses and temples, which he proved by terra-cotta reliefs of the same collection, as well as by some paintings of Pompeii. A paper by Dr. Henzen on the Curatores of the Roman municipal cities, and their difference from the Quinquennales, concluded the meeting, which was numerously

attended by most of the Roman savans and amateurs, as well as many distinguished foreigners. The Archaeological Institute will in future resume its regular weekly meetings, whence a continuation of useful and interesting researches is to be anticipated.

NOTES IN THE PROVINCES.

At the late Quarter Sessions for the county of Essex, it was stated that the Lunatic Asylum Building Committee had not yet come to any decision as to the twelve tenders received by them on the 16th of September last, in accordance with the specifications and working drawings prepared on the plans sanctioned by the Sessions, and approved by the Secretary of State, for the erection of the new Pauper Lunatic Asylum for the county.—The small but ancient church at Barham has been lately undergoing considerable repair and restoration. The exterior has been renovated, and a new bell-turret added. The interior has been re-seated, with new pulpit, &c., and the roof thrown open to the church, with framed trusses, pendants, &c., complete. The works were executed from plans furnished by Mr. Allen, of St. Ives, architect.—The new Corn Exchange at Thrapstone was opened on Wednesday in last week. The building has been erected entirely at the cost of Mr. Freeman Roe, of Camberwell (formerly a resident in the town), and is situated in the rear of the Court-house, the entrance being common to both. The roof is partly boarded on the inside, and the upper part glazed.—A cenotaph to the late Mr. John Neame, of Selling-court, has been placed in the parish church of Selling, according to the *Kentish Gazette*. It consists of a window, in three compartments, with stained glass, subject, the parable of the Good Samaritan. It is executed by Willement. The monument, immediately beneath the window, is from the atelier of Mr. George Cooper, of Canterbury, and executed by Mr. H. J. Day, a student of the Royal Academy. It is composed of Caen stone, and is divided into three compartments, of the early English style of architecture. In the centre is the tablet.—The Portsmouth Council are about to consider the practicability of obtaining commercial docks within the borough.—Some ninety pounds a year being found necessary to be collected by farthing rate at Winchester for the support and preservation of the Museum already collected there, it seems to be a question at present whether the requisite means will be granted. An objection started is that the county will benefit by a sight of it without paying its farthing also towards the object in view!—At the recent Warwick Quarter Sessions the County Lunatic Asylum Committee reported that they had accepted Mr. John Heritage's tender for supplying and fixing the warming apparatus at the Asylum for the sum of 1,250*l.*, to be completed by the 1st of May next; that the works are proceeding, and that the asylum will be open for the reception of patients by the end of the summer of 1851.—At the Hereford Sessions, Messrs. Fulljames and Walker, the architects of the New Joint Counties Lunatic Asylum, reported the progress made in the building, and the amount expended. Up to the 13th of December, the total expenditure was 19,789*l.* 18*s.* 11*d.* A further sum of 1,000*l.* will be sufficient to carry on the work for the next two months.—The Paul-street baths and washhouses at Liverpool have not only paid all their expenses, but, after bathing 30,000 persons gratuitously, have thrown a clear profit of 130*l.* into the public purse.—At the weekly meeting of the Liverpool Health Committee, on Thursday in last week, the sub-committee on new baths reported, that the engineer had submitted plans and specifications for the new baths in High Park-street, Toxteth-park; estimated cost, 5,299*l.* 13*s.* 5*d.* The sub-committee recommended the adoption of the plans by the general committee, and that they should direct the engineer to prepare working drawings, with a view to the same being proceeded with. The engineer stated that he had ascertained that the salt water at Brighton was raised 600 feet, and at Ramsgate 100 feet above the level, for the purpose of supplying the public baths, and he was of opinion that no difficulty what-

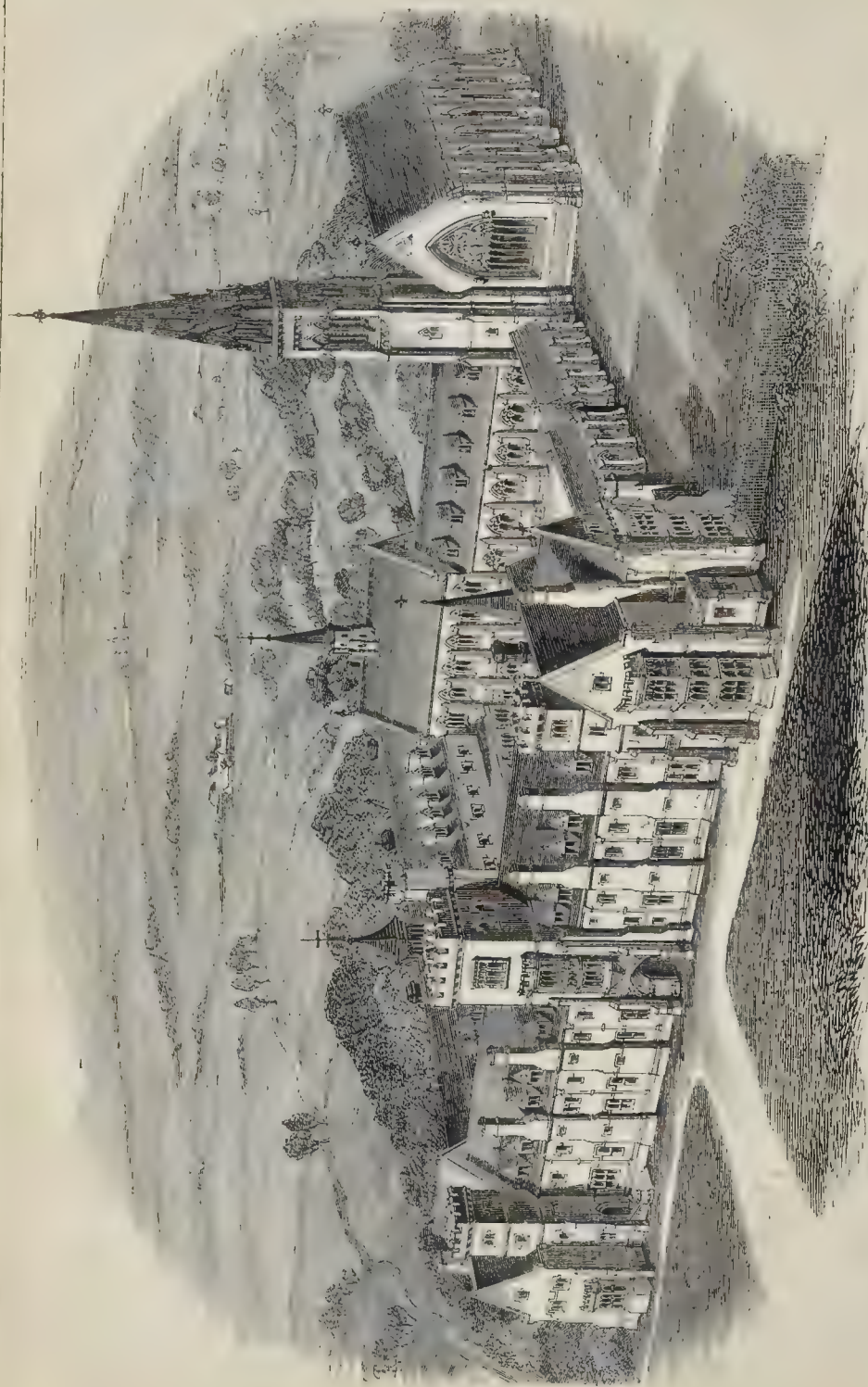
ever existed to the proposition of supplying all the baths in the town with salt water. Mr. Newland's suggestion was acted on, by the matter being postponed.—The corporation of Liverpool have come to a determination to guard the large deposit of gunpowder in the neighbourhood of their town against lightning. It is expected that the site of the small temporary magazines in which the 800 tons of powder are deposited, will be eventually removed to some greater distance from the shores of the port. Sir W. Snow Harris, at the request of the corporation, has visited and inspected the buildings, and provided a plan of lightning conductors, which is to be immediately carried out under his immediate direction.—The statue of the celebrated Dalton has been at length placed in the niche originally formed for it in the block of building at the corner of John Dalton-street and Deansgate, Manchester. The work is the production of Mr. Charles Edward Smith, sculptor. It is of Caen stone; and, including a pedestal of 8 inches, is 7 feet 11 inches high. The philosopher is represented as some sixty years of age. The statue has been executed at the cost of Mr. Peter Bowker, the owner of the property.—On the 1st of January, the Manchester Water-works Company were denuded of their powers, and the Corporation took possession of the entire works, new and old, for the water supply to the inhabitants, under the provisions of their Act. The daily supply of water will be, for the present, only a small proportion of that which will ultimately flow into the channel, when all the connecting links from the upper gathering grounds are completed. The Corporation have ordered the water rate to be levied as from the 1st of January. Somewhere about seventy miles of street piping have been completed, leaving something over twenty-five miles of piping still to be laid. It is manifest, says the *Manchester Spectator*, that if the number of plumbers in the town were multiplied fourfold for the nonce, several weeks must elapse before the ratepayers could receive the water supply. Even if the present staff of plumbers work night and day, it will be months before all the blocks of houses throughout the borough are fitted up with water piping.—At a woollen mill at Oakenrod, near Rochdale, lately, while twenty to twenty-seven workpeople were running out of an upper room at the call of the factory-bell, the floor fell in and injured some of them dangerously, while a steam pipe at the same time broke and severely scalded several of them. The whole of the floor fell in, but the iron beams of the floor below remained. The building was erected only about two years since.—The reservoir for supplying Leeds with water is said to have lately been nearly empty, through a long drought. Its capacity is 217 million gallons.—The Leeds council have resolved to appoint a committee to superintend the preparation of a Bill to be introduced into Parliament next year to empower them to make and sell gas, and to appropriate the surplus profits to the improvement of the borough. One of the aldermen said he hoped the gas companies would lower the price of gas so as to obviate the necessity of going to Parliament. The same corporation have also recently resolved,—“That as the attempt to raise funds by public subscription has failed, it is in the opinion of this council desirable to erect a town-hall, including suitable corporate buildings, and that a committee be appointed to make the requisite inquiries, including the procuring of plans and other information, with power to expend any sum not exceeding 300*l.*, and report thereon to the council.”—A new church is being constructed at Bowling, in Yorkshire, entirely of iron and stone, except the rafters of the roof. The cost will be about 4,000*l.*—The foundation-stone of a new church, to be called St. John's (the Evangelist), has been laid at Langcliffe, near Settle. Mr. John Green Paley, of Oatlands, Harrogate, has provided the endowment, and contributed the funds necessary for the erection, aided by a grant from the Ripon Diocesan Church Building Society. The church, which will afford accommodation for about 300 persons, is to be built in a simple style of village church architecture, under the superintendence of Messrs. Malinson and Healey, of Bradford,

architects.—The Bishop of Durham has presented 1,000*l.* towards the erection of a new church at Blyth, Northumberland, provided that 4,000*l.* more are subscribed for the purpose.—An additional supply of water appears to be wanted by the Whittle Dean Water Company at Gateshead—a new company, if we mistake not, with works but recently constructed. The proprietors have recently held a meeting, “to take into consideration, and, if approved of, to authorise the construction of works and adoption of measures for securing an additional supply of water at Whittle Dean.”—The parish church of Rothbury, Northumberland, was reopened on the 20th ult. It has been restored in the Early English style, with lancet windows, pitched roof, and lofty tower. The expense has been defrayed by subscriptions of landowners and others, at the head of whom the Duke of Northumberland has contributed the munificent sum of 800*l.* The rector, the Rev. C. Vernon Harcourt, has also restored the chancel.—Mr. R. Thornton, of Cannon-hill, Merton, Surrey, is erecting free schools and school-houses at Burton-in-Lonsdale, his native village. They are in the Elizabethan style, and are expected to be finished in May next.—On Friday week the new Episcopal Church, for some time in course of erection at Bailieston, in the diocese of Glasgow, was opened for public worship. This small edifice has been erected chiefly for the benefit of the colliers residing at Bailieston and the neighbouring villages, which comprise a population of about 4,000. The site was granted by the Springhall Coal Company, and the levelling and plans were supplied gratuitously by Messrs. Clark and Bell, architects. About 700*l.* were subscribed for the erection, chiefly by persons connected with the locality; and it is gratifying to mention that among the subscribers were nearly 200 colliers and workmen employed in the district. The structure is in the Old English style.

THE ASSOCIATIVE LABOUR PRINCIPLE.—A public meeting was held on Thursday evening in last week, at the Mechanics' Institution, Manchester, to consider the subject of co-operation and associative labour, and to listen to the addresses of a deputation from the central associative labour committee, formed in London. Amongst those present were Professor Maurice, Mr. Thomas Hughes (barrister), and others. The chair was occupied by the Rev. T. G. Lee.

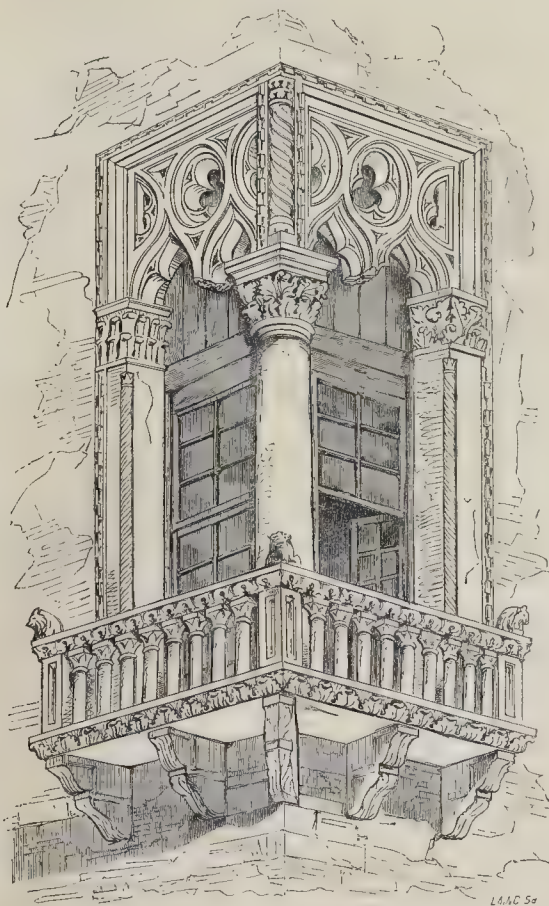
“BERLIN PATTERNS.”—Berlin patterns, and work properly so called, were not known till 1804, when the first pattern, on checked paper, was published by a printseller in Berlin. In 1810, Madame Wittich, wife of a printseller in that city, and herself a celebrated workwoman, urged her husband to engage in that branch of his business with more spirit. And, since his time, more than 14,000 Berlin patterns have been published; and more than 1,200 persons are now engaged in colouring and preparing them. They are worked on canvass, either worsted or silk, with wool manufactured at Gotha, and dyed at Berlin. Formerly, the Germans imported their yarn from us; now they have attained far greater perfection than ourselves. Their patterns are, however, deficient in that subdued and tasteful effect, to be found in the manufacture of the Gobelins: there is too much glare and frippery in their colours and designs to be as yet natural. They were introduced into England in 1831, by Mr. Wilks, of Regent-street, who imported a large quantity of patterns from Berlin; and from thence, and Paris, the best materials of silk, wool, &c.; and, moreover, engaged the best French workers to accompany him to this country. To this gentleman we owe an art which gives amusement to so many of our ladies; and is sometimes the horror of their husbands and brothers.—*Familiar Things: “The Needle.”*

*“The writer might have said, not merely “an art” which gives “amusement,” but a business which gives occupation and bread to thousands of industrious females. Those who know how greatly respectable employment for females is needed, will appreciate the extent of the benefit which Mr. Wilks has conferred upon the community. The number of persons in England now engaged in the trade is quite extraordinary.



TRINITY COLLEGE, GLENALMOND, PERTHSHIRE.—MR. J. HENDERSON, ARCHITECT.

ANGLE WINDOW, VENICE.



TRINITY COLLEGE, PERTHSHIRE.

TRINITY College, Glenalmond, was originally set on foot for the purpose of affording to Scotland the advantage of a sound religious and classical education, in an establishment conducted on the principles of the Church, with careful domestic superintendence, and, at the same time, on such moderate terms as would render it accessible to the middle classes of the community.

The Institution was opened in 1847, under the superintendence of the Rev. C. Wordsworth, A.M., warden; the Rev. H. E. Moberly, sub-warden, and five assistants. Since then, the number of students has steadily increased: in the senior department there are now twelve theological students; in the other department, the number of boys is about seventy.

Trinity College is situated ten miles north-west of Perth, from which you proceed by the road to Crieff, through one of the finest parts of Perthshire, as far as the village of Methven; you then strike off to the right, and pass over a track of high land, rough but well wooded, and thence descend into Glenalmond, where you catch a glimpse of the college.

The buildings, however, are, not fully seen on this side of the valley until you approach within the grounds. Glenalmond stretches east and west about sixteen miles, skirting the south lateral range of the Grampians: the land here descends rather gently to the centre of the valley, and is there abruptly farrowed out for the bed of the river Almond, to the depth of some 150 feet, forming many tortuous windings, open haughs, and steep rocky banks covered with wood; and it is upon a flat table of ground over one of these beautiful turfs of the river that the college is

situated, and certainly a more romantic and secluded spot, could not well have been chosen.

The buildings, as shown by the engraving, form three sides of a quadrangle, the fourth or south side being closed only by a low cloister. The inside of the quadrangle measures 180 feet square.

The west or entrance façade to the left of the engraving embraces the sub-warden's apartments, on the extreme left, with the visitors' room and porter's house; over which are some of the dormitories; and south of the great tower are the divinity students' apartments and lecture-room. The warden's house is on the extreme south. The north side of the quadrangle, parallel to the river, is occupied on the ground floor by the school-rooms and study rooms, over which are continued the dormitories in the two upper floors.

The great kitchen, with its apartments, is placed at the extreme north-east, having the servants' rooms above.

The first floor of the dormitories, extending over the two sides of the quadrangle, is occupied by the students of the senior department, having a range of bedrooms, 12 feet by 9, on both sides of a central corridor. The upper dormitories for the junior boys extend over the same space, the apartments are 9 feet by 7, arranged along each side, and enclosed with deal partitions, 5 to 7 feet high, and open above, so that each boy has a separate room to himself. The lodgings of the tutors are placed at equal distances over the dormitories, to secure a more perfect supervision.

The cloisters are carried entirely round the quadrangle, partly within the main buildings and partly without. The whole of the apart-

ments are heated by warm-water pipes, conducted in troughs under the floors.

The entire structure is composed of a stone of a reddish gray hue, and of great durability, which is very abundant in this quarter.

The buildings, as above described, are in the late domestic style of Gothic, but the chapel is of an earlier period (Geometric), and is an edifice of considerable size. The inside dimensions are 120 feet by 35 feet, and it is 65 feet high to the ridge: the whole of the side windows are already fitted with stained glass, by Messrs. Powell; but the east and west windows, being of great dimensions, are filled with plain glass until funds can be raised to furnish them in a more fitting style. The roof is open to the ridge, with arched couples: the whole is stained dark, and the compartments over the chancel are gilded. The principal fittings of the interior are of oak, and it will accommodate 126 students, besides 44 stall-seats. The ante-chapel, 35 feet square, is divided off at the west-end by a deal screen, 12 feet high, within which, upon a floor slightly raised, are the benches for the domestics, &c., which are again divided by an open screen from the benches and stalls of the college. The walls of the chapel are wainscotted all round 12 feet high, with Gothic headings. The chancel floor is of white and black stone. The organ is placed in a large recess on the north side of the chapel beyond the open screen.

It is much to be regretted that funds have not yet been procured for building the large school-room and the dining hall, and thereby completing the east side of the quadrangle, as shown in the engraving: in the mean time one of the large study rooms is used as a dining hall; but we confidently hope that the appeal now being made to the public will soon enable the council to proceed with these very necessary buildings.

We must not omit to notice, that ample means for the healthy exercise and amusement of the student has been provided in the shape of cricket-ground, ball-court, and skating-pond, besides the never-failing amusement of fishing in the river, and enjoyment of the walks on its wooded banks.

About 45,000*l.* have already been expended on the buildings and grounds connected therewith, and it is calculated that a further sum of 17,000*l.* will be required to complete the whole.* Mr. John Henderson, of Edinburgh, is the architect.

ANGLE WINDOW, VENICE.

THIS is one of those picturesque features with which the street architecture of Venice abounds; it forms the angle of the building on the first floor, and the proportions of the column and tracery of the window head are therefore necessarily heavy, in order to bear the superincumbent weight. The character of the detail, like most of the Italian Gothic, shows the influence of the classic models. The figures of animals on the angles of the balcony form good terminations to that feature.

C. F.

WEST OF SCOTLAND ACADEMY OF THE FINE ARTS.—This exhibition has been opened for the admission of the working classes, day and evening, at one penny per head. "The committee," says the *Glasgow Gazette*, "would gladly have given free admission, but it was thought the penny would exclude no one desirous of visiting the exhibition, while it would tend to prevent the overcrowding of those who might go to derive profit as well as pleasure."

ST. GEORGE'S CHAPEL.—We are glad to observe that the Commissioners of Woods and Forests are repairing the turrets and pinnacles on the north side of Cardinal Wolsey's Chapel, and we hope they will extend their operations to the pinnacles on the other portions, many of the beautiful coats of arms and other carvings being much dilapidated. The dean and canons have lately been further embellishing the chapel by new stained glass windows, and those on the south side are now in course of being filled with the same material.—*Windsor Express*.

* About 36,000*l.* were raised by subscription, mainly in England.

THE WATER COMPANIES.

At the close of an article in the new number of the *Westminster Review*, condemnatory of the Board of Health's scheme for supplying London with water, the writer says:—

"Having thus freely expressed ourselves on this plan, we would most carefully guard ourselves from being misunderstood, as advocating the cause of the present companies, and their modes and sources of supply. There is, undoubtedly, much to condemn; but we are far from thinking that the mutual check of these great bodies, who are extremely jealous of each other, may not be valuable to the consumers. The consumption of water is not expensible, nor is it a manufactured article, like gas: any attempt at coalition and centralisation will have its attendant evils, and certainly the most recent and successful attempts at amalgamation, that of the Southwark and Vauxhall Companies, was not by any means advantageous to the public, although so highly paraded by the Clay school of economists. Imagine that within several years two companies should have united, to do no better than erect works for pumping from the Thames below Battersea-bridge, with a suction-pipe, opposite the Ranelagh and King's Scholars' Pond Sewer, and only half a mile above the great gas and bone-grinding establishments at Vauxhall—*ecce signum*—in the tall clean stand-pipes and chimneys near the Nine Elms station. We should earnestly advise the present water companies to beware of paying high dividends, and rather to reserve their surplus profits to meet the spirit of the times and the unavoidable march of events and of improvement. The stewardship is an important one, and we believe that there is every reasonable chance of such an extension of the metropolis as to make either new efforts by the present companies, or new companies for the outlying districts, a certain and safe investment of capital, with the additional advantage of doing common justice to the water-rate payers, who are entitled to be heard in their cry for reform, although one may be not disposed to accede to them a vote in the management of concerns which require careful attention, and that kind of energy and control which is only to be found successfully applied by those with whom it is a pocket question."

In conclusion he observes:—

"Among the numerous schemes which have been prepared for the next session of Parliament, for better supplying water to the whole or part of the metropolis, it is singular that the Board of Health project, although open to the public, has not found any one to pay the expense of the necessary plans, so as to give it a position before the Legislature. We are to have pure spring water from Watford, on the north; on the south, the Wandle is to be relieved of sewerage, and pumped up for supplying the district which it traverses; in the west, the Thames is to be delivered from Henley; and, in the east, immense reservoirs are to be formed in the valleys of the Lee, while the old New River is to be straightened, enlarged, and shortened in its windings, by twelve miles out of forty, so as to carry the great additional volume of water, which would be available for London, at the elevation of Islington. This plan is designed to give, by means of the reservoirs, that amount of soft water stored at flood time, which, mixed with the pure chalk-borne streams of the district, would offer a moderately soft water to the consumer, in lieu of the present undoubtedly hard supply. The principle of this project was in fact to a great extent sanctioned by the Legislature during last session. We will leave for the present the discussion of these several plans, feeling assured that Parliament will not allow another session to pass without deciding fairly on the merits of each and all of the rival schemes."

The *Times* has said lately on the same subject,—"The propositions which lie at the bottom of the question are not difficult of demonstration. London is now supplied imperfectly and irregularly with bad water at a great outlay: it ought to be supplied cheaply and well. Water cannot be too pure from all admixture, animal, vegetable, or mineral—organic or inorganic. For general uses the absence of any particular bias is most manifestly inculcated. The effects of a pure and ample supply upon health and life are not within calculation; the economy resulting

from the possession of a perfect solvent and a good detergent are equally beyond calculation. We might go further and plead for classes whose comfort and self-respect hang upon this simple element, and to whom tea and soap are luxuries which they can ill afford to waste. We might urge the growing danger of a calcareous diathesis, and the unpleasant roughness imparted to our cuticle. We might allude to the extended sale of bleaching liquid, and the extended depreciation of our undergarments. We might put in a plea for Mr. Cruikshank and his brother tee-totalers, now exposed to a double temptation, inasmuch as they must at once reject what is nice and condemn themselves to that which is nasty; but we would not add to the credibility of a fact which stands confessed—the first and greatest city in the universe ought not longer to sustain the reproach of neglecting the first and greatest addition which she could make to the solidity of her institutions, the splendour of her streets, and the list of her charities."

JOHN KAY, THE INVENTOR OF THE SPINNING-JENNY.

It has been the custom of John Bull, from time immemorial, to reward the inventive faculties, genius, or heroisms, of Albion's sons not (more's the pity) with substantial proofs of his approbation during their lifetime, but with "statues" to their memory after death! Alas! how many of our greatest men (Nature's noblemen) have passed from this work-a-day world to that

"Bourne from whence no traveller returns"

in poverty and obscurity—unpitied and uncared for. The "hero of a hundred fights," it is true, has lived to see statues around him, plentiful as blackberries; but this is the exception to the rule: for how many years did old Time roll on before justice was done to our immortal Shakespeare? In our own times, how long before the naval hero who never knew what fear was, was handed down to posterity in Trafalgar-square? and how long it will be before his dying request will be complied with by his grateful country, Heaven only knows!

There is one man whose inventive genius enabled a barber to become a prince, in point of wealth—whose genius has enabled others to amass princely fortunes—whose genius enabled the poorest of the poor to wear clothing and buy it for next to nothing: so cheaply, indeed, can what was once a luxury be now made, that in Manchester and other districts, it is well known that the article (calico) is used by shopkeepers as cheaper and better than paper-bags—and yet this man has found not one soul to "propose" even a monument to his memory. Need I say that I allude to JOHN KAY, the inventor of the spinning-jenny; and yet this man was left by Arkwright (the barber, who made his fortune by his means) to die in poverty and distress. Surely, surely it is not yet too late to do justice to such a man! Surely the present inheritors of old Arkwright's princely fortune, built, colossal as it was, upon the energies of this poor man, cannot refuse to "come down handsomely" towards a statue to poor John Kay's memory, even if they do not think it worth while to defray the cost, as they ought, out of their own private purse.

I feel so satisfied that something *should* and *could* be done, that I venture to suggest the subject to you. There is not among the mechanics a holiday visitor to Gravesend who brings away his shrimps in a cotton bag, who would not, I am convinced, put down his trifle, should those who have benefited by "poor John Kay's invention" fail to do what is right.

R. KNEVETT.

MR. BEAUFOY'S SCHOOL, LAMBETH.—We have before now mentioned the large school-house erected in Lambeth, at the cost of Mr. Beaufoy, who seems never to tire of doing good works, and so exemplifying what his name imports. Beau-foy and a fine faith are now synonymous in English as well as French. A correspondent tells us that the following genial and suggestive quotation has been placed upon the school:—"They that do teach young babes, do it with gentle means and easy tasks."

IPSWICH GRAMMAR-SCHOOL COMPETITION.

THE letter which appeared in your paper of last week, in reference to the competition for the Ipswich Grammar School, is in part unfair, in part untrue.

It is unfair to several gentlemen of the highest character to leave it to be supposed, that the number of designs under consideration was reduced to fourteen with no more deliberation than could be bestowed upon them in the space of their first meeting. The designs had been most carefully studied by them as individuals, and they, therefore, met in committee to give formal sanction to conclusions already formed. There was no such "quick work" as your correspondent supposes.

The same careful and repeated examination in the interval enabled them, at their second meeting, to reduce the reserved plans to four, which were not exclusively by Ipswich architects. A man's style of drawing is as easily recognised as his handwriting, and it is not, therefore, surprising that the plans of local architects should be known. But that the committee were perfectly uncorrupt may be inferred from the fact, that one local design was rejected because it avowedly exceeded in cost the sum stated in their advertisement, although it was accompanied by an offer of pecuniary assistance to carry it out.

Again, the premium was not absolutely assigned to Mr. Woolnough, but on the condition that his estimate was proved correct. When this was found otherwise, the committee intended to fall back upon the other designs. If these, too, failed on this point, the discredit must have lain with the architects. But the attack of your correspondent has caused the withdrawal of almost all the plans.

This may force them to apply to some architect for a new or an amended design. But I am authorised to say that it is untrue that they have employed any one to do so as yet, and to deny that to their knowledge any one has been making a piratical use of the designs committed to their care.

I inclose my card, and am

NOT ONE OF THE COMMITTEE.

I am anxious to bear testimony to the truth of the statement of your contributors as to the unfair and unhandsome conduct of the Committee for selection in this matter. Being near the town, and somewhat interested in the competition, on application I was admitted to see the designs submitted for the proposed new school, many of which were good, and must have cost much time and money in their completion; and it was with some degree of pain I observed the careless indifference which was shown in the preservation of the designs so liberally entrusted for their selection.

After looking round the room with a young gentleman who was sent to show me, I enquired if he could tell me which was the design selected: when pointed out I involuntarily started, and asked if he knew the author, when it was reluctantly admitted to be a resident in the town, at the same time pointing out two other designs near, as the production of resident architects. This was before the selection was determined, and when the motto only should have been known. On examining the plans of the one supposed to be selected, I was still more perplexed to divine the reasons or grounds on which its merits rested, as it appeared to me to be ill-arranged and ill-constructed, and certainly had fewer claims in point of taste and purity of design than any I saw; indeed, I should be sorry to see the building erected. If the design pointed out to me be, as you state, the production of a resident architect, and the one decided on by the committee as the best (I do not recollect the motto), I think in justice it should be published; and if the author of the design bearing the motto, "*cum spes laboro*," would also allow his to be published, the public will be able to form some opinion as to their relative merits.

I should think these about equivalent as to cost; there were others more elaborate.

If the committee found themselves in a difficulty in making their selection, or, as it appears, they were not unanimous in opinion, they might easily have called in some professional gentleman, who would have assisted them and relieved them in part of their responsibility. No one will deny but that the com-

mittee were at full liberty to employ any architect they might think proper in the first instance, or to select any design they chose, provided all the competitors were remunerated; but having issued an advertisement, on their honour as gentlemen, by which one individual only was to receive remuneration, they were no longer at liberty to decide, except as to the merits and suitability of the designs so submitted for their consideration. How far this has been complied with, I will leave to the opinion of any person who may have the opportunity of seeing the designs sent in. This may not, perhaps, amount to the fact of "obtaining goods under false pretences;" but it certainly is obtaining from ardent, aspiring, and talented members of the profession that which cost them much time and money, and deserves liberal encouragement, which I hoped it would have received from every intelligent and enlightened mind, and from this committee, in return for the very liberal response which was made to their public request. To issue an advertisement requiring so great a personal sacrifice, and not act up to the spirit of it, is certainly dishonest, if not illegal.—I send you my name.

HONESTAS.

I beg leave to suggest that a meeting of architects be called, to raise a fund for the purpose of trying the legal liability of these Ipswich worthies. It seems to me hardly fair, that in a question involving the interest of all, any one architect should have to fight the battle single-handed. I should be very glad to do all in my power, and I think the profession generally would do the same.

C. VICKERS.

I was one of those who were foolish enough to try for the Ipswich competition, and since the time I sent it in, I have heard nothing either of the committee's decision, or of my design, except what I have gleaned from your columns, in which I have just read of the very strange proceedings which took place. What strikes me as the strangest part of the affair, is, that though it was nominally settled a fortnight ago, all the designs have been retained for the especial benefit of the favoured one. I hope, sir, that, with your usual fairness, you will publish this communication, and the letters you may receive from others.

J. CLARKE, Architect.

RAILWAY JOTTINGS.

By a work recently published, it appears that there were in operation, at the commencement of 1849, in different parts of the globe, a total length of 18,656 miles of railway, on which a capital of 368,567,000*l.* had been actually expended. Besides this, it is estimated that there were, at same epoch, in progress of construction, a further extent of 7,829 miles, the cost of which, when completed, would be 146,750,000*l.* Thus, when these latter lines shall have been brought into operation, the population of Europe and the United States (for it is there only that railways have made any progress) will have completed, within the period of less than a quarter of a century, 26,485 miles of railway; that is to say, a greater length than would completely surround the globe, at a cost of above 500,000,000*l.* sterling. To accomplish this stupendous work, human industry must have appropriated, out of its annual savings, 20,000,000*l.* for twenty-five successive years.—It appears from a statement in *Herapath's Journal*, that the traffic returns on the following railways during the second half of the year 1850, were increased as follows:—Midland, 2½ per cent.; Great Western, 4½ per cent.; London and Brighton, 5½; Caledonian, 6½; London and North-Western, 6½; Newcastle and Carlisle, 8½; Edinburgh and Glasgow, 8½; London and South-Western, 9; Bristol and Exeter, 10½; York, Newcastle, and Berwick, 11½; Ulster, 14; Belfast and Ballymena, 19½; Great Southern and Western, 20; South Devon, 21; South-Eastern, 23½; York and North Midland, 25; Lancashire and Yorkshire, 25½; Lancaster and Carlisle, 28½; Manchester, Sheffield, and Lincolnshire, 29½; Shropshire Union, 30; Leeds and Thirsk, 45½; and the Chester and Holyhead, 64½ per cent. On the Eastern Counties, a decrease in the traffic for the past half-year is shown of

16,894*l.*, or 4½ per cent.—The *Times*, in a leading article, in which it takes a hopeful view of the prospects of "our splendid railway system," now, as it were, completed, urges tourists to turn their sight-seeing eyes into the interior of their own native country, and thus to induce the publishers to finish their "Handbook of England," which is actually "not yet out," but from which they will learn what doubtless is better known to some foreign tourists than to many English ones, that "routes may be marked out which will give, within a month's tour, a dozen cathedrals equal to almost any in Belgium, a dozen noblemen's seats, with fine collections accessible to the public, besides parks, ruins, rural scenery, natural curiosities, historical monuments, and curious manufactures, to almost any extent." With such tours, as plainly marked out as those in the continental handbooks, we shall soon, the Editor thinks, have our tourists consenting to take at least one holiday in three in their native country: and to this we earnestly respond—so may it be. The excursion system, at least, has taken root, and will, itself, easily stretch into tourist temptations. But innkeepers as well as railway companies, must overhaul their charges, and no better epoch of such an era can possibly present itself than this present year ONE of international and industrial motion, mixture, and amalgamation. The opening of the more mature moiety of the nineteenth century is an epoch which peculiarly recommends itself to such considerations with all amongst whom its past moiety has introduced such a wonderful system as that of the railway. Cheap charges are essentially necessary to the full expansion of railway and wayfaring profits in such an age.

PROPOSED ENLARGEMENT AND DECORATION OF THE CAPITOL AT WASHINGTON.

THE AMERICAN ART-UNION.

At the annual meeting of the American Art-Union, held on the 20th ult., Mr. Cozzens, the president, in the course of his opening address, when alluding to current topics of interest to lovers of art, said—"It has been determined to enlarge the Capitol at Washington to an extent commensurate with the increased necessities of the legislative department of government. It is understood that no plan as yet has been adopted for these alterations; but they will undoubtedly be contracted upon a scale and in a style worthy of the grandeur of the nation. It is greatly to be desired that they should be made the occasion of a systematic encouragement by Congress of the higher departments of art. These new halls and corridors to be prepared for the assemblage of the representatives of the most powerful republic that ever existed, should be resplendent with all the graces which painting and sculpture can add to architecture. The picturesque history of the first settlements of the different States, the heroic deeds of our armies, the labours and exploits of border life, the great councils which have originated important civil changes,—all these should be illustrated by the broad canvasses and the frescoed walls; while the marble should symbolise the richness and extent of the national domain, the majestic progress of civilization from the Atlantic to the Pacific, and the generous hospitality which opens wide the portals of the country to the poor and distressed of all creeds and languages. The erection of the new palace of Westminster has afforded to the British Government an opportunity of bestowing the most substantial encouragement upon Art—an encouragement which has resulted in a great improvement of public taste and the development of artistic skill. It is not to be doubted that a similar display of liberal and enlightened policy would produce the same results in the United States, and that not only the general standard of taste would be raised, but artistic genius and ability brought to light which might otherwise have remained for ever undiscovered. This subject has already attracted the attention of the artists of New York, and they are taking measures to bring its importance distinctly before the notice of the National Government.

The report of the Society sets forth that the number of members during the present

year is 16,310, and they have placed the sum of 81,550 dollars at the disposal of the committee of management.

Of this amount, 16,225 dollars have been devoted to the production of six engravings, by American engravers, from pictures by American artists.

The sum of 8,009 dollars has been devoted to the publication of the *Bulletin*, a monthly art-journal, designed to aid in advancing the interests and promoting the objects of the American Art-Union. Of this work, 113,500 copies have been published during the year, and, accompanied by 227,000 original etchings and woodcuts, have been placed in the hands of all the members.

The committee have purchased, during the year, 424 paintings, 20 bronze statuettes, and 6 bronze busts of Washington, by American artists, at an aggregate of 43,120 dollars. They have also purchased 50 copies of outlines, by Washington Allston, 450 medals, and 60 proof impressions of the large engravings from two of Trumbull's paintings.

PATENT PRESSURE FILTER.

WE inspected, a day or two ago, a new and very ingenious filter, termed by the inventor a *pressure filter*, patented recently by Mr. James Forster, of Liverpool. The filter consists of a small globe, of a peculiar silicious sand-stone, hollow in the inside, and contained in a metal jacket. When this compact, but extremely simple, apparatus is screwed on to the service-pipe, the water is forced through the stone globe by the ordinary pressure from the main, and comes out perfectly exempt from all foreign bodies, and as clear as crystal. The action is mechanical, and it admits the water to flow through with such rapidity that it can be fixed permanently to the service-pipe, in place of the usual brass cock. There are two taps attached, one of which draws the *filtered* water from the *interior* of the stone globe; the other, the *unfiltered* water from the *exterior*. When the unfiltered water is drawn off for scouring or other purposes, it thoroughly cleanses the exterior of the filter from all mechanical impurities which may have collected on the surface, and by this means the filter is always kept sweet and clean. The apparatus is so formed as to allow of the sandstone globe to be readily detached from its exterior casing, and chemically purified by the most simple and ready means. This filter has received the marked approval of the authorities at Gwyder-house. A very complimentary allusion is made to it in the *Blue Book of the Sanitary Board*, which has just been published. Referring to the action of water on lead, when this metal happens to be mechanically diffused in pure water, at page 246, appendix 3, the report says, "One of the best preventives I have seen, is Forster's Patent Pressure Filter, which, although calculated to deliver the largest quantities, yet for domestic use need not occupy more space than the usual ball-cock of a cistern. Apart from its compactness, I have found that this filter completely arrests the action of lead, where, for the purposes of experiment, I have caused its oxide to be mechanically diffused in water." Now that we are becoming so much alive to the necessity of having water at least mechanically pure, this filter presents the readiest means of accomplishing this most desirable object that we have yet seen. But although so easily applicable for a domestic supply, the patentee assures us that the extension of his principle on a large scale will entirely supersede the use of filtering beds, and be constructed and worked at less than one-half of the cost, irrespective of the saving of land which is now used by the water companies for that purpose.

BIRMINGHAM SOCIETY OF ARTISTS.—Sir Charles L. Eastlake has accepted the office of President of this association.

THE NEW BRIDGE AT BATTERSEA.—During the last few days from twenty to thirty men have been busily employed in sawing timber and preparing piles to sink in the river, preparatory to beginning operations for the erection of the proposed and long-talked of suspension-bridge between Chelsea and Battersea.

AN IMPROVED GAS-HOLDER, AND OXYHYDROGEN BLOW-PIPE.

The following economical apparatus, answering the double purpose of a gas-holder and an oxyhydrogen blow-pipe, has been successfully used, for some time, by the writer of this paper. In the annexed cut, *r* represents the gas receiver; *s*, a shelf which screws on at *b*; *e* and *e* stop-cocks, as in the ordinary gas-holder; *h*g, a jet filled with wire-gauze at the thick part, *h*; *p*, an aperture for receiving the beak of a retort; *nk*, a bent pipe passing into the interior of the receiver, *r*; *kt*, a flexible tube, which screws on at *k*, and forms a connection with a bladder containing the mixed gases; *f*, a funnel with a tube and stop-cock for screwing on at *k*. The tubular portion, *db*, is about $\frac{3}{4}$ inch internal diameter, and 2 inches in length. When the apparatus is to be used as an oxyhydrogen blow-pipe, water is introduced into the receiver, so as to stand at the level, *d*; the orifice at *b* is closed by means of a cork, and the bladder containing the mixed gases is screwed on at *k*; the safety-jet *h*g is screwed on the stop-cock *e*: upon pressure being applied to the bladder, the mixed gases rise through the water, and filling the space *d* b, pass out in a strong stream through the jet *g*, and are there ignited. This arrangement is perfectly safe, for in the event of the flame passing along the safety-tube *h*, we can only have an explosion of the gases contained in *d* b, the only effect of which would be to blow out the cork in the orifice *b*, as the large body of water in *r* most effectually cuts off all communication with the gases in the bladder. When the apparatus is to be used as a gas-holder, the shelf, *s*, is screwed on at *b*, the funnel, *f*, at *k*, and gases are received and transmitted in the same manner as in the ordinary gas-holder.

T. TATE.

WORKSOP TOWN HALL, CORN EXCHANGE, AND ASSEMBLY ROOM.

This building, now in progress, is situated in Potter-street, at the corner of Bridge-street. A wing on the right of the building will form the entrance to the sack-market, shambles, and general market, the entrance to which will be through a circular gateway 10 feet wide. The approach from the street to the level of the corn exchange will be by eight steps. Entering the corridor, on the right, will be a retiring-room, 20 feet by 14 feet, with dressing-rooms. On the left of a corridor will be a lobby. These are all on the same level with the corn exchange. From this corridor, through the vestibule, will be the entrance to the corn exchange, opposite to the centre archway. The exchange will be 58 feet long by 29 feet wide, and 19 feet high from the level of the floor to the floor of the assembly-room, which is over it, and of the same size. The exchange will be lighted by five windows on the east side, and four on the west. The ascent to the upper rooms will be by the principal staircase, which consists of thirty-one steps, up to the landing of the assembly-room. From the landing of the principal staircase, we pass on through a lobby to the vestibule and corridor, with a retiring-room attached. The assembly-room will be a large room, capable of holding 1,000 people standing, or about half that number conveniently seated. It will be lighted by five windows on each side, and there will be three fire-places, one on each side and one at the south end. The roof will form a segment of a circle. The assembly-room will be 20 feet 6 inches high in the centre. The orchestra, which will be at the entrance end, will be 21 feet 6 inches in extent, having four tiers of seats: the width of

the orchestra will be 12 feet 6 inches. Beyond the assembly-room will be the magistrates' retiring and refreshment-room: it will be lighted by two Venetian windows, one at each end. The ceiling of this room, as well as those of the corridor, vestibule, lobby, and ante-room, will consist of sunk panels and enriched cornices. Passing through the corn exchange we find the sack market: it will be 33 feet 6 inches in length, by 17 feet wide; beyond which, to the south, will be the butchers' shambles, which will comprise ten shops, five on each side, with a space between of 12 feet. This building will be octagonal, and will have a projecting roof, 13 feet 6 inches, for the convenience of the fruit, butter, vegetables, poultry, and earthenware market; and at the two extreme angles will be the fish market. Mr. Gilbert, of Nottingham, is the architect, Mr. Ferguson, the contractor, and the works are under the superintendence of Mr. Mallinson. The style of the elevation is Venetian. The ornamental terminations of the two archways (one on either side of the building) seem very unmeaning.

FOUL AIR IN WELLS.

I beg leave to communicate the following simple method of extracting carbonic acid gas from wells, which plan will, I believe, be found sufficient in all such cases as that alluded to by your "Seven Years' Subscriber."—Attach a gutta-percha or other pipe, reaching to the bottom of the well, to the valve of a common pair of blacksmith's bellows and blow away—or, in other words, pump it out.

As you invite suggestions for remedying this fruitful cause of the loss of many lives, I beg to offer a few remarks in addition to your own judicious observations. Your "Seven Years' Subscriber" says slacked lime was used as well as water. If the slacked lime was used dry, and the water separately, the wonder ceases that the bodies could not be extricated until the following day.

The lime should have been made into cream of lime, the more diluted the better, and thrown down in small quantities at a time, continuously, until a candle would burn.

A watering-pot is the best implement to use, as it secures minute dispersion, and the lime acts upon a larger area.

Chloride of lime, in the proportion of one pound of the dry powder to five gallons of water, well mixed, and used in the same manner, acts much more efficaciously than quick lime; and if there be any admixture of sulphuretted, carburetted, or any other combination of hydrogen, it secures the instant decomposition at the same time that the lime absorbs the carbonic acid gas.

I write from experience in destroying the inflammable gas and choke damp in coal-pits, and as the chloride of lime or common bleaching powder, is cheap, and to be bought at any chemist's, I hope some of your numerous subscribers will test it for themselves and report the results, which I have no doubt will confirm what I have stated.

P. B. P.

ANOTHER BRIDGE OVER THE NIAGARA FALLS.—We understand that the Niagara Suspension-bridge Company intend to erect, next season, a suspension foot-bridge across the Niagara river, between their present bridge and the Falls. The new bridge will be considerably longer, of course, than the present one, and the transit upon it will be one of the most agreeable adventures of visitors to the great cataract. The company will apply for a charter at the ensuing session of the Legislature.—*Rochester Advertiser.*

THE BRIDGEWATER-HOUSE GALLERY.—We hear with much gratification that the picture gallery in Bridgewater-house is to be completed forthwith, so that the collection may be opened to the public and foreign visitors during the Great Exhibition. As the scaffolding is only now being put up to begin the internal works, efforts will be needed to get done. We hope other owners of collections and fine mansions will take the hint thus afforded, and set their houses in order. England has wonderful collections of works of art, but too many of them are sealed.

SAFETY OF WINDSOR CASTLE.

SIR,—The "Dramatic Representations at Windsor Castle," by command of her Majesty, the preparations for which are confided to eminent members of the British stage, are again taking place. To this there seems only one objection, and that is, the total want of adaptation of any room or space within the Castle for such a representation, not even excepting (as stated) the Rubens' room.

Granting that the substructures of that room are capable of sustaining the additional pressure upon the walls and floors, the whole interior of the theatre must necessarily be formed of one mass of combustible materials, dependent for its light and heat (during the longest and perhaps coldest nights) entirely on artificial means: let but one spark of fire ignite, and such is the known construction of the building, that nothing in all human probability can possibly save the greater part of it from entire destruction—as was formerly the case at the Opera-house, the Pantheon, and most of the metropolitan theatres.

Let it not be understood that the exception is intended to be taken against the propriety of theatrical representations being provided for in a suitable building, and under proper restraint, during the residence of the Court at Windsor Castle: the object is, that the deficiency of a proper place may be supplied. It is to be hoped that the required structure may receive the immediate notice of the proper authorities, and thus provide against the possibility of a great national calamity.

WYKEHAM AND WYATVILLE.

WHY IS THE MARBLE ARCH AT CUMBERLAND-GATE.

THE "Marble Arch," which defaced so long the front of Buckingham Palace from ill-association with the building, being fairly floored, and lying piecemeal in an inclosure in the Green-park, the question, with great propriety, has been often asked, what to do with it. You are aware, Sir, that there is not a single important entrance-gate to Kensington-gardens, nor, properly speaking, an architectural object in these gardens, nor in Hyde-park; that which is pushed up in the corner, next to the Duke of Wellington's house, being, from its very situation, more an entrance into Piccadilly than belonging to the park, at which the many roads meet from various parts of the town and its environs, to enter that great thoroughfare of the metropolis. There is a fine broad vista, beautifully timbered on its either side, in Kensington-gardens, the further extremity of which is formed by the front facade of the Royal Palace, the other terminating at the brick "haw-haw" separating its gardens from Hyde-park, at the spot which constitutes the greatest altitude of the surrounding scene, and which termination is a void. Do not the very elevated nature of this point, and the other circumstances, indicate it to be an eminently appropriate site for the architectural structure in question, where, facing the front of the palace, and forming the central entrance to its grounds, it would admirably associate with use and with the beauty of the situation; and would require no further expense to the public purse, than the mere transit and readjustment of its several parts to their original places; as it would be perfect, for such a purpose, *per se*; and would constitute a prominent, commanding, and elegant object from all points of view: but, Sir, what do we hear?—that the road at Cumberland-gate has been turned from its usual line into Park-lane, where temporary gates have been placed; that the two excellent, light, iron gates, presented by Mr. Hope, and which were admirably adapted for the spot, and quite handsome enough for so awkward a nook, have been cast aside, and their site surrounded by an extensive hoarding, and that within it workmen are actually now employed preparing the ground for the foundation and subsequent erection of the Marble Arch—at this other poked-up corner of the park! Who could have suggested such an incongruity—such a blunder in the choice of situation? At this corner of the park, I should remark, Sir, as at the southern corner, there is situated a dual residence—odd coincidence!—that the present director of the "Woods and Forests" is the eldest son of

that ducal house—odd coincidence! And what a beautiful object the marble arch would be from the windows, at the north end of Park-lane—very odd coincidence! Yet, Sir, is that which is offensive to public good taste and public sound judgment to be permitted to be formed,—public opinion to be mocked, laughed at, and *off-handedly*, against them, the private whims and fancies of those in office to be carried out—all remonstrance to be *pooh-poohed*? Further, Sir, will the public tolerate the needless, and worse than wasteful, expenditure of many thousands which will be required of the public money, if the said marble arch be placed at Cumberland-gate. One gate being insufficient for the service of that thoroughfare at that entrance; and as the arch must, from the nature of its construction, either stand alone or form a centre, it follows that lateral gates must be raised of adequate architectural importance to correspond with the marble structure. An excuse may be, that her Majesty should pass under a series of arches in her passage from the palace to the dingy entrance of the Great Western Railway; but so truly ridiculous would the position be at the very end of the park, that should it be perpetrated, I can contemplate nothing less than, in similarity with the southern corner, they would throw the duke of the northern *porte* a pretty somersault, and place him on a cockhorse, too, and so complete the summit of the absurdity, and achieve the similitude of the two angles.

AN INHABITANT OF MAY-FAIR.

THE ART OF DESIGNING AND DECORATING.*

THE ancients were well aware that the perfection of art consists in combining, with the greatest possible effect, the useful with the pleasing—

“Omne tulit punctum qui miscuit dulci;”

and the studies of our artists and artisans should, therefore, be directed to imparting a useful purpose to articles of ornament, and an ornamental character to articles of use. The *Exposition* cannot fail to prove highly suggestive to them on this important subject. Whatever is *new* to them in the category of the beautiful will at once attract their attention; and on studying the peculiar characteristics of the work, in order to detect the secret by which the effect has been produced, they will, after a series of such observations, easily arrive at the conclusion, that the qualities required in a work which the artist aspires to have ranked in the order of the beautiful are very simple and few—namely, unity of designs, symmetry of parts, and harmonious colouring of the whole. Here, he will become master of the entire theory of the *science* of his art, just as the mathematician becomes master of the entire theory of the science of mechanics, as soon as he becomes thoroughly acquainted with the few and simple laws by which nature controls matter and motion. The progress which either of them, from this point, makes in practical knowledge, will depend upon their studying all that *has* been achieved or found out in their respective walks, and upon their capacity for improving upon the ideas or enlarging the discoveries of others. In the latter respect, Englishmen have generally shown a remarkable aptitude; and if, as regards the former, our artists and artisans have been deficient, the defect must be attributed, not to any inherent want of *application*, but to a haughty prejudice against being indebted to foreign rivals for instruction! As well might Herschel have disdained to glean anything from the researches of La Place, or La Place to have availed himself of the discoveries of Herschel! They did not act as if they were morbidly sensitive of being thought to owe anything to each other, but as reciprocal lights to each other in their common path, and both equally delighted and served mankind; indeed, amongst the MEN OF SCIENCE of different nations, there is no surly independence, no jealousy, no contempt, no fear of each other. This is owing to the constant and friendly intercourse and correspondence which they keep up with each other, by means of their several institutions for the advancement of science; and we have no doubt that, if *Industrial Expositions* also become general, they will soon infuse the same

spirit of philosophic fraternity into the *Men of Manufactures and Arts*.

We have been led into these remarks from perceiving a great deal of the old leaven of jealousy and hatred towards foreigners employed in this country, among different classes of our artisans, from a mistaken notion that the foreign workman is usurping the rights and privileges of an English workman, and not only depriving him of his rights, but also diminishing the amount of his wages, by the keen competition and superior skill which the foreigner, in certain special branches of industry, brings to bear upon him. Nor is this feeling confined exclusively to the workmen; it extends even to the masters, in several branches of trade and manufactures, and operates materially against that fusion of spirit and enterprise which alone can secure the general advancement and well-being of the working classes.

We find the feelings of jealousy and assumed contempt for the foreigner more particularly prevalent amongst decorators, designers, &c., therefore shall devote a few remarks to this branch of industry, with the view of showing, not only its injustice towards the foreign artisan, but also its folly as regards the interests of the English workman himself. The perfection of the art of designing, as we remarked at the commencement, is to combine a refined taste with unity of purpose; but little regard is frequently paid to this element of the art, so as to render the work produced at once pleasing to the eye and agreeable to the judgment. There is no lack of talent or imagination in England; but the designer too often travels away from his first conception, and wanders into any style which he thinks likely to produce additional effect, instead of pursuing his design truthfully and chastely.

They are the basis and the spirit of the art, and must be carefully studied by every one who would excel in it. The beauty of outline, which consists in correctness and congruity, is the acme of perfection in any drawing of an article of taste. But this is too frequently overlooked from an ambition to display a luxuriance of taste by a superfluity of ornament, which, while it is detrimental to the effect of the work, also renders it more costly than is advantageous even for the artists themselves.

Practice and perseverance are necessary to make a designer, but, after all, designing is a natural gift, in the same way as painters, poets, and composers, are gifted. A youth may be taught to draw, and copy the designs of his instructor, to perfection, but it is a different thing for him to produce an original design; still it is, as we have said, necessary even for a genius to perfect himself in the fundamental principles of his art, and when he has done so, the higher studies in design will become easy to him, and his conceptions will no longer be obscured by that unpleasant *embarras de richesses* which prevents the less accomplished designer from displaying his resources with the best effect.

The mistake of English designers is, that they do not follow out the order or style of design upon which they start. When once they have commenced they do not know when to leave off, but, after having made a good design, persist in encumbering it with fancied improvements, until the first and best idea is completely overlaid. Another misfortune is, that where the combined talents of two artists of different classes are required, they do not study, either by conspiring together to produce a harmonious design of the whole, or by the one adapting his ideas to those of the other, how to produce a *tout-ensemble* which shall at once strike the eye of taste as being perfect for its consistency, without which, though you may produce a stupendous effect, you never can produce a grand one. For instance, the internal appointments and fittings of an apartment should harmonize with its style of decoration; but in this country the upholsterer violates the design of the decorator, who has himself violated the design of the architect. The architect may have erected a mansion in the Gothic style, the decorator gives to the interior an air of the Saracenic, and then the upholsterer fits it up, perhaps, in the quaint style of the Elizabethan era. And to make the matter worse, perhaps neither of the three has strictly followed his own design, but has been prompted by a meretricious ambition of blend-

ing together as many of the leading features of the several styles in his art as possible. Hence, foreigners justly say that true elegance is rarely to be met with in this country.

The chief elements of design are correctness and purity of style. To attain correctness, each object must have the proper proportion assigned to it in the design which its uses and its nature suggest; and everything deserving the title of beautiful must be invested with an outline of definite character; and lastly, whatever style of ornament is commenced upon, that should be strictly adhered to. For instance, the styles of the *Renaissance* and *Louis XIV.* are both very chaste and beautiful, if religiously adhered to. In these cases the ornaments should be kept light, and symmetrically placed; but this is scarcely ever done correctly in this country, through a desire to do more than the styles will admit of, and thus overloading them with ornaments which are out of place. Besides what we have said of the harmony which should be preserved between the architecture, decoration, and furniture of a mansion, the harmony of colours should also be remembered. But this is frequently not the case, for you will find an extravagantly luxurious carpet destroying the whole effect of the other decorations, the pattern being much too large for it, the colours not corresponding in tints with the wall, the chairs quite lost upon it, and the curtains made to look insignificant. All this arises from a want of taste, either in the party who gives the order or in the man of business. Both are culpable in this matter. Monopolists, whose only object is to get business, have made great innovations upon all trades of taste; and the passion of our higher classes for foreign productions of former ages, burlis, tapestries, &c., have set every manufacturer to work to corrupt what taste we have, while the artist must administer to whatever may be the *penchant* of the employer. Hence the introduction of the *arabesque* into ordinary rooms, which is quite out of character, and destroys the effect of everything which is placed in connection with it. It is adapted, as it was intended, for no other purpose than entrance-halls, vestibules, staircases, &c.; and to apply it to other purposes, merely because it is a foreign style, is ridiculous.

Draftsmen and designers here should make themselves acquainted with the ideas and styles of foreign artists, who first taught us what variety ornamental style is capable of. To compete with them we must have a true School of Design, for it is not talent, but education, which is wanted to enable our artists to rival, and even outstrip, those of other countries. Those to whom the education of our aspiring artists is confided should be men possessing large views and great knowledge of the several branches of the art, and the education afforded should not be merely general, and therefore superficial, but the utmost care should be bestowed in perfecting the pupils in every particular department of the art for which they may show a special bias and aptitude. It is to be regretted that no such school has been established in this country as yet, although great improvements have been effected within the last ten years in this important branch of education, as Somerset House clearly testifies.

MUNIFICENCE BY STEALTH.—Twenty thousand francs in bank notes were lately found in the poor-box of the Hospital at Orleans, to which was joined a paper containing the following lines:—“My intention is that the sum of 20,000 francs be employed in completing the eastern gallery of the great court of the Hotel Dieu d’Orleans.”

RAILROAD TO CALIFORNIA.—Mr. Benton has introduced into the United States’ senate his Pacific railroad bill. A railroad, plank road, and common road for waggons and horses, with a foot path for pedestrians, are to be built from St. Louis to San Francisco by the federal government. Branch roads are to connect with Santa Fé and Oregon. The main road goes straight to the Pacific, and will be 1,600 miles long, with two branches—one to Santa Fé, 300 miles long, and the other to Oregon, 500 miles long. The grant of land is to be about 100 miles wide, and the whole amount of land to be granted for this purpose is about 150,000,000 acres.

* From “The Wealth of the World in its Workshops,” Chilton, London.

LONDON TAVERN SIGNS.*

HAVING lately commented upon the various emblems displayed by tradesmen as indicative of their business, perhaps a few further remarks relative to the origin and meaning of public-house signs may not prove uninteresting.

In the preface to the "Law of Drinking," keeping a public-house is called the trade of the ivy bush: the bush was a sign so very general, that probably from thence arose the proverb "good wine needs no bush," or indication as to where it was sold. In "Good Newes and Bad Newes," 1622, a host says—

"I rather will take down my bush and sign
Than live by means of riotous expense."

The ancient method of putting a bough of a tree upon anything, to signify that it was for disposal, is still exemplified by an old besom (or birch broom) being placed at the mast-head of a vessel that is intended for sale. In Dekker's "Wonderful Year," 1603, is the passage "Spied a bush at the end of a pole, the ancient badge of a country ale-house." And in Harris's Drunkard's Cup, p. 299, "Nay, if the house be not with an ivy bush let him have his tooles about him, nutmegs, rosemary, tobacco, with other the appurtenances, and he knows how of puddle ale to make a cup of English wine." From a passage in "Whimzies, or a new Cast of Characters," 1631, it would seem that signs in ale-houses succeeded birch poles.

It is usual in some counties, particularly Staffordshire, to hang a bush at the door of an ale-house, or mug house. Sir Thomas Browne considers that the human faces depicted on sign-boards, for the sun and moon, are relics of paganism, and that they originally meant Apollo and Diana. This has been noticed in Hudibras—

"Tell me but what's the nat'ral cause
Why on a sign no painter draws
The full moon ever, but the host."

Fosbroke says, that the Bell Savage is a strange corruption of the Queen of Sheba; the Bell Savage, of which the device was a savage man standing by a bell, is supposed to be derived from the French Belle Sauvage, on account of a beautiful savage having been once shown there; by others it is considered, with more probability, to have been so named in compliment to some ancient landlady of the celebrated inn upon Ludgate-hill, whose surname was Savage, as in the close rolls of the 31st year of the reign of Henry VI. is an entry of a grant of that inn to "John French, gentleman," and called "Savage's Ynne," alias the "Bell on the Hoof."

In Flecknoe's "Enigmatical Characters," 1665, in alluding to "your fanatic reformers," he says, "as for the signs, they have pretty well begun the reformation already, changing the sign of the Salvation of the Angel and our Lady into the Shouldier and Citizen, and the Catherine Wheel into the Cat and Wheel, so that there only wants their making the Dragon to kill St. George, and the Devil to tweak St. Dunstan by the nose to make the reformation complete. Such ridiculous work they make of their reformation, and so zealous are they against all mirth and jollity, as they would pluck down the sign of the Cat and Fiddle, too, if it durst but play so loud as they might hear it."

The sign "In God is our Hope" is still to be seen at a public-house on the western road between Cranford and Slough. Coryatt mentions the "Ave Maria," with verses, as the sign of an alehouse abroad, and a street where all the signs on one side were of birds. The "Swan with Two Nicks, or Necks," as it is commonly called, was so termed from the two nicks or marks, to make known that it was a swan of the Vintners' Company, the swans of that company having two semicircular pieces cut from the upper mandible of the swan, one on each side, which are called nicks. The origin of the "Bolt-in-Tun" is thus explained. The bolt was the arrow shot from a cross-bow, and the tun or barrel was used as the target, and in this device the bolt is painted sticking in the bung-hole. It appears not unreasonable to conclude, that hitting the bung was as great an object in crossbow shooting as it is to a member of a Toxophilite Club to strike the

target in the bull's eye. The sign of the "Three Loggerheads" is two grotesque wooden heads, with the inscription "Here we three Loggerheads be," the reader being the third. "The Honest Lawyer" is depicted at a beer-shop at Stepney; the device is a lawyer with his head under his arm, to prevent his telling lies.

"The Lamb and Lark" occurs at Keynsham, near Bath, also in Printing-house-lane, Blackfriars, and has reference to a well-known proverb that we should go to bed with the lamb and rise with the lark. "The Eagle and Child" is by some persons imagined to allude to Jupiter taking Ganyমেদ, but others suppose that it merely commemorates the fact of a child having been carried off by an eagle. "The Bull and Gate," which at first appears incomprehensible, is a corruption from Boulogne Gate, or one of the gates of Boulogne, and is said to have been so named in compliment to Henry the Eighth having taken that place in 1544; the "Bull and Mouth" also is considered to have a similar derivation, from mouth or harbour of Boulogne. The sign of the "Two Chairmen" was formerly not an unfrequent emblem in London, the public-houses bearing it being at that time much resorted to by the men who carried sedan-chairs; as the sign of the "Running Footman," in Charles-street, Berkeley-square, was probably patronised by that active but now extinct class of men, who are commemorated by Sir Walter Scott in his novel of the "Bride of Lammermoor." The "Pig and Whistle," a common sign in the north of England, is supposed to mean the elephant, the trunk of the animal being the whistle. The "Hog in Armour" is defined as the rhinoceros; the "Devil and the Bag of Nails," as Pan and the Bacchanals; the "Cat and Wheel," the Catherine wheel, on which St. Catherine was tortured; the "Goat and Compasses," a corruption of a sign of the Puritans, "God encompasseth us."

In the neighbourhood of the Fleet Prison, before the year 1753, a sign of two hands joined indicated a marriage-house, or a house in which Fleet marriages were celebrated similar to the Greta Green marriages. These places were not all public-houses. At some of them a person was stationed at the door to invite passers-by to come in and be married. They were about sixty in number. Fleet marriages were totally abolished by the passing of the Marriage Act in the twenty-sixth year of the reign of George the Second, and these register-books are now deposited in the registry of the Bishop of London.

G. J. RHODES.

LONDON THEATRES IN THE TIME OF CHARLES II.

"Mr. Urban" is becoming gallant and gay in his new youth; and in his 120th year has taken under his protection Nell Gwyn; whose house, by way, on the Park side of Pall Mall, now shelters the Society for the Propagation of the Gospel in Foreign Parts! The story of Nell Gwyn, commenced by Mr. P. Cunningham, in the *Gentleman's Magazine*,* is to be true throughout, and promises to present a curious picture of the age of Charles II. We take from the opening number a note of the London theatres.

"The King's Theatre (the stage on which Nell Gwyn performed), or 'The Theatre' as it was commonly called, stood in Drury-lane, on the site of the present building, and was the first theatre, as the present is the fourth, erected on the site. It was small, with few pretensions to architectural beauty, and was first opened on the 8th of April, 1663, when Nell was a girl of thirteen. The chief entrance was in Little Russell-street, not as now in Brydges-street. The stage was lighted with wax candles, on brass censers or cressets. The pit lay open to the weather for the sake of light, but was subsequently covered in with a glazed cupola, which however only imperfectly protected the audience, so that in stormy weather the house was thrown into disorder, and the people in the pit were fain to rise.

"The Duke's Theatre, commonly called 'The Opera,' from the nature of its performances, stood at the back of what is now the Royal College of Surgeons, in Portugal-row,

* The present number contains an admirable likeness of our late esteemed friend, Mr. Thomas Amoy, F.R.S.

on the south side of Lincoln's-inn-fields. It was originally a tennis-court, and, like its rival, was run up hurriedly to meet the wants of the age. The interior arrangements and accommodation were much the same as at Killigrew's house." As to the appointments, "the dresses at both houses were magnificent and costly, but little or no attention was paid to costume. The King, the Queen, the Duke, and several of the richer nobility, gave their coronation suits to the actors, and on extraordinary occasions a play was equipped at the expense of the King. Old court-dresses were contributed by the gentry, and birthday suits continued to be presented as late as the reign of George II. The scenery at the Duke's house was superior to the King's, for Davenant, who introduced the opera among us, introduced us at the same time to local and expensive scenery. Battles were no longer represented

'With four or five most vile and ragged foils,'

or coronations by a crown taken from a deal table by a single attendant."

EFFECT OF THE PAPER DUTY.*

MR. CHARLES KNIGHT has published a pamphlet in that lucid and convincing style which distinguishes his other efforts to spread abroad a knowledge of right principles, showing the effect of the duty in discouraging the production of good cheap works. In it he shows—

1. That the tax presses most unequally upon the fund for the remuneration of those who are labouring for the instruction and amusement of the people.

2. That this tax, which in its effects upon cheap literature is excessive, operates against the extension of the best English authorship, and interferes with the improvement of all the productions of the press.

3. That it diminishes the author's profits to the lowest point; and substitutes for useful English works invasions of foreign copyrights—or encourages the production of inferior and injurious works by unskilled labourers in literature.

With the craving for extreme cheapness amidst the great body of book-buyers,—and with the growing appreciation of what is really excellent in literature—of what is clear, condensed, imaginative, earnest, benevolent,—what prevents us having the noblest popular literature in the world? The inroads upon the labour-fund out of which the best authorship is to be supported. The State, which exacts a paper duty, and thus robs the capital which would otherwise go to the remuneration of literary industry, is the power which denies the popular writer his maintenance, or abridges his profits and limits his fame."

SELF-TAUGHT SCOTCH SCULPTORS.

In an obituary notice of the late sculptor James Thom, of Ayrshire, at page 250 o. v. viii., you mentioned as one of his work "Old Mortality." Allow me to suggest doubt as to the correctness of this part of the notice. In the year 1839 or 1840 the statue of "Old Mortality" reclining upon a grave ("through" stone) was exhibited in London, executed in a grayish sand-stone. If this be the work alluded to, it is the production, not of Thom, but of another self-taught artist, Corrie, of Dumfries. He is a native of the neighbourhood, and was bred a *whinstone* mason, but going to Dumfries, adopted the sandstone, which alone is worked there.

After exhibiting "Old Mortality," he was employed a good deal in making portrait busts, and executed also two figures in a similar style to "Old Mortality,"—Dominie Sampson and Meg Merrilees. "Gape, sinner, an' swallow." These were not nearly so successful as the first, and I am not aware that he has since produced any work in this style. He removed to Liverpool, but after a short time returned to Dumfries, where, I believe, he still practises.

It is worth while to notice a curious incident in connection with the history of the figure of "Old Mortality." It was disposed of by subscription, and on the day of "drawing" was

* The Case of the Authors as regards the Paper Duty, 90, Fleet-street, 1851.

* See Vol. viii. p. 625.

allotted to Mr. Sinclair, a surgeon in the army or navy, who, on the same day, was killed by being thrown from a gig; in the neighbourhood of Chatham, if I recollect right. His representatives presented it to the company who possess the Observatory in Dumfries; they erected to receive it an octagon temple, from a design by Mr. Grogan, of Manchester, and there it remains.

Dominie Sampson and his companion are deposited, I believe, in the grounds of Carlton House, Bogruie, near Kirkcudbright.

The sculpture in Burns's mausoleum (mentioned at page 413, last year) is a very poor affair by Turnerelli. Burns at the plough, and the Genius of Scotland hovering in the air, about to throw her mantle over him, in allusion to a passage in one of his letters. The incompleteness of the edifice, now proposed to be remedied, consists simply in the absence of four sarcophagi upon the entablature, one at each angle, over the coupled columns that project upon the diagonal of the square. That they will be any improvement is very questionable. By-the-bye, if you, or any of your readers, should have an hour to spare in going north, the churchyard in which this mausoleum stands is worth looking at,—a thing by itself, without a rival in its way; of monuments, from 1632 downwards, full, and many not without interest. W. R. C.

METROPOLITAN COMMISSION OF SEWERS.

At the last general court, Lord Ebrington stated, in reference to the sewer-accident at Scotland-yard, that the commissioners had not thought it their duty to give a copy of Mr. Forster's report, as it might affect the character of individuals, and possibly give rise to proceedings in a court of law.

On the recommendation of the committee that public conveniences be constructed in the Edgeware-road, in the New-road (opposite Trinity Church), and at St. John's Wood, being brought up, his lordship said the absence of public conveniences had been frequently impressed upon the attention of the commissioners by the commissioners of police, but that the greatest difficulty was experienced in the selection of eligible sites for the purpose, for no sooner was one proposed than the inhabitants raised the greatest objections to it. He thought, however, there was a very improper prejudice against them, as he believed the absence of them to be injurious to public health, and that a great deal of unreasonable clamour had been raised upon the subject, and the same difficulty had been experienced in the city of London. The recommendation was agreed to.

A report was presented by the secretary from Mr. Grant, the surveyor, sanctioned by Mr. Forster, the engineer, on the drainage of Peckham and its neighbourhood, the report stating that upwards of 400 square acres would be benefited by the proposed drainage. To meet the requirements of the district, he proposed that 10,935 feet of pipe sewers should be laid down in Rye-lane, Peckham, and its neighbourhood. It was proposed that the expense of the proposed works should be contributed by two-thirds of the district-rate and one-third by a special rate on the owners of the property. The estimated expense of the entire works was 1,700*l*. The committee recommended its adoption. Sir Henry de la Beche said it should be borne in mind that this outlay of 1,700*l*. was part and parcel of their plan for the drainage of the southern side of the Thames. The recommendation was then agreed to and ordered to be carried into effect; but the proportions of the expense were deferred for further consideration. In furtherance of the drainage of the southern side of the Thames, a report was presented from Mr. Cresy, recommending that 1,220 feet of 12-inch, and 9,310 feet of 9-inch pipe sewers be laid down in Lower Marsh, Lambeth, and neighbourhood, at an expense of 1,080*l*.; half of the same to be defrayed by the district, and half by a special rate on the owners of the property. The report was received, and the recommendations therein contained agreed to.

In reference to the Chancery suit, at the instance of Mr. Rains, for trespass in filling up open ditches at Bermondsey during the

prevalence of cholera, it was ordered that the solicitors defend the action on the part of the commission.

Mr. Peto announced that the stoppage of Parliament-street for sewer works was nearly at an end, as the street was about to be placed in the hands of the Regent-street Commissioners for macadamization. Sir John Burgoyne, in allusion to some remark about the name of the sewer through Victoria-street, said that no name had been given to the sewer at all.

Books.

Thirty Designs adapted for Civil Architecture.

By J. B. WAKING, M.I.B.A. London, 1850. 70, St. Martin's-lane.

These designs include cornices, string-courses, doors, and windows, and display both novelty and good taste, though the strait-laced will call them "mixed." Some of the arch-bands are adapted for moulded brick. As suggestions they will be found valuable, but in applying them skill would, of course, be necessary, to make the other parts conform and produce a sequence. They are lithographed, partly by the designer and partly by Mr. Macquoid, his coadjutor in the work on Spanish Architecture, to which we lately called attention.

The Dream Chintz. By the author of "A Trap to Catch a Sunbeam," &c.; with Illustrations by JAMES GODWIN. Wright, Pall-mall, 1851.

THE notion of a "Dream Chintz,"—a chintz designed from the recollections of a dream,—is a pretty one, whether it be true or not that a chintz so called some years ago did so originate. We would not advise designers to sit with folded hands till they dream a pattern, but we do advise them to be ever ready to take advantage of a suggestion, whether it be struck out while digging for it, or come of itself when the judgment be laid asleep with the body, and the imagination roams, a thousand miles a minute, wild and unrestrained. Notwithstanding this exordium, and the incident in question, the pretty book before us, and to which the latter gives a name, does not belong to industrial art, but to the affections and the conduct. It inculcates that to try and fail is better than not to try at all; combats despondency, and teaches that none who do their duty in the position in which they are placed live uselessly. Like preceding stories by the same writer (an amiable and gifted girl), it is the utterance of a pure heart and kindly spirit, and contains no sentiment which the author will wish to blot, when time and experience have matured her judgment and strengthened her powers for higher flights.

The illustrations by James Godwin, engraved chiefly by Dalziel and Mason Jackson, give evidence of ability, which we believe, as well as hope, will enable the artist, by perseverance and study, to take a good place in his profession.

The Builder's Price Book for 1851. By W. LANTON, Architect. London: Weale; Simpkin and Marshall.

THIS is the 28th edition, and has been corrected up to the present time. It is necessary parties should bear in mind that the prices allowed in this book are for materials and work of the best description.

We give a specimen of the memoranda with which the book commences:—

"To ascertain the value of timber per foot cube, when the prime cost is known. *Rule*—Add to the price at the yard 1*l*. per load, for sawing and carting, then multiply the number of pounds by 6*d*. which will give the price per foot cube, including 20 per cent. profit and waste.

Example.—If the prime cost at the yard be 7*l*. add 1*l*. for sawing and carting, which will make 8*l*.; this multiplied by 6*d*. will give 4*s*. 4*d*. per foot cube. If the prime cost have any odd shillings, take the proportion of 6*d*. for the same;—thus, if it be 5*s*. divide 6*d*. by 4, which will give 1*d*. and a fraction.

To ascertain the price of deals, when the price per C. is known. *Rule*—Multiply the number of pounds by 2*d*. or double it, which

will give the number of pence each deal is worth.

Example.—If deals be 40*l*. it will be 40*x* 2=80*d*. or 6*s*. 8*d*. per deal; and *vice versa*, if the price per deal be known, to ascertain the value per C. *Rule*—Reduce the value of the deal into pence, and divide by 2, will give the value in pounds, per C.

Example.—If the price of a deal be 6*s*. 9*d*. or 81*d*. it will be 81*÷* 2=40½, or 40*l*. 10*s*.

To ascertain the price per foot super. for deal, to include 20 per cent. profit, when the prime cost per C. delivered is given. *Rule*—Take 1*d*. for every 10*l*. or 1*d*. for 5*l*.; suppose deals be 35*l*. per C. inch deal will be 3½*d*. per foot; and if 40*l*. 4*d*. per foot—if for measured work add ½ for waste; and for any other thickness add or deduct 1*d*. per foot for every ½ of an inch variation up to 1½ inch, and above 1½ inch ¾*d*. for every ½ of an inch variation. Thus if inch deal be 4*d*. ½ inch will be 2*d*. ½ inch, 3*d*.; 1½ inch, 5*d*.; 2 inch, 6*d*.; 2 inch, 7½*d*.; 2½ inch, 9*d*.; and 3 inch, 10½*d*.

As, according to some teachers, architects make no calculations, and know nothing of thrusts and weights, even the following modicum of information may be useful!

Table showing the quantity of Stone and Marble equal to a ton weight:—

13 ft. cube of vein marble	Inches.
13½ statutory	70 ft. sup. 2½ York paving
13½ granite	58 3 ditto
14 Purbeck	68 2½ Purbeck do.
14½ Yorkshire	56 3 ditto
14½ Cragleith	54 3 granite
15 Portland	27 6 ditto
15 Derby	23 7 ditto curb.
16 Bath	

The Family Friend. Vol. III. Houlston and Stoneman, Paternoster-row.

THE praise we gave to the second volume of this miscellany is fully due to the third also. It is full of useful information and pleasant reading.

Who's Who, in 1851. London: Bailey, Brothers.

THIS is a pocket directory, of persons in positions of honour,—peers, members of the House of Commons, baronets, admirals, &c.

THE BUILDERS.

All the architects of fate,

Working in these walls of time;
Some with massive deeds and great,
Some with ornaments or rhyme.

Nothing useless is, or low,

Each thing in its place is best;
And what seems but idle show,
Strengthens and supports the rest.

For the structure that we raise,
Time is with materials fill'd;
Our to-days and yesterdays
Are the blocks with which we build.

Truly shape and fashion these;
Leave no yawning gaps between;
Think not, because no man sees,
Such things will remain unseen.

In the elder days of art,
Builders wrought with greatest care
Each minute and unseen part;
For the gods are everywhere.

Let us do our work as well,
Both the unseen and the seen;
Make the house where gods may dwell
Beautiful, entire, and clean.

Else our lives are incomplete,
Standing in these walls of time;
Broken stairways, where the feet
Stumble as they seek to climb.

Build to-day, then, strong and sure,
With a firm and ample base;
And ascending and secure
Shall to-morrow find its place.

Thus alone can we attain
To those turrets where the eye
Sees the world as one vast plain,
And one boundless reach of sky.

H. W. LONGFELLOW.

THE SANITARY QUESTION IN THE THEATRE.—In a bustling, novel, and amusing burlesque at the Adelphi Theatre, in the Strand, by Mr. Albert Smith, called *La Tarrantula*, full of pretty effects and Wrighto-Bedfordian fun, the struggle is made to lie between the demons of dirt and the bright spirits of cleanliness,—a sign of the times not without value.

Miscellaneous.

IMPROVEMENTS IN SLEEPERS, RAILS, AND MACHINERY.—Mr. James Samuel, C.E., has patented some improvements in the construction of railways and steam-engines, and in steam machinery. He claims the construction of longitudinal trough sleepers. Also the construction of metallic bearing plates or chair sleepers described. 2. The construction of fish-chairs described. 3. The modes of securing and construction of the ends of rails by scarf-points. 4. The corrugation of rail-bearing plates, either transverse or longitudinal. 5. The construction of hollow slide valves, with metal packings and springs, in the manner specified, in order to admit of the waste steam passing through the back of the valve. 6. The mode or modes of constructing such steam-engines as have two or more cylinders, working with their cranks at right angles to each other, or at about such angles, so that steam used for giving motion to the piston of one cylinder may be transferred to another, and used in giving motion to its piston, whereby a great degree of expansion is obtained. 7. The construction of small steam-engines or "donkeys," used for pumping water into the boilers of large engines, such engines having pump barrels, pistons, and plungers, such as described.

STATISTICS OF STEAM POWER IN FRANCE.—There are 5,607 manufactories in which steam machinery is employed. Of boilers, the number is 9,288, of which 8,776 were made in French establishments. These boilers represent a force of 65,120 horses' power, calculating the horse-power as 75 kilogrammes (180 lb.) raised one metre (1 yard) per second. They represent the available force of 195,361 draught horses and 1,367,530 labourers. The number of boilers employed in the preceding year was only 8,023, and only 4,033 establishments existed in which steam-power was used. The length of railway now open for traffic is 21,171 kilometres (13,000 miles), on which are employed 725 locomotives. The number of steam trading vessels is 279,—tonnage, 40,098 tons. They are propelled by 502 engines, constituting a total power of 22,893 horses. The merchandise transported by these vessels amounted to 780,948 tons. The progress of steam navigation in France is thus indicated: In 1835 there were 75 steamers, by which 1,038,916 passengers were carried, and 88,140 tons of merchandise; last year there were 279 steamers, 2,808,886 passengers, and 730,948 tons.—*Journal des Débats.*

OPENING OF A NEW BRIDGE AT ST. PETERSBURG.—The following is an extract from a letter dated "St. Petersburg, Nov. 22 (O.S.).—The new iron bridge over the Neva was opened yesterday by his Majesty in very simple guise. He met the merchants on the English quay, who approached him to return thanks for the construction of such a beautiful bridge. His Imperial Majesty turned, and pointed to the engineers (English and American), and said, 'These are the gentlemen you must thank. Now, gentlemen,' said he, 'let us walk over.' They were hanging back, not understanding they were to accompany him: perceiving which, he said, 'Come along, gentlemen.' And seeing that the crowd of workmen (thousands in number) were kept back, he waved his hand for them to come over also, when they rushed on *en masse*, like a drove of cattle, following and almost driving his good-natured Majesty, with his two sons, the few officers who accompanied him, and the merchants, before them. There was no music, no soldiers, *tout simple*. And the splendid bridge is now open to the public. It is brilliantly lighted with gas, and forms quite a beautiful promenade. Another superb bridge is to be immediately erected from the Litany to the Wiburg side of the Neva. Next November the Moscow railway will be finished."

THE AMERICAN METAL TRADE.—Accounts from the metal markets of the United States continue to represent holders as steadily exacting former rates, from which no decline could be obtained at New York. Rather large arrivals of Chilean copper had taken place, amounting to about 100,000 lbs. pig, and 400,000 lbs. in ingots, partially refined, but sold for consumption previous to arrival. The market for Scotch pig iron, though quiet, was firm at 19 dols. 75c. cash, and 29c. dols.

75c. six months. English bars were steady at 36 dols. six months, without transactions of importance. The sales also included 609 packs Russia sheet, and 250 tons Swedes, at 82 dols. 50c., though this price has since been refused. The imports into New York from 1st January to 1st December, were, in all, 52,778 tons bar, 41,458 tons pig, and 488,062 bundles; of which 51,532 tons bar, 38,022 tons pig, and 480,070 bundles, were from foreign ports. In the same period of 1849, the total imports were 47,372 tons pig, 63,664 tons bar, and 368,588 bundles. For American lead there was more inquiry.—*Daily News.*

It is generally believed that Congress will increase the duty on iron, and that some fluctuations in that article will consequently take place during the next two or three months. In America, in 1840, there were 115 works, and in 1850, 208, showing an increase of 93.

ELECTRO-TELEGRAPHIC PROGRESS.—Parliament is to be shortly applied to by various companies for the promotion of electro-telegraphic communication. The company for establishing the submarine telegraph between England and France propose to incorporate themselves by Act of Parliament. Capital to consist of 200,000 shares, of 1l. each, with power to borrow to the extent of one-third of the capital. Powers are proposed to be conferred to exercise exclusive right to lay down and use a system of electric printing and other telegraphs from the coast of England to France. In ten years Government to revise the regulations for protection and convenience of the public. The measure proposing to establish a submarine telegraph between Great Britain and Ireland contemplates the same amount of capital, and contains almost similar provisions. The European and American Electric Printing Telegraph Company is for the incorporating a company for the working of certain letters-patent granted to J. Brett, for exclusive use in Great Britain and its colonies for fourteen years,—capital to consist of shares of 5l. each, in 40,000 shares, with power to borrow one-third of the capital. The Magneto-Electric Telegraph Company seeks to be incorporated to work certain letters-patent granted in 1848 to W. T. Henley and D. G. Foster,—capital to consist of shares of 20l. each, in 25,000 shares, with power to borrow to the extent of one-third of the capital. The existing Electric Telegraph Company apply for a monetary amendment of their Act of 1846. The bill alleges that 600,000l. has been subscribed for, and a sum of 300,000l. paid on, the 6,000 shares.—Some successful experiments, it is said, have been made with the electric printing telegraph (the invention of Messrs. Brett, of Hanover-square) on the Admiralty line between London and Portsmouth. Messages were printed in a clear Roman type, requiring no transcribing, and being free from the possibility of mistake.—A correspondent of the *Times* complains, that last August, his child being dangerously ill in London, he made a telegraphic message from the station at Gosport to London of nine words: an answer was returned, consisting of twelve words. On these messages 1l. 4s. was charged and paid at Gosport, and 7s. 6d. of portage in London, making a total of 1l. 11s. 6d. Not finding it convenient within a month to apply for a reduction of such charges (quadruple those in America, as he remarks), the secretary intimated to him, when he did apply, that no redress could be had.

TRADE.—The hardware trade at Birmingham remains tolerably steady. In some few branches there is a trifling fall off in the orders, at the close of the year. All the great manufactories have orders enough to carry them on, and the men are working full time.—The *Globe* gives a selection of the items in the Russian tariff which came into effect on the 1st of January. With one or two trifling exceptions, every change is a reduction or abolition of duty; and some of these changes are of considerable importance to English producers. Besides the cotton and woollen manufactures, with which we have here less to do, we may specify machines, rough ironwork, tin-ware, earthenware, and glass. Upon these (all holding a prominent rank in our export trade to the Baltic) very important concessions have been made.—The Germans appear to be opening their eyes to the disadvantages of the continental policy adopted to exclude English iron

from their markets. A book on this subject, titled "The Iron Lever," is spoken of by a contemporary as recently translated from the German, and interesting, independently of the local interest of the subject treated, as showing the prevalence of Free Trade principles in the very nursery of manufacturing monopoly.—Apropos of the iron trade, we understand that the large works of Messrs. Stephenson are now fully occupied, and that they have extensive orders for locomotive, marine, and stationary engines, so as to require them to take on new hands.—Mr. H. Ferguson, of Glasgow, in his annual circular, recently sent us, says that, "notwithstanding the increased stock of pig-iron, the withdrawal from circulation of a large quantity of scrap has already very much reduced the available iron in the market; and, should the scrap system be permanently discontinued, there seems no reason to doubt that, when speculators have satisfied themselves with their dealings in pig-iron, the practice which obtained previous to storing and scrap having been adopted, will again be resumed. By latest advices from America (he adds), no measures had been taken to alter her tariff, and should no change take place in this respect, a good demand may be expected from that quarter; but the contrary should her legislature impose a high specific duty on imported foreign iron.

THE PEEL MONUMENT AT LIVERPOOL.—The original scheme of a monument of marble or bronze will shortly be carried out. Designs are being obtained. Great disappointment, however, has been felt by many who looked to Liverpool for something worthy of it in the shape of funds for a monument. If we mistake not, some 700l., made up in a few days at the outset, constitute the main amount of the subscriptions. It was afterwards thought that a proposal for the establishment of scholarships might meet with a more cordial support; but 5,000l. to 6,000l. would be required for these, and the result is a return to the original intention. It is yet hoped, however, that the rich and liberal merchants of Liverpool will not allow the design to be carried out at all, without rendering it worthy of the "princely liberality" for which they are renowned.

RESTORATION OF HEATHFIELD CHURCH.—A few months since a notice appeared in your paper respecting the state of Heathfield Church, in this neighbourhood, which was then in a most deplorable state. It will, I am sure, be gratifying to you to know that your notice was copied by the local journals, and produced a stir in the parish: the result has been that the church is now nearly restored, the north aisle has been rebuilt, the pews lowered and made new, the whitewash scraped from the internal columns and arches, the roof thoroughly repaired, new stone coping, and a new north porch, &c. The tower and spire are not yet done, but I believe it is the intention of the parish to rebuild the spire in the spring. This shows the value of a few words in *The Builder*.—CLIO, Uckfield.

THE CANALS AND WATER-SUPPLY.—Is it not worth while calling the attention of some of your numerous engineering, building, or other enterprising readers, to the now almost useless canals? Surely they may make some fortunes yet. I am a proprietor of the Basingstoke canal shares. There is about thirty-miles of water-way, with a considerable fall towards London, and it is in the vicinity of the spot chosen by certain authorities as the best locality for supplying London with water. At present, as a canal, it is almost useless, and affords a fair chance for any project to convert it to other purposes.—DAVID SINGLEHEART.

PATENT WHITE LEAD.—On New Year's-day, Mr. H. L. Pattinson, and his partners of the Washington Chemical Company, commenced the manufacture of white lead by his patent process. A numerous party witnessed the grinding of lead ore, and its subsequent transmutation (*without being smelted*) into a colourless liquid. On the mixture of this liquid with another, equally colourless, white lead of brilliant purity was produced. The manufactory is entirely free from noisome smell, although a gas is generated in the process, which, if liberated, would prove highly deleterious, but which is imprisoned and converted into a valuable article of commerce.—*Correspondent of Gateshead Observer.*

THE BUILDER.

STAFFORD EXCHANGE COMPETITION.—I cannot restrain my indignation when I see such advertisements in *THE BUILDER* as the one this week from the provisional committee of the Stafford Exchange, &c., which offers the astounding sum of 20*l.* to the successful architect who is foolish enough to waste his time on such a competition. Here they require post-offices, offices of inland revenue, savings bank, news and reading room, a large room for library, committee-rooms, an institute of five rooms, a lecture hall for 800 people, a superintendent's house and offices, the time to prepare which would, at the lowest estimate, take four weeks of intense application, saying nothing of the preparatory studies the architect has had to go through. Do they imagine that we can live on the honour accruing from obtaining the prize of being the chosen tool of such honourable generous men as those on the Stafford provisional committee? When are these things to cease? All honour be given to your paper, which has ever exposed such proceedings. Accept my thanks for your advocacy of the architect's rights and necessities.—P.

A LEARNED EX-CARPENTER.—An interesting sketch is given in the *Albany Dutchman*, a paper published in Albany, State of New York, of a Mr. John Paterson, a native of New Jersey, originally a carpenter, but afterwards, successively, a clerk, bookseller, druggist, &c., and finally a printer. Mr. Paterson, though thus kicked about the new world like an old foot-ball, or like "the rolling stone" which "gathers no moss," unlike the latter type of a worthless life, appears to have managed, more like the snow-ball which rolls into an avalanche, to gather an immense amount of learning, the usual fruit of sedentary and studious habit, and even at the same time, like a true American, to collect some little cash, wherever to salt his attic lore. "Mr. Paterson," says our authority, "is a scholar in every sense of the term. He is not only thoroughly versed in every branch of mathematics, but can read and write Greek, Latin, Hebrew, and Arabic, with as much ease and fluency as he can English. In the different living languages he is equally well posted up, and is probably the only man on earth who can converse in every language spoken in Europe. His great work, 'The Calculus of Operations,' has just issued from the press, and is, in the opinion of scientific men, one of the most profound productions that the mathematical world has yet given to society. With no aid but industry, and no higher salary than that which is bestowed on a journeyman printer, Mr. Paterson has become not only thoroughly acquainted with every department of human knowledge, but has acquired a handsome little property, and owns one of the best select libraries in the city. The latter contains some 3,000 volumes, while its estimated worth is 6,000 dollars. In our opinion" finally "calculates" the *Albany Dutchman*, with all the phlegmatic coolness of his tribe, "nature will produce a half-dozen Shakespeares before she produces another man whose acquisitions will compare with those belonging to this modest, unpretending printer."

LIABILITY TO WORKMEN FOR INJURIES SUSTAINED.—In the Sheriff's Small Debt Court at Glasgow, an action was lately brought at the instance of a labourer against his employers, Mr. William Broom, builder, and Messrs. Thomas Lamb and Sons, wrights and joiners, "for damage sustained by him in consequence of the carelessness or neglect of one or other of the defendants, or their servants, in the erection of a building in or near Port-Dundas, whereby the sum of 3*l.* 15*s.* was incurred, viz. for doctor's attendance, 15*s.*, and 3*l.* for wages, being at the rate of 12*s.* per week." The defendants pleaded ignorance of the cause of the accident, on which the pursuer led evidence, showing how the accident occurred, viz. from the falling of a piece of wood or other part of a scaffolding, which had not been properly secured. The sheriff found the foreman of Mr. Broom liable for the amount sued for, on the ground that it was his duty, or that of his employers, for the protection and safety of the lives of the workmen under them, to see that the buildings or other fixtures were in a proper and safe condition previous to their operatives proceeding to work upon the same.

ARCHITECTURAL SOCIETY OF ARCHDEACONRY OF NORTHAMPTON.—At the last meeting of the committee, L. Christie, esq., and subsequently the Marquess of Northampton in the chair, it was stated that plans for the restoration of Wellingborough, Wilby, Ashwell, and South Luffenham churches were in preparation, and would be submitted for the inspection of the committee. From letters of the Rev. J. P. Lowe, secretary of the Lincolnshire Architectural Society, it appeared the forthcoming joint volume of Reports and Papers would be issued early in this year. The societies of Yorkshire, Lincolnshire, Bedfordshire, and St. Albans, have now joined the society of this archdeaconry, for the purposes of the associated volume, which, besides the reports, will contain the chief papers of interest read at the meetings of the several societies during the last two years, accompanied with a large number of illustrations. This volume will be sent gratis to every member. Its circulation will amount to 1,250. The Marquess of Northampton called the attention of the committee to the proposed Exhibition of Mediæval Art, in London, during the ensuing year. A St. Peter's Committee was then formed, when a financial statement was made, showing that their funds already exceeded the sum required for the extension of the chancel, though the committee have still to depend on the liberality of the public to enable them to carry out their original design of a complete re-arrangement of the interior fittings.

A SUGGESTION FOR THE SOCIETY OF ARTISTS.—We wish we could persuade the members of this society to open the doors to the working classes for a fortnight, before the final close of each season; and to begin at once. We are firmly impressed with the conviction that by so doing they would give an incalculable amount of pleasure to many an individual whose sensibilities are as acute as those of his richer fellows, who has a love of the beautiful none the less pure because it is not educated, and to whom the sight of such a collection of pictures as that in the Society of Artists would be the realisation of a day dream, a fund of enjoyment that might make plain many of the rough places of life. If precedent be wanted for such a step, we point to Manchester, where throughout a considerable portion of the season the working classes are admitted on Saturdays, at a charge of two-pence. In Liverpool, the rooms are open during the evenings of the last fortnight, at the same price. We have made inquiries as to the result of the arrangement, and we find that none of the pictures have suffered, the funds have been benefited, and much elevating pleasure communicated to thousands who else would have been excluded from this feast, prepared for the rich man's palate alone. It may be contended that sixpence is a small sum to give for such a gratification, and so it is. But we want the working man to be accompanied by his wife and family. In such circumstances, the small individual charge becomes prohibitory in the aggregate.—*Birmingham Journal*.

PORTRAITS OF DISTINGUISHED CHEMISTS.—Mr. Mayall, the American Daguerreotypist, has recently issued a print representing Messrs. Brande, Miller, Faraday, Grove, and Graham, executed on stone, from daguerreotypes made by him. The likenesses are undeniable and will interest a large number of persons, though the lithographer, M. Shappers, has given a certain ghastly appearance to Faraday which will not please those who know the sparkle of his eye, and playful vivacity. The likeness of Brande is particularly excellent. We have since seen some daguerreotypes of other eminent men by Mr. Mayall, which are certainly amongst the finest productions of the process that have yet come under our notice.

STREET ARCHITECTURE IN PLYMOUTH.—In one of the principal streets of Plymouth, last week, a number of workmen, under the protection of a party of police, by direction of the clerk to the Commissioners of Improvement, pulled down a newly-erected shop front, in consequence of the proprietor having persisted in building it 18 inches farther out over the street than was agreeable to the law. The proprietor, who had been cautioned again and again, although sorely annoyed, was obliged to submit.

SPIRIOUS RELICS IN HOLYROOD PALACE.—At a late meeting of the Scottish Society of Antiquaries, Mr. Daniel Wilson, the secretary, read a paper, entitled, "Notices of certain Popular Relics of Queen Mary in Holyrood Palace," in which he deprecated the pitiful show of pretended relics, especially of Queen Mary's reign, exhibited by the housekeeper and her assistants. "The presence chamber, with its adjacent closets, are the grand arena of the show. Here we are shown the first fire grate ever known in Scotland, brought hither, of course, by Queen Mary, and marvellously like various others in adjoining apartments. Here too is the double chair or throne expressly made for the marriage of Queen Mary and Darnley; though by a singular and no doubt economical foresight the royal upholsterers have wrought on the Queen's throne the cypher of her grandson Charles, and of his Queen Henrietta Maria! Round this remarkable centre-piece a pleasant variety of rickety old furniture is grouped, such as one may occasionally see at a broker's door in the Cowgate. Some of these also have the anticipatory cypher; while the uninitiated would be apt to ascribe others to the reign of the Georges. They are all genuine and authenticated Queen Mary relics. Prints in little slips of black, some with broken glasses, more with no glasses at all, but begrimed and worm-eaten, and even in tatters, help to carry out the idea of a Cowgate broker's shop," &c. &c. Something ought to be done to redeem actual relics, of so abiding an interest, from that contempt into which they are sinking, while confounded with glaring and obvious impostures.

APPROPRIATION AND MISAPPROPRIATION OF RAILWAY ARCHES.—It is some time since we first suggested the appropriation of the cavities of terminus and other railway arches as sheltering places, under police supervision, for the houseless, and we had hoped that ere now none of such vaults or cavities would have been left for misappropriation, such as that disclosed in a recent paragraph in the daily papers on the "extraordinary discovery of a den of thieves" in one of those under the terminus of the London and South-Western Railway, in the York-road, Lambeth. There, it appears, some "Twenty Thieves," as they call themselves, have dug a narrow hole through one of the archway walls, and secretly "appropriated" the interior as a den of vice, to which simple and innocent youths have been inveigled, probably by the very romance of the thing, and where a sort of domestic cooking and lodging establishment has been discovered by the police, through the instrumentality of one of these youths, who had been initiated into the art and mystery of thieving, in this den of the twenty thieves.

RENT GUARANTEE SOCIETY.—A prospectus has been issued, with list of office-bearers, &c., by a society, incorporated under Act 7 & 8 Vict. cap. 110, for the purpose of securing to landlords the punctual payment of their rents by a certain day, in return for a moderate commission for collection and guarantee, thus placing incomes derivable from house property on a footing of certainty. Starting as such an application of the principle of assurance may at first sight seem to be, there cannot be a doubt that, if based on sound calculations, and carried out with commercial discretion and integrity, it at least promises well.

IMPROVEMENT OF BANKING HOUSES.—In connection with the Exhibition, the *Banker's Magazine* states that Mr. J. W. Gilbert offers a prize of 100*l.* for the best essay in reply to the following question:—"In what way can any of the articles collected at the Industrial Exhibition of 1851 be rendered especially serviceable to the interests of practical banking?" "These articles," it is explained, "may be architectural models that may suggest improvements in the bank-house or office—inventions by which light, heat, and ventilation may be secured, so as to promote the health and comfort of the bank clerks—discoveries in the fine arts, by which the interior of a bank may be decorated, or the bank furniture rendered more commodious,—new inventions in the construction of locks, cash boxes, and safes, which shall render property more secure against fire or thieves."

THE BUILDER

TEMPLE CHURCH, LONDON.—The *Globe* quotes from a contemporary correspondence the following extract as to the air of this church:—"Exhalations from a churchyard in the open air are bad enough, but when the corruptions of the grave emit themselves directly into the church it is infinitely worse. These are the facts from an eye-witness. The Benchers' vault is under the Master's garden, but the entrance to it is from the church, which is divided from it only by a door. The door has a key-hole, and over it there is a piece of iron, which, when the key is out, is, of course, over the hole. That part of the iron which faces the hole is covered with a rich black coat of stuff like tar or shell varnish, which exudes from the dead Benchers inside, and must, of course, also escape into the church. *Persons are constantly fainting during the service, owing, doubtless, to this nuisance; and a friend of mine, a member of the Inn, never enters the church, because he always feels there a fullness of blood about the head—a sensation which I have also experienced from the same cause.* This is really too bad; and I should have addressed you before this, but I had forgotten to do so, and was only reminded of it this day by hearing the bell toll for, I suppose, another addition to this legal charnel-house, which ought not only to be closed, but filled up with chalk and lime."

SUBSTITUTE FOR THE MARINE GLUE.—An excellent transparent substance, well adapted to replace the marine glue of Jeffrey for many purposes, particularly where a transparent joint is required, as in the union of pieces of glass, invented by Mr. S. Lenher, Philadelphia, was exhibited at the monthly meeting of the Franklin Institute (September 8, 1850), and its properties explained. From its transparency, it was suggested by the chairman, Mr. G. W. Smith, as admirably adapted for the union of the parts of polyzonal lenses and rings. Small glass boxes, for containing microscopic objects, united by it, were shown, and gave much satisfaction. The composition of the cement is as follows:—Caoutchouc 15 grains, chloroform 2 ounces, mastic half an ounce. The two first-named ingredients are to be first mixed: after the gum is dissolved the mastic is added, and the whole allowed to macerate for a week, which is about the time required for the solution of the mastic in the cold. More of the caoutchouc may be added where great elasticity is desirable. The convenience of its application with a brush, cold, recommends it for approval. —*Franklin Journal.*

FIRST CONTRIBUTION TO THE SCOTCH NATIONAL GALLERY.—The first donation to the Edinburgh National Gallery was received a few days since from Mr. Wardrop, of London. It consists of a picture by Vandermuller, and the "Beheading of John the Baptist," by Domenichino Neri.

EFFECT OF PATENT LAWS.—POOR INVENTORS.—With reference to "W. L. E." suggestion for an economic water-closet, if it were not for the unjust extortions of the patent laws, the public could be supplied with one much more simple and considerably less expensive than any one now in use, requiring no cistern, or wires, cranks, stop-cocks, or other expensive fittings, the whole being complete within itself. But as the inventor is only a mechanic, and has not the means to pay fees required under the patent laws, so as to secure some trifling remuneration for his labour, it cannot be brought out.—A PLUMBER.

MANUFACTURE OF "BATH BRICKS."—At a conversation of the Somersetshire Archaeological Society, held last month, in Taunton, Mr. W. Baker read a paper on the deposits of the river Parrett. He dwelt on the economical advantages presented by them, remarking there were made from them 8,000,000 bricks every year, the value of which at present amounted to 12,000*l.* or 13,000*l.* The number of persons employed was very great. Sometimes a man, his wife, and four or five children, were kept at work at one moulding, and thus they could often get as much as 2*l.* per week. This deposit was not found anywhere in the world besides, so that Bridgewater had to furnish the whole world with it; and it was remarkable that these "Bath bricks" were just as well known in China as in England. They were known in India, and all over the world.

GREENWICH-PARK.—Without doubt you as well as myself have been in Greenwich-park, and have walked from the Observatory to Blackheath, and have seen the unsightly old brick wall that parts the park from Blackheath, with a pair of gloomy gates for a grand entrance. We are promised this year a visit from all the civilised nations on the earth, and some will, I think, visit the pet park of the Cockney, and will wonder why that wall is not removed : it is no ornament and no use, save to help form a rabbit warren. Now, Sir, as rabbits are cheap enough, let them be destroyed, the wall pulled partly down and sold, and a light iron railing put in its place, which will greatly improve the place.—F. W.

THE TAMWORTH PEEL TESTIMONIAL.—The Tamworth committee for erecting a testimonial to the late Sir R. Peel have finally settled to have a bronze statue erected on a pedestal in the centre of the Market-place, at the cost, with railings, &c. of 1,000*l*.

BRISTOL SOCIETY OF ARCHITECTS.—A meeting was held by this society on the evening of Monday, the 6th inst., when a paper was read by Mr. Bindon on the Dilapidated Remains of Ecclesiastical Architecture in Bristol. A conversation afterwards took place, by the fellows of the society present, on the Exhibition Building, and its construction was commented on by them and many of the builders present.

THE FITZWILLIAM MUSEUM, CAMBRIDGE.—It is pleasing to see the troops of people who avail themselves of the liberality of the University by visiting the Fitzwilliam Museum upon the two open days in the week, and more especially upon the Saturdays, when the town is filled with inhabitants of the country. No less than 46,273 have visited this noble building during the past year.

TO CORRESPONDENTS.

The Line of Frieze in Entablatures.—In the entablature of a building where the architrave, frieze, and cornice are used, the architrave having one or more fascias, is it usual to place the line of frieze directly over any of these fascias, and in advance of the line of wall below? If so, where are the examples to be found?

It is not usual, but instances of such an arrangement are not wanting. In Greek architecture, the Temple of Jupiter Olympus affords an example.

"J. P. C." "Milo." "W. G. C." "W. M. C." "Mr. C." "W. J. C." "W. G. C." "W. G. C." "Mr. Coseley." "R. T." (there is no institution in London that would be available), "J. P. A." "Young Lady." "C. M." "Double X." "J. P. C." (thanks, but not desired), "A. Z. Z." (need not take notice), "W. G. C." (not a name), "W. G. C." "S. H." "Hater of Humburg." "W. P." "Putney (Portland cement is very variable. Some of it is not worth the oak that holds it)." "King's Arms." "Westminster (C. is right), but the name of the building is not a proper one for the ingredients mix indefinitely, but the result is not to be made more freely than the others, and a good coating still got." "C. H." ("we are not willing to aid in blocking up the river") "C. H." (gives no information). The application of electricity to the water is not a new thing, but it has been made, "A Student of the Society," "J. W. W." "W. J. W." "W. R. C." (next week). "P. D." "Gosport (we believe common putty is used. Each pane is clipped by the assistant, and the pane is then placed in the frame.) "Jonathan" (the "Royal Society" sell No. 2 catalogues; to what society does he allude?). "A. P. C." "J. G. D." "C. B. S." (the "Museum" has not reached us), "J. B. C."

"*Books and Addresses.*"—We have not time to point out books or find addresses.

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ADVERTISEM

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NOTICE IS HEREBY GIVEN, that the Examiners appointed by and in pursuance of the Metropolitan Buildings Act will hold their next Examination of persons desirous to obtain a Certificate of Fitness for the Office of District Surveyor on Thursday, the 1st day of January instant.
Persons desirous to be examined must apply on or before the 15th day of December, 1970, to the Examiners, at the Metropolitan Buildings Building, to receive the names of examinees to be presented to the Examiners at the examination to be held on Thursday, the 1st day of January, 1971, at which time the rules for that purpose, copies of which, and any other information, may be obtained from the Examiners, or at Mr. W. F. WALLS, Registrar, 100 R. A. Adams Building, 51 Hudson Street.
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the principal French and foreign architects.

By JULES GAILHABAUD.

This remarkable work will consist of five parts, to be 32 plates, plain or coloured, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834

The Builder.

No. CCCCXV.

SATURDAY, JANUARY 18, 1851.

IO please some of our readers, who tell us they like gossip, and have no time for long disquisitions, we begin our present number with a dish of it—a paper of paragraphs, the first of which shall be to set us right with some few of our subscribers, who complain that they did not receive the promised view of the Interior of the Exhibition Building with our first number for the new year. They must transfer their reproaches to their respective newsmen: the view accompanied every copy that left our office, and should have reached them in due course. It has given us pleasure to receive from all sides kindly acknowledgments for the manner in which our promises were redeemed. We may add that the number has been reprinted, and, with the view of the building in Hyde-park, may still be obtained by those who desire it.

The executive committee have taken possession of that building (although still unfinished), and have issued cards to the various metropolitan local commissioners, inviting them to assist in the arrangement of the Exhibition. It appears that the productions of the United Kingdom and the British colonies will be grouped westward of the central transept. The productions of each colony will be placed together, and classified as far as practicable into thirty classes. The productions of each foreign country will be placed together eastward of the transept, except machinery in motion, which, on account of the motive power being at the north-west end of the building, will be placed in that part of the building. The productions of each country will be classified, nation by nation, and, as far as practicable, into the thirty classes adopted for the united kingdom. We may add that, as a general rule, machinery will be placed at the north side, and raw materials and produce brought to the south side of the building. The intermediate parts will be occupied by manufactures and fine arts.

The Commissioners have undertaken to provide steam gratuitously for exhibitors, not exceeding 30 lbs. per inch, and to supply water at a high pressure. The allotments will now be made.* We grieve for many applicants who have been refused because they were unable to show what they intended to exhibit, and, as we think it likely that many to whom space has been granted will not wholly occupy it, we would recommend to the former a second application, asking to have their claim reconsidered, in the event of room being available,—more especially if they can make wall-space suit their purpose.†—How the multitudes who will visit London on this occasion are to

be lodged, is still a question. That the number will be enormous no one now doubts, although few even yet realise what we expect will be the truth. Three months ago when we asserted our belief, in private society, that two millions of persons would pass through the Exhibition, the notion was derided by some of the warmest supporters of the project, but the increasing experience of every day leads us to believe that we were under rather than over the mark. The executive committee have stated, in reply to inquiries, that they do not intend “to find lodging for persons visiting the Exhibition, or to interfere with individual enterprise,” and they recommend the employment of some London agents to secure the accommodation that may be required. Mr. Lahee, the well-known agent, of Bond-street, has put himself into communication with the provincial commissioners and some of the foreign states, and taken other large means of assisting effectually in this matter. We will venture to say to such of our foreign readers as may need assistance in this respect that they cannot be in safer hands.—We continue to receive letters from poor inventors asserting that the want of means for obtaining protection for their inventions will prevent them from exhibiting. One states that “were it not for the expense of obtaining protection he could place it in the power of the public to make their own gas on the table by a machine like a common table lamp, giving, without attention, a light of great brilliancy and purity at one-third the expense of coal gas: that the lamp requires no preparatory heating, has only to be turned on and lighted, and could be sold at about the same price as an ordinary table lamp.” How true this may be we cannot say; but such are the statements we receive. It is asserted that her Majesty’s Government intend to bring in a Bill for the purpose of protecting from piracy inventions, &c., not already protected by the Designs Act of last year; and we hope the report is correct. That there will be change in our patent laws seems quite certain.

Something has been said about allowing the erection of places of amusement in the Park, but we hope this will not be listened to. There should be nothing outside the building to induce the idle to resort there: the crowd will be quite sufficient without that, as any one may prove by walking to the park even now on a fine Sunday. Light bridges over the road, for the sake of pedestrians, will be found necessary.

In connection with this matter, we are glad to be able to re-assure several correspondents, on the subject of the building now being erected on the piece of ground on the west side of the large house at Albert-gate,—who have been led, by the rumours of Batty’s Circus, monster kitchens, &c. &c. for the grand year, to fear all sorts of noisy things in this new building. They may dismiss their alarm, however: the structure is intended to accommodate the Chinese Exhibition, as quiet and inoffensive an appropriation as they could possibly hope for.

A fine model of the exhibition building, of large size, has been made by Mr. Deighton, and will

Helen’s. It will be piground on the upper surface, to give it the appearance of waves, the under part to be polished and silvered, so as to reflect the objects by which it will be overshadowed. No fewer than 1,500 “model vessels” are in course of construction. There will, we understand, be 120 steam-vessels, large and small. Another feature in the model will be the figures in the streets, which will include cabs, omnibuses, and other vehicles. The men and horses are cut out of cardboard, and are exceedingly perfect, when we take into account their minuteness; a man being no larger than the extremity of a fine pen’s point. The tympanum of the pediment, instead of having figures carved in relief, as was at first proposed, will be filled with stained glass, having the royal arms depicted on the centre. The effect will be very rich. Beneath the arms will be the words, “The Port of Liverpool,” and on scrolls round the case appropriate mottoes will be introduced.

have a place in the Exhibition.—To descend from great things to small, we will mention the pleasure with which we saw the other day another model of the same building, by John Trumble, a working man employed in the machine-room department of the printing-office of Messrs. Cox and Wyman, made wholly in his leisure time, brief as this is, from the drawings and descriptions which have appeared in THE BUILDER. It is about 4 feet long, and speaks well for his ingenuity and industry. Some of our readers who say they have “no time” to improve themselves, might take a lesson from him. How much time do most of us waste, even the industrious of us, and that chiefly through not varying our labour. Hazlitt says, with truth,—“It is wonderful how much is done in a short space, provided we set about it properly, and give our minds wholly to it. Let every one devote himself to any art or science ever so strenuously, and he will still have leisure to make considerable progress in half-a-dozen other acquirements. Leonardo da Vinci was a mathematician, a musician, a poet, and an anatomist, besides being one of the greatest painters of his age. Michaelangelo was a prodigy of versatility of talent—a writer of sonnets (which Wordsworth thought worthy of translating), and the friend of Dante. All our real labour lies in a nut-shell. The mind makes, at some period or other, one Herculean effort, and the rest is mechanical. We have to climb a steep and narrow precipice at first; but after that the way is broad and easy, where we drive several accomplishments abreast.”

A man now-a-days must have something of the steam-engine in him. We found a sentence in an American paper the other day to the same effect,—coarse, but not without force. “A lazy, snail-paced chap,” said the writer, “might have got on in the world fifty years ago, but he won’t do these times. We live in an age of quick ideas: men think quick—speak quick—and slow coaches ain’t tolerated. ‘Be up and dressed’ always—not gaping and rubbing your eyes, as if you were half asleep, but wide awake for whatever may turn up, and you may be somebody before you die. Think, plan, reflect as much as you please before you act; but think quickly and closely, and when you have fixed your eyes to an object spring to the mark at once.”

We must take care, however, that the mark be a good one: merely “to get on in the world” is not the right motive.

We should be glad to see English sculpture show well at the Exhibition, and hope care will be taken to obtain a proper light for all the specimens sent. In its highest form,—the ideal,—we fear we shall not come off satisfactorily. Sincerely, we hope we may be wrong.—The models, seventeen in number, which have been sent in by nine eminent sculptors, for the Manchester memorial to Sir Robert Peel, are now under consideration. It was decided that only one member of the committee should know the names of the competitors, and the task of ascertaining these was confided to the Bishop of Manchester: it is the intention of the committee that all the unsuccessful models shall be returned to their authors, without the name of any one becoming known in connection with the sending in of a model. All this, however, practically, will go for nothing. It is to be hoped, as we urged to members of the committee some time ago, that they will call in some men of known taste and knowledge of the subject to aid them in the decision. The models are at present visible to the committee

* There will be a central passage down the building, 48 feet wide; a corridor at the north and south side, each 12 feet wide, and two intermediate passages, of 8 feet, all running from the east to the west end of the building. As a general rule, these will be intersected by passages at right angles, running from north to south.

† The model of Liverpool, which is to figure amongst the contributions from that town, is fast approaching to completion, twenty-four hands being engaged on it, including some young women, who are employed to execute the lighter work in connexion with the shipping. The size of the model has been extended some twenty square feet, so as to take in more of the town, the principal parts of which will be depicted. Mr. Granttham, Mr. Raffles Brown, and Mr. David Graham are the parties more immediately engaged upon it. The *Adlon* says considerable trouble has been gone to to produce the effect of water. The material to be used is glass, the manufacture of St.

only, but after the 24th they will be open to public inspection.

We hope to see the sculptor's art called into requisition more often for a similar purpose than it has hitherto been in England. We have grand deeds to illustrate, and great men to honour,—men who should be "chained to the chariot of triumphal art," and made to serve as an incentive to future generations. A poet has sung—

"These are the gifts of art, and arts strives most
Where commerce has enriched the busy coast.
He catches all improvements in his flight,
Spreads foreign wonders in his country's sight,
Imports what others have invented well,
And stirs his own to match them or excel,
'Tis thus reciprocating each with each
Alternately the nations learn and teach."

But England as yet scarcely bears him out.

A conversazione was given at the North London Artisan School on the 10th inst., which was fully attended. The sketches and drawings exhibited were numerous and good. Mr. Bailey, the sculptor, sent two or three choice specimens from his studio; Alderman Copeland fitted up three shelves, with a display of works in glass, porcelain, and china; and the School of Design lent some drawings. Free admission was given to the students of the school, and those of the school of design, who availed themselves of it freely. At the conclusion of the evening, Mr. S. C. Hall purchased a small study, and the artist (Mr. Buss) who was there, immediately (very much to his credit) presented the proceeds (5l. 5s.) to the school.*

From art to an artist: some time since, when describing the new Olympic Theatre, Wych-street, then just completed, we mentioned that Mr. Aglio, by whom the decorations were executed, had suffered paralysis. From that time to this he has not recovered: his right side is wholly useless, and he is unable to make those efforts on which his subsistence depends. We found him the other day laboriously striving to complete the third of a series of pictures which he has, painfully, executed with the left hand! We sincerely wish that these few lines may lead some who are able to interest themselves in his behalf, and secure him a retreat for the rest of his days.

We cannot too often impress on artists and others the importance of making a provision when young against the contingencies of fortune.—The proposed Provident and Friendly Society for Building and Engineering Workmen is now in shape: its principles of action are settled, and more than 1,000l. has been subscribed. We shall take an early opportunity to bring it fully before the public.—And this leads us (and with this we shall conclude our present chapter) to ask the attention of our readers to the announcement in our advertising columns of the annual ball to be given in aid of "The Builders' Benevolent Institution." Last year it realised a considerable sum for the Institution, and was in all respects so well conducted as to lead us to claim for it the support of the charitable and right minded. The Institution is not now merely an idea, it is a fact. The doubt as to its practicability is past: it is already doing its work, and we hope to see many, who have hitherto hung back, take this opportunity of giving it their earnest aid.

THE COMMERCIAL DOCKS.—Applications are to be made in the ensuing session for the improvement of these docks. It is proposed to enlarge the East Country Dock, and to carry a tramway from the docks generally to join the branch railway at Deptford.

* This school will do much good, and eminently deserves the support of the public.

WHAT WILL IT COST?

THE question, "What will it cost?" was selected as the title of this paper in order briefly to indicate the scope of the following remarks, which are entirely of a practical nature.

What will it cost? A weighty question this, which ought to be gravely put, in regard to every object that can excite the ambition or vanity of the human mind. A wide field of inquiry is thus opened up doubtless, but I shall follow it only so far as applicable to architectural design, in regard to which all must admit its importance. Indeed, it is in accordance with the daily experience of the architect that when a new work is proposed to be confided to his care, the first question generally put is, "What will it cost?"

Now, admitting to the fullest extent the propriety of ascertaining with all possible accuracy the ultimate cost of any work before commencing operations, it seems deserving of inquiry what the effect upon art is of thus giving to such considerations a place of the first importance.

In every architectural work—no matter of what extent—whether a cottage or a palace—the first and all-important question is, What do the circumstances of the case in hand require? Determine this question, and having done so, then follows, in its natural course, that as to cost. Even in cases where, of necessity, the question as to cost must be strictly kept in view, mere cheapness ought never, for a permanent building, to be the sole aim. There are considerations of higher interest, which, in no circumstances, ought to be overlooked—not even in the erection of the humblest cottage—not to speak of public buildings. For it must ever be kept in mind that the works of the architect differ from those of all other artists, inasmuch as they bulk largely on the eye of the public, and cannot be hid. Unlike the productions of the poet or the painter, they cannot be laid aside when their brief hour of popularity has passed away. On the contrary, they are prominent and enduring structures, generally of such magnitude as to add new features to the aspect of the country. The architectural monuments of successive ages, therefore, serve as landmarks, indicating to future historians the progressive stages of advancing refinement. In this view, architecture becomes the exponent of the civilization and habits of a people: it is read and known of all men, and ever obtrudes its emphatic testimony on the most transient passenger. Its records have been preserved when every other record of the people who owned it has perished in the abysses of remote antiquity. And even where Tradition herself had become silent, the works of the architect in the infancy of the world have, by the perseverance of a Layard, been disclosed to view. The gorgeous halls and stately palaces of ancient Nineveh proclaim, as with the thrilling voice of one raised from the dead, the vast resources of that mighty empire, and the pomp and glory of her potentates, who thus seem restored back again to the world after ages of oblivion. Such is the high position which architecture assumes—such are the responsible duties which the architect is called on to perform. He becomes the historian of his country's civilization, and his works are written as with an iron pen on tables of stone. He can, therefore, no more perform these duties lightly, or with a sinister motive, than can the military engineer, to whom are intrusted the outworks for the defence of his country: he cannot, in order to please the taste of his employer, do what he, after mature deliberation, believes to be a violation of good taste, any more than can the physician alter his prescription to please the palate of his patient.

If such be a true representation of the views which ought to guide the architect in the performance of his duties, it will not be difficult to determine the position in the consideration of any contemplated work which ought to be assigned to the question—What will it cost?

Thus to preface all our inquiries, and to make the question of cost paramount to every other consideration, is to lay an instant arrest on design. The architect, thus fettered, is precluded from all sympathy with the good and the true—the only source of the beautiful. The imagination must be schooled down to the views of the utilitarian, who values everything

by a money standard; and thus images of nothing but what is cheap present themselves—ever meagre and starved in their forms. All aspirations after those forms of beauty which art can supply are quenched. The imagination, thus enthralled, refuses her office, and the advancement of art becomes impossible: its very existence is altogether perilled. The architect, thus trammelled, must be content to descend from the high platform of his profession, and occupy the more humble position of the handicraftsman. The effect of this system, so injurious to the mind of the designer, is alike fatal to the result of his labours. A building reared under such circumstances for ever afterwards betrays its sordid origin in the meanness of its features, and the leanness of its forms, which, in spite of all future efforts, can rarely be effaced. Nothing short of the direst urgency should induce the architect to give way to the system—nothing short of physical necessity can excuse it. Begun with the one object of economy alone before the mind, the meagre starved design, in the course of being developed, seldom comes up to the expectation of its proprietor; and, during its progress, is not unfrequently made to undergo a variety of transmutations, in the vain hope of rendering its ungainly aspect somewhat more attractive. The result in most such cases is, that the cost in the end is greater than if a proper system had been at first adopted. The unhappy architect loses his credit, and the disappointed proprietor loses his money, without attaining his object. It were easy to illustrate these remarks, by reference to examples around us, and these not everyday works, but such as are of considerable pretension to architectural effect, occupying a prominent position, and bulking largely on the public eye.

But without referring to recent works, the parish churches of the last century may be safely quoted as illustrating the miserable result of giving pre-eminence to the question of cost. What huge monstrosities do we see scattered all over the country. How often do we find some miserable fabric, stamped in its every feature with sordid parsimony, marring one of Nature's loveliest landscapes, in which she has scattered her richest stores in boundless profusion. And how sadly do these contrast with the parish churches of England of the fourteenth and fifteenth centuries, or with those of the same period still existing in our own country, so beautiful even though in ruins, and adding fresh charms to the fairest scenes. These fine fragments of bygone ages have done more to revive the dark superstitions of their times than the world care to admit. But why should good taste, or a true and noble architecture, be confined to the unformed creed of the middle ages? Let heritors and proprietors abandon the miserable system of starved economy, and follow the more generous system of bygone times, already so auspiciously revived in various quarters. The banking establishments of our cities, and other public institutions, have shown in their recent architectural works a fine example of wise and judicious liberality, which, it is to be hoped, will not be lost sight of by other public bodies throughout the country, so that the question, what will it cost? will no longer be allowed to lord it over every other consideration.

Are considerations of expense, then, to be entirely overlooked or set aside? By no means. No man beginneth to build a tower without first counting the cost. But surely he must previously, and first of all, endeavour to form a clear idea of what the tower ought to be, and of what the circumstances require at his hands.

The peculiarities of the site, or of the neighbourhood, will all be considered by the judicious architect. He will endeavour to work out his design in accordance with these, having a truthful regard to the circumstances of the case, and an enlightened view to the ultimate good of the whole. Having thus endeavoured to form a clear idea of the extent and character of the proposed work, he will, while attempting to realize it, and give it form, employ all the artistic skill at his command. In this way the mind is left unfettered, and free to choose from amidst all the forms of beauty which fancy can disclose. And it is only by following such a course that architecture can be

entitled to take its place, and rank first amongst the fine arts. Painting and Sculpture will then become her handmaidens, ever in attendance to adorn and exalt her.

It is at this stage of the proceeding that the question of expense comes up in its natural order—a question deserving ample inquiry, and an honest answer; and in no department of his art are the skill and qualifications of the architect more severely put to the test. The pecuniary interests of his employer are confided to his care: he looks to him, on the one hand, for protection against the undue demands of the contractor, and on the other, against an undue increase of additional works arising from his own neglect or oversight. The architect, then, requires not only a thorough knowledge of the qualities of the various departments of work, but of their value, and of the modes of measurement, in order to be able to judge of the rates of charge. Though called on to look to the interests of his employer, he is equally required to see that justice be done to the contractor. And when the accounts come to be submitted to his award, he is to act with the uprightness and integrity of a judge, and is bound to see justice done at whatever sacrifice of feeling or of self-interest,—a task, this, at once difficult and delicate, requiring a thorough knowledge of the value of the varied and multitudinous items connected with the building art, which can only be acquired by laborious and incessant perseverance.

The want of proper skill in these matters, or perhaps of proper attention to them, is the cause of that fatal error which so frequently occurs, of estimating the probable expense of a contemplated work at a sum far below what it is possible to execute it for. Such a system is injurious to the best interests of true art. It engenders suspicion and distrust, and its inevitable result is to make in future the question of cost a paramount object. And while in the first instance it may only affect the pockets of the employer, it is sure in the end to tell against the architect. Complaints against this system are not new. It is curious and instructive to find they are greatly more ancient, than the days of old Vitruvius himself, as the following extract from the writings of that most judicious author amply testify.

"In the magnificent and spacious city of Ephesus," says that author, "an ancient law was made by the ancestors of the inhabitants, hard, indeed, in its nature, but, nevertheless, equitable. When an architect was intrusted with the execution of a public work, an estimate thereof being lodged in the hands of the magistrate, his property was held as security until the work was finished. If, when finished, the expense did not exceed the estimate, he was complimented with decrees and honours. So when the excess did not amount to more than a fourth part of the original estimate, no punishment was inflicted. But when more than one-fourth of the estimate was exceeded, he was required to pay the excess out of his own pocket. Would to God that such a law existed among the Roman people, not only in respect of their public, but also of their private buildings, for then the unskilful could not commit their depredations with impunity, and those who were the most skilful in the intricacies of the art would follow the profession. Proprietors would not be led into an extravagant expenditure, so as to cause their ruin. Architects themselves, from the dread of punishment, would be more careful in their calculations, and the proprietor would complete his building for that sum, or a little more, which he could afford to expend. Those who can conveniently afford to expend a given sum on any work, with the pleasing expectation of seeing it completed, would cheerfully add one-fourth more; but when they find themselves burdened with the addition of a half, or even more than half the expense originally contemplated, losing their spirits, and sacrificing what has already been laid out, they incline to desist from its completion."

But, on the other hand, it not unfrequently happens that complaints of this kind are most unjustly preferred against the architect, who is often in this respect more sinned against than sinning. How often are his designs cut down and denuded of their fair proportions in order to effect some trifling saving in expense? and

after being contracted for in their modified form, how frequently does it occur that, during the progress of the work, one item is ordered after another by the proprietor, without due regard to the effect which these will have upon what has already been done? and the result is, that the whole becomes an incongruous piece of patchwork; and there remains the mortifying reflection that in consequence of the contracts having been interfered with, the "bills of extra work," added to the estimate, greatly exceed the sum that would have served to complete the original well-matured design. To the architect imbued with a true feeling for his art, nothing can be more tantalizing than such a result, for which he is in no way responsible, and for which he is often most unjustly blamed. It is always unwise, and seldom very safe, to interfere with plans after the work has been contracted for and fairly commenced. None but those in the practice of design can conceive how entirely one part hangs on another, and how dangerous it is to interfere with any architectural work after it is in progress. While only on paper, it may be modified or reconstructed as often as circumstances require, as, in this case, the effect of any alteration is at once seen and provided for by a readjustment of the other portions until the whole is brought into harmony. But when once contracted for, the design ought to be inviolable. Alterations in these circumstances are always costly, and the architect would do well to set his face resolutely against them. This may at times be a delicate task, requiring tact and judgment, but it is a duty which no architect who values his reputation should shrink from performing.

Where economy requires to be very closely studied, the old Vitruvian rule of avoiding materials which are not easily procured and prepared on the spot, is still the most effective, and of most general application. The building materials of the neighbourhood, besides being the cheapest, generally harmonise better with the landscape than those which are foreign to the soil. England's brick mansions of the olden time, however beautiful amidst their "tall ancestral trees," would ill accord with the stern clime and rugged scenery of the north. In ordinary cases, therefore, where mere general effect is all that can be aimed at, the building materials of the district, being not only less costly, but more artistic and effective, are to be preferred.

All ornamentation, where economy is an object, should be dispensed with; for unless fully carried out, it but serves to betray the poverty which it is meant to hide. Simplicity of outline, and a due proportion of the several forms, add nothing to the cost; and where these are properly attended to, the result will generally prove satisfactory.

Admitting, then, to the fullest extent, the importance of the question, in its proper place, which forms the subject of this paper, I have endeavoured, on the one hand, to point out the very injurious effects to architecture, as a branch of the fine arts, which follow from giving it the precedence of all our other inquiries. Its tendency is to degrade art, and to cover the country with monuments interesting to the archaeologist only, as marking the money-loving spirit of their epoch, and the low state of art at the time.

On the other hand, I have endeavoured to point out the proper period at which the all-important question as to cost ought to be determined, and the no less injurious effects which a wrong solution of the problem has upon art, and the necessity there is of the architect being thoroughly qualified to form correct estimates of the value of building materials and of labour, so that he may be able to adjust his design to the money proposed to be expended.

These remarks, it is true, do not directly bear on the principles of art or of architecture, and they may in consequence appear to some to be of too humble a nature to form the subject of a paper. But if I have succeeded in conveying in any degree a just sense of the importance, in architectural design, of limiting to its proper place the question "What will it cost," and of giving it, in its own place, a full and honest answer, I shall feel that my labours, however humble, have not been altogether in vain.

DAVID COUSIN.

THE DECORATION OF THE BUILDING IN HYDE PARK.

HAVING been requested to give my opinion as to the treatment in colour which ought to be given to the Great Exhibition Building—a subject which is creating considerable interest at the present moment, and has called forth suggestions from several gentlemen conversant with such matters,—I beg, through the medium of your paper, to state the leading principles which I conceive should be observed in the case, and in which circumstances have tended to confirm me.

I had not at all expected that the "Crystal Palace" would be considered an object for decoration, or that discussion would have arisen on that score respecting it: as a variety of opinion does appear to exist on the subject, however, it becomes important that a correct view should be arrived at, in order that we may not have occasion to regret the result when it is too late.

In my mind I cannot conceive any safer plan of procedure than, as a *first principle*, to let every constructive portion of this important edifice tell its true story of the engineering skill which is involved in it. The Building is, by general consent, a great curiosity constructively, which alone would be a sufficient reason for avoiding the adoption of any mode of colouring which should interfere with its effect in that respect. As a *second principle*, I think such appearance of solidity or strength as the rough material would possess, should not be on any account diminished: on the contrary, if it could be increased without detriment to elegance, which, of course, has to be aimed at, I think it would be desirable.

Upon these principles, any disguising of the character of the materials is precluded, as well as any breaking up into any more minute parts. I would propose, therefore, to paint the entire upright shafts, and the horizontal beams supporting the galleries, of a middling strong green bronze colour, while I would give the upper beams the colour of Florentine bronze. The railings of the galleries, and perhaps other details, I would treat the same, in order to relieve the monotony, where it might be thought desirable on carrying out the work. The other metal divisions of the roofs I would give a more golden hue, and the wooden sash-bars throughout a very light buff. The transition upward from the darker to the lighter bronze, for the metallic constructional parts, might be more gradual than I have indicated; but what has to be aimed at is, to improve rather than deteriorate the relation which the parts supporting, and the parts supported, bear to each other; the idea of security being of prime importance, and worthy of being pushed to its maximum, however satisfactory the reality may be. The appropriate treatment of the broad surfaces, for the reception of the goods to be exhibited, must of course entirely depend on these latter. The glass I would leave untouched.

LEONARD W. COLLMANN.

Mr. Crace agrees with you about the columns with stripes looking like wooden ones. In this I think him correct, but I cannot agree with his "pale bronze green maroon and gold colour," as a remedy.

Mr. Sang, in his circular letters to the newspapers*, talks a great deal about *truth* in architecture, and then seriously proposes to paint the ironwork so as to look like bronze, and to colour the glass to look like the magnificent stained windows at Chartres and Cologne. Not quite consistent this. To make the glass (which is used) look like glass, I should leave it as it is, and to make the ironwork like ironwork, I should paint it—the whole of it—of a dark chocolate colour—"picking out" the edges of certain parts sparingly with gold. If gold be objected to on account of the expense, then use the brightest yellow that we have.

Ironwork never looks like ironwork unless it be painted of a very dark colour. Use blue, red, yellow, green, &c., and it at once has the appearance, as you properly at first pointed out, of wood and pasteboard work.

AN ARCHITECT.

Mr. Wyatt, in his lecture on Decorative Colour, said:—"If architects would only think

* Mr. Sang favoured us with a communication on the subject, but as it appeared in the morning papers before our day of publication, we did not print it.

a little more of the power of decoration by means of colour, I submit that they would not only build more *effectively*, but more *economically*," and I would add, have more to do, especially the nameless ones, who might themselves, with their own hands, as well as heads, work at it; for if the poor German can make here a living by painting the houses of the great, why should not an Englishman? He needs only to be taught, or rather put in the way to teach himself.

My interest in the Exhibition of this year has, from the first, been of no ordinary kind, as I hope that it will give a new and more correct direction to public taste. I hope that it will show them when a thing is *good enough* to be dignified with the title of a *work of art*. If it do only this, and nothing more, what a mighty change will it effect.

However the interior of the Exhibition Building may be coloured, it must prove a great lesson, either one way or the other. It will be a thing to be remembered as a guide afterwards, or it will be a thing to be remembered as a failure and a caution. I would suggest that let the colouring be what it may, much additional effect would be obtained if they were to stain the *canvases* proposed for the roof, which would thus, like coloured glass, deepen the tints throughout. C. B. A.

Your paper has contained many clever suggestions for the internal decoration of the great Exhibition Building; but one subject all have failed to consider, and that is economy. I profess to be only an amateur, and therefore shall, with all humility, ask your opinion rather than give my own. I wish to know if the pale grey enamel with which iron can be permanently coated (I believe) at less than one penny per foot, would not have satisfied the requirements both of taste and expenditure? I imagine four coats in oil of expensive colours would cost much more; and if the building remains (as it doubtless will), how many months will pass before acres of corrosion are visible, and a general re-painting of those broad acres be necessary?—W. F.

THE GREAT PAINT QUESTION.

THERE seems to be a general feeling of some link wanting, or some inference not exactly consequent, in the reasoning that has led Mr. Owen Jones to his "yellow rounds, blue hollows, and red flats" for the six-month palace; and from the number of different proposals in its stead, the question seems to be thought worth even more deliberation than the design of the structure itself; while the utility of such questions is shown by the extreme originality and novelty of some of the arguments it has drawn forth. Thus, a letter in the newspapers proposes, "on the great principle of truth in architecture," that the ironwork should be made to counterfeit bronze; and the white glass, coloured glass, Cathedral. This is such a very novel and useful interpretation of "the principle of truth," that I cannot but think it might be extended to other arts than architecture, with immediate advantage. Observe, this kind of truth consists in the metal being made to resemble a metal, and the glass to resemble glass, but each of a kind far superior to itself. Could not we take the hint, even in what I am now about? Certainly. Let this letter represent a letter, and nothing else: let the signature be a signature, and the date a date; but let the former be spelt "Albert," and the latter "Windsor Castle." I will venture to predict that if you would print it with these simple ornaments (more simple even than the bronze colour and transparent paints), it would have more readers, obtain more notice, and carry more conviction with it than anything that has appeared in your journal this year. In fact, the advantages of adopting this new "principle of truth," in all matters, would be such that its discoverer deserves the gratitude of thousands.

Without pretending to any such originality, I would, as every one seems inclined to do, suggest a method (but a very old one) of solving this momentous brush problem. Leaving the theories of artists, and coming to the experiments of physicists, we find it an established scientific fact (not an aesthetic

notion), that no positive colour can harmonise perfectly with more than one other positive colour; nor can it agree, even bearably, with more than one-third of the entire scale of colours, since (if you arrange them in the well-known circle) any two that lie nearer together than one-third of the circumference are positively discordant. The first object, then, we should think, in coloured design, would be so to arrange the tints that no two thus known to be discordant should come together; and it would be easy to show you, had I space, that however little this may be attempted now, yet, "in the elder days of art" (which, by-the-by, Longfellow should have called the *younger*) this was always done. Now, as it is to be assumed this exhibition will not exclude objects of any particular colours, the building must be so painted as not to be discordant with any colour. Chromatic harmony may and should obtain, in the arrangement of the articles exhibited; but, as for the building, if it have any positive colour at all, it must needs be discordant with some of them, the chances are with two-thirds of them, since every positive colour is discordant with two-thirds of the whole scale of colours.

It is equally an established physical fact, that the only colours (if so we may call them) which will harmonise, or rather be non-discordant with, all others, are white, black, and all the neutral tints between them. Moreover, these, as well as all the tints or shades of any one definite hue, are harmonious, or rather indifferent to each other.

Accordingly, when we turn to nature's exhibitions, we find, however the articles exhibited may be coloured, their back-grounds are neutral, or comparatively neutral. The purest positive colours belong to the rainbow; the purest neutrality to the clouds that back it. Primary colours are given to the flowers, not to that on which they grow. As we descend or ascend from the house to its inhabitant, from the bearer to the borne, so do we from neutrality to positive colour. The tree is more coloured than the rock or earth whence it springs, the foliage more so than the stems, the blossom or fruit more than all. But where in nature, do you find the bearer more coloured than the borne?—the *exhibitor* than the *exhibited*? Again, nature decks with primary colours, not her leviathans, but her flies. She colours brilliantly only the smallest things; and again, the smallest of each class,—the lizards, the humming-birds, the mulleats—not the crocodile, the condor, or the whale.

It seems to me, therefore, that in every view of this colossal cage, whether regarding its size or its destination, any use of positive colour (much more of the primaries) would be contrary to nature,—contrary both to the letter of her laws (as far as physicists have discovered them), and to what may be called the spirit of her practice; if, indeed, it be possible to suppose, as in human law, any clash between the letter and the spirit.

But we want variety. Next to the preservation of the iron, the chief object of the paint is to obviate the monotony and flatness (even amounting to optical deception) which in such a structure, and in such a climate as ours, would be found to attend equally any uniform tint,—for the "sage" or "onion," or "bronze" or "grey," would not make the slightest difference in this respect. Flatness is flatness, whatever be its tint. Now, in architecture (that is, in material structures aiming at any beyond material excellences), the avoidance of this æsthetic defect, or this practical inconvenience (for such it would actually here prove), would be a matter of design, not of after-addition. It would be one of the points for consideration from the first, having its influence on everything else, and influenced by everything else, in the conception of the structure as a work of art,—that is, as a whole. But this being no work of architecture, but a piece of pure engineering (that is, attempting nothing beyond the supply of material wants), and this not by a studied whole (for it is boasted how few hours' thought it occasioned), but simply by adding and superadding remedy upon remedy, to meet each inconvenience just as it arises or occurs to us (a process which, it is said, has already gone so far as to leave no member as originally "designed")—this being the nature of the thing (not in any sense a work of art, but purely a

work of industry,—not a design, but a cumulative aggression of remedies), this inconvenience of flatness must, like all others not having been avoided, be now remedied as we best can, by a fresh expedient, *i. e.*, a fresh design. For this the painting affords the only opportunity, and I have shown that we have for the purpose no positive colours, but all the shades of neutral tint from white to black, or (to avoid heaviness and harsh contrasts), let us say from white to a certain shade of grey, approaching perhaps a moderately deep slate. Now, without party-colouring, nature herself would produce some variety of this kind, by the lights and shades; which, in an architectural work, might have been so contrived as to suffice by themselves; but here they certainly will not. Well, then, shall we make use of this natural and inevitable party-colouring to aid and reinforce our own, or shall we make it our enemy, partly neutralizing our work; or lastly (what is most likely to be done), leave the arrangement to fancy (*i. e.* chance), so that the natural and artificial sources of variety may sometimes help, sometimes counteract, each other? If the first be thought best, it is easily carried out by the merest mechanic, as well as the cleverest artist, by observing the simple rule, to paint darkest what already appears darkest, and *vice versa*. With about four tints, no gradating would be required, and the arrangement being founded on the effects of evenly-clouded daylight, not sunlight, would be equally true at all hours. Those who have not seen this kind of party-colouring (as any one may easily do on a small model), have no idea of the picturesqueness and heightening effect it has, which is, indeed, as though the object were removed into a brighter climate. I would deviate from this rule only in the soffites of the ceiling-girders, making them white, to avoid heaviness.

Of course, we must not hope to escape attempts, by stencilling or some such means, to convert the colouring into ornamental forms or patterns. In the present state of taste in this country, it would be madness to think of convincing the many, that what is originally planned with no view to beauty can receive none from any such additions. Every one here supposes a packing-case, or the wall of a bricklayer's cell, to be "ornamented" by covering it with a printed diaper pattern; and every one, for the present, supposes the "glass palace" to be architecture, and architecture a fine art; though professing to know that what constitutes anything a work of art is the evidence of thought; and knowing that this was planned with the avowed aim of *economising* thought, and that the next thing we were to admire, after the number of miles of sash-bar, was the paucity of hours of study it had cost. It would be waste of words at present to dilate on either of these fallacies—to show either that what is not architecture admits of no ornamentation, or that this structure is not, and never can in any sense be, architecture, and that its only ornaments should be its contents. We must keep this till people are sober.

I have troubled you with these suggestions chiefly on account of having lately had a remarkable proof and warning that no observations, from however humble a source, should be withheld from any possible means of reaching the minds of others. Being bred up (I may almost literally say) in two old cathedrals, I was perfectly aware from a child of that *atrament* (may I not so call it after a hitherto obscure word which it seems to illustrate) on the ancient glass-paintings, which it seems our precious "restorers" have mistaken for dust, and knew well that it covered all except the high lights. Could I but have entertained the remotest idea that this was a "secret," or not yet imitated by our artists, so humble an individual might have saved the windows of the Cambridge Chapel from a mutilation that must be a permanent disgrace to this age and its arts. I hope this may be a warning to your friends, as it will certainly be to—

E. L. GARBETT.

HOW VERY CORRECT!—The *Messagere Modanese* states that the Papal Government has determined to order all naked statues in the churches, including the little marble angels, and the Genius at the tomb of Clement, by Canova, to be covered. Paintings are to undergo a similar process.

UTILITY VERSUS BEAUTY.

INSTITUTE OF BRITISH ARCHITECTS.

At a meeting on Monday evening, the 13th, Professor Cockerell took the chair. The absence of Professor Donaldson from the recent meetings was explained as caused by illness, and much satisfaction was evinced at the announcement that his health was improving. The business of the evening consisted of an account of the "Britannia and Conway Tubular Bridges," by a third professor, Mr. Cowper, of King's College; who, in a popular and familiar style, described the leading characteristics of these structures. We shall recur to his account on another occasion. In concluding, Mr. Cowper begged to offer a hint for the consideration of the meeting. Looking at the works of engineers and architects, he found that the prevalent idea with the former was utility, whilst the prominent idea with the latter was beauty. The building in Hyde Park, although it looked so slight, was a striking illustration of the elaborate calculations made by engineers in order to combine stability with economy. At the Euston-square railway station there was a magnificent portico, which had cost 35,000*l.* but which he found was not applied to any useful purpose; whilst immediately adjoining it was a very large iron shed, of the greatest possible utility, but with no beauty at all. What he wanted was that the engineers would get some notion of beauty from the architects, and the architects some notion of utility from the engineers. He strongly urged upon architects the importance of recognizing iron as a material to work with, and not to be so averse to it as they now are. Although Wren had objected to the use of iron ties in Salisbury Cathedral, as "contrary to the rules of good architecture," he had himself introduced an iron chain to strengthen the dome of St. Paul's. With such an example before them architects might use a little iron occasionally, without getting into great disgrace. A great deal might be done with it, and he thought the architects ought to do it.

The Chairman acknowledged the claims of engineers on the score of their great and useful works, but urged the importance of that study of the beautiful, united with the useful, to which the architect was specially devoted. He hoped the *iron order* of architecture would receive that attention from architects which the learned professor had suggested.

Mr. Tite regretted exceedingly the severance which had taken place between architects and engineers. Almost within his own recollection there had been no such distinction between them as now existed, and it was well known that all the great architects of Italy were engineers likewise. He wished to remove from the mind of Professor Cowper, the impression that architects repudiated the use of iron, and did not consider utility. Iron was first used to any extent by architects: he believed Sir Robert Smirke was the first to employ cast-iron bearing beams, and to him also were indebted for the re-introduction of concrete. In the Walhalla, near Ratisbon, by Von Klenze, and in the roof of the Madeleine at Paris iron was most successfully used, and in the most elaborate manner; and he would also mention as a proof of its recognition by architects, the roof of Mr. Barry's mighty palace of Westminster. It was a foolish mistake to suppose that architects did not calculate the strength of materials. No architect would venture to put a girder across a room, without ascertaining the weight that would come upon it. In the adoption of the iron order, recommended by the chairman, great caution was necessary. In dwelling-houses especially, in such a climate as ours, exposed iron surfaces were highly objectionable, from the condensation of moisture. He knew a chapel where an old lady, sitting beneath an iron girder, found it necessary to put up her umbrella, in consequence of the moisture dripping from the girder. From his own experience of railway matters, he knew there was an inclination to indulge engineers in spending large sums of money; whereas the architect's expenditure was always cut down as low as possible. He had endeavoured to introduce some degree of beauty in the railway shed at Perth; but the nature of these structures rendered it a very difficult task. As to the strength of slender iron columns, the professor's remarks were very true; but a

blow on the *side* of such a column might bring down the whole structure. Architects did think, and he was sure they did all they could with the limited means at their disposal. Fancy the enormous sum of 760,000*l.* expended on that wonderful structure the Britannia-bridge! Many thousands for the experiments alone! How much might be done in our churches, town-halls, schools, and other buildings, if a similar sum of money were to be spread among the architects of England. They could only wonder at and envy the engineers their good fortune, and live in hope that the day would come when architecture should be thought to deserve as much as engineering, and be as much appreciated. He trusted the architect would at all times labour to make everything that was useful elegant, and that the engineer would aid him in adding that elegance to his usefulness.

The Chairman observed, that the first instance of the use of cast-iron in England was the railing round St. Paul's, by Wren.

Professor Cowper hoped it would not be thought that he was making an antithesis between architects and engineers. He regretted the severance between them, and had always sought rather to diminish than to increase it, having repeatedly urged upon engineers a greater attention to beauty than they now displayed. Science was common to all, and every description of material should be recognised by all as part of the common stock to work from.

The Chairman acknowledged the perfect good humour of Professor Cowper's remarks, and hoped he would regard the observations of Mr. Tite as being offered in the same tone of banter.

Mr. Godwin said he was compelled to remark, that he did not consider it a matter for banter at all. As another description of banter had "laughed Spain's chivalry away," so he could see that the feeling at the bottom of this banter might laugh architecture and architects away. Believing that Professor Cowper represented a very large class, in his sentiments on this subject, he felt bound to characterize opinions which that gentleman had expressed elsewhere on the subject, and in a modified form that evening, as injurious to the profession of architecture. Mr. Cowper had said elsewhere that the engineer was to be looked to for utility and the architect to "make a thing pretty." He had somewhat modified the expression on the present occasion. That was an opinion which he never could allow to be mooted without challenging it. The architect dealt first with "utility," then with "commodity," and then with "delight." Architecture had been defined as the art of the beautiful in building: he could not be contented with this, he would call it the art of building with beauty. It was because some architects had lent themselves to the notion that they were to deal simply with beauty, that they were being gradually shouldered on one side, and were held, he regretted to say, in little consideration by the great body of the public. To allow the public to run away with the idea that architects were only concerned with the beautiful, and had nothing to do with the useful, was, he would venture to say, exceedingly dangerous, and exceedingly untrue. He hoped the lecturer would take these observations in the kindest possible manner, but he could not avoid making them, as he felt very strongly on the subject.

Professor Cowper did not mean to assert that architects dealt *only* with beauty: he had alluded only to the *prominent* ideas of engineers and architects; and certainly to judge from the discussions he had heard at the Institute, the prominent idea of the latter was beauty. He again protested against promoting antagonism between the two classes.

Mr. Fowler supported the views expressed by Mr. Tite and Mr. Godwin, and thought Sir C. Wren had been unfairly represented as opposed to the employment of iron. Wren's objection, and a very proper one, was to the use of iron to hold masonry together.

Mr. Roberts adverted to the very extensive use of cast-iron by Sir Robert Smirke at the British Museum, the Post-office, the Custom-house, &c.

Mr. Garling suggested that the father of Mr. P. Hardwick had, he believed, employed

concrete at the House of Correction, Milbank, before Sir R. Smirke did.

Major-General Pasley confirmed the statement that Smirke was the first to use it in anything like its present perfect form; and also to adopt extensively the use of cast-iron girders. The wrought-iron bridges recently erected by Mr. Stephenson would not, he thought, have been introduced but for the failure of the cast-iron bridge over the Dee at Chester. He had recently, with pleasure, defended Mr. Stephenson's claims against the pretensions of a foreigner.

Mr. Tite observed that the only feature which, in his opinion, redeemed the Exhibition Building in Hyde-park from downright ugliness, namely, the arched roof of the transept, was the suggestion of Mr. Barry, and they might therefore claim it on behalf of the architects.

REMOVAL OF FOUL AIR IN WELLS.

In answer to your invitation, I beg to state the following case of actual practice, arising from foul air in a well.

Some time in the latter part of 1840, I was indirectly concerned in the execution of some alterations, &c., carrying on at a mansion near Wycombe, in Bucks, connected with which was the sinking of a well. The men, at the depth of 150 feet, or rather more, were very much troubled with foul air, or carbonic acid gas, which, as they proceeded in depth, increased, till at last they could not work at all.

At this time, my employer was applied to by the owner of the property, by letter, as to the means of getting rid of the evil; and at a consultation, to which I was called, the following method, suggested by me, was considered so feasible, that it was carried into immediate execution, and was completely successful, as the men were enabled by its use to proceed to a depth of 300 feet, at about which depth they arrived at the water.

A pair of small forge-bellows was fixed on a stand near the mouth of the well, to the nozzle of which a zinc pipe (*gutta percha* was not then in vogue), 1½ inch diameter, was attached, and carried down the side of the well to the bottom of the same; and as the depth increased, fresh pipe was added, so as to keep the mouth of it at or near the men's feet. This being done, at any time when the foul air inconvenienced the workers, a few strokes of the bellows at the well's mouth always gave a supply of pure atmospheric air, sufficient to remove the same, and enable the men to proceed with their work till they arrived at the water, as before stated.

I cannot but think that the same principle (using a powerful blowing machine in place of the bellows, together with *gutta percha* or other tubing), might be applied for the purpose of driving out fire damp from the goafs in coal mines, as the tubing by means of poles or otherwise might be projected into these places, and the foul air removed from thence, which other means of ventilation do not seem to accomplish.

CHARLES GALE.

Reading the inquiry respecting the best method of forcing foul air out of a well, I beg to submit the following to the notice of your readers.

Procure a thick canvas tube, nine inches in diameter, to reach from the top to the bottom of the well, in which may be inserted, at the distance of every eight or ten feet, an iron or wooden hoop to keep open the same; the upper end of the tube to be attached to the nose of a box, containing a fan-wheel, to the axle-tree of which must be fixed a pulley, round which must pass a strap from a large multiplying wheel, (which, being turned, will impart to the fan-wheel a rapid rotary motion, the effect of which will be to force sufficient pure air down the canvas tube to force the foul air out of the well.

I have tried this experiment in a number of similar cases, and never found it to fail.

HENRY STONE.

Allow me to submit to you some recommendations of practical utility, having paid attention to the subject for many years, and submitted the question to oft-repeated experiment. These recommendations are entirely

practical in their character, and if judiciously employed, cannot fail of success.

Carbonic acid gas is not only of considerable specific gravity, but a very *sluggish* gas. These properties enable us to treat it as we do water; that is, it may be transferred or emptied like water. Carbonic acid gas may be laved out by a bucket, flow through a funnel, a spigot, or a stop-cock, or be pumped up from a well by a common water-pump attached to a hose. Let it not be overlooked in this estimate, that any gas, however sluggish or heavy, will ascend on the wings of heat, and flow toward the source of heat and rarefied medium.

An essential precaution and pre-requisite is, to let down, under such cases, a lighted candle, to ascertain the presence or absence of this noxious and destructive gas. On its presence being ascertained by the extinction of flame, *cream of lime*, in sufficient quantity, will certainly absorb and neutralize the gas, for moist quick-lime readily does so; as much as possible, *fresh surfaces* should, however, be exposed, by diffusion or other means.

In the case of individuals having fallen victims to the asphyxia occasioned by carbonic acid gas, let cold water be showered down through a cullender, or by the nose of a large watering pan: these divide the streams; the cold water will, *pro tanto*, condense the gas, while the descending streamlets will each carry down a current of fresh air to the victim of asphyxia. This may be judiciously and effectively followed by *lime water*, which will absorb the carbonic acid, and not in anywise injure the victim. *Cream of lime* can only be employed in the absence of accidents such as these.

The carbonic acid gas in wells may be emptied like water by vessels let down, or the common pump may entirely drain it: There yet remains an extremely simple and effective plan to discharge the carbonic acid gas: all that is necessary is to kindle a small furnace fire near the edge of the well, let a hose descend into the well, and the upper end terminate by an iron pipe in the furnace: the rapidity with which a well may be thus emptied of carbonic acid gas is almost incredible.

"Occidat quod non servat."

J. MURRAY, PH. D.

THE IPSWICH GRAMMAR SCHOOL COMPETITION.

In consequence of a letter, signed "Not One of the Committee," appearing in your journal of last week, and in which the writer endeavours to throw discredit upon the author of the first letter on the subject of the late Ipswich competition, I beg to observe that most, if not all, the statements therein made can be proved to be correct, whatever the clerk to the town council or others may say to the contrary, although it must be confessed that some gentlemen on this committee devoted some time and trouble to obtain a fair decision, but unfortunately found themselves in the minority. It is also a pleasure to state that one of the "three architects" whose designs were selected, and to whom the premium is likely to be awarded, appears to have acted throughout the affair in an upright and honest manner.

It is desirable that legal opinion should be taken upon the liability of the town council, and, if favourable to the competitors, the case to be tried in a court of law; and I should be most happy to join Mr. Vickers and others in carrying out the above.

Y. Z.

YOUR correspondent of last week, signing himself "Not one of the Committee," has asserted that my former communication was "in part unfair," and "in part untrue," but has not been deemed to deny the main points therein stated.

He does not, and cannot deny, that those who voted for and carried the adoption of Mr. Woolnough's plan, had most of them never attended the former meetings of the committee, and did not show themselves at the last meeting until a short time before the matter was put to the vote. He does not, and cannot deny, that they voted by name for the architects whose productions they were; and with regard to four plans being retained, I can confidently assert that only three were put to the

vote, and that the whole of them were by Ipswich architects.

He gives as an instance of the perfect purity and uncorruptness of the committee, that they rejected a plan because it avowedly exceeded the sum stated in the advertisement, although it was accompanied by an offer of pecuniary assistance to carry it out. He unfairly withholds the fact that this offer was made *after* Mr. Woolnough's plan had been chosen.* The reason why the premium was not voted to this gentleman was, that the other members of the committee who had been divided between the other two plans, immediately they found the prize had slipped through their fingers, mutually joined their strength, and tacked on the provision about the price. So much for "Not one of the Committee's" (a very necessary signature) explanation. Let me add a word, however, on subsequent proceedings. The "uncorrupt" committee again met last Friday, and having received a letter from Mr. Woolnough, stating that his plans *could not* be carried out for 3,000*l.* (a very honourable proceeding on his part), they again took into consideration the two other plans. The lucky gentleman this time is Mr. Barnes, of course of Ipswich, whose plan, to use the words of one of the committee to a friend of mine, "is not exactly the thing they want, but it can be altered in carrying of it out!" This design was accompanied by what was termed "a detailed estimate" of the cost, showing how it could just be finished for the exact sum of 2,985*l.* The entire contents, however, of this plan is about 255,000 feet, which, calculated at the moderate price of fourpence per foot (for a building with stone mullions, ornamented gables, and bell turrets—a price certainly within the mark), makes its *real cost* 4,250*l.* But then, as was significantly remarked, "it can be altered in carrying of it out." In justice, however, to the other competitors, more especially to Mr. Woolnough, who has been ousted on the score of price, the committee are bound in honour (if not in law) to find out whether the plan, as it now stands, can be executed for 2,985*l.* (what a nice calculation to make from "fair plans!"), and if not, it must be rejected. Mr. Woolnough could, no doubt, have altered his design "in carrying of it out," if they would have given him the chance, so as to make it come within the sum specified. Thus stand matters at present? I shall watch the future movements very carefully, and having friends in Ipswich, from whom it is impossible for even the lawyers on the committee to hide what passes, I shall, if you will allow me, communicate to you the final acts of this "uncorrupt" farce.

ARCHITECTURE AT THE ROYAL ACADEMY.

PROFESSOR COCKERELL gave his first lecture on Thursday evening, the 9th inst. He began by saying he rejoiced at the return of the season, which was looked for with anxiety, considering the value of the subject, connected as the art was with the natural history of man from his first essays, founded on his necessities, to the higher development of luxury and beauty. It was no common task to exercise and refresh the students' minds; and the course of lectures on architecture could not be dispensed with: the omission would be a misfortune, as knowledge must be derived from these opportunities. The learned art of architecture, united both theory and practice. Vitruvius says,—"Theory is the result of this reasoning, and he who unites the ideal with the practical is doubly armed." Lucian, the Dean Swift of antiquity, says, "None are more estimable than those who can both teach and act." The riches of the theme were a subject of rejoicing, as nothing could be more worthy therein than the study of the exact sciences, mathematics, &c., with the æsthetic and historical: all were objects of contemplation. The student should work with the hand as much as the head, and attain dexterity as a carpenter as well as a mason. Some of the best men of the day had passed a considerable time at the bench, and two of the most eminent now living had done so. Labour was the great source of pride. The new facilities given by science were worthy of consideration; but the

* This is the same design I referred to, as having been allowed to be withdrawn, and amended.

labour of the hand gave true value to such works as the Palais-Pitti and our St. Paul's. All such works as a colonnade in cast-iron, or a frieze of continued design, lost all value, became dead, and gave no pleasure: so much for the hand. It was the application of the discoveries in science to construction that were valuable. Professor Cowper had recently illustrated this by the goose-quill; and if the principle of hollow columns had been understood, the beautiful work of the Pantheon at Paris would not have been in its lamentable state, from the columns breaking under their weight. Instead of the course of lectures being limited to six, thirty-six would be hardly sufficient. But it was gratifying that instruction was administered in the two London Colleges, and at the Royal Institute of Architects, on the subject of architectural science.

Although the principles of the science were invariable, the poetry and grace were unbounded, because these affected the eye, and ought to be the object of pursuit. The architect must work with the lamp of power, and not despite the lamp of beauty. Beauty is part of the great scheme of Creation: the beautiful and true are synonymous: therefore, the study of beauty and taste are imperative in the midst of the new changes now going on. It required Briareus's hands in the combination of capital, power, and numbers for the architect; but it might be contested in the sister art of painting. The multitude of works left by Raffaele during his short life, ought rather to be called the works of Raffaele and Co.: the same might be said of Rubens. The indolence of imitation revived styles not adapted to the present day. The Egyptian at one time had many admirers. When the French invaded Egypt it became the fashion at Paris to have everything Egyptian; and the battle of the Nile was likely to do the same here, although it fortunately did not succeed. Then followed Greek art—influenced by the republican spirit of the age,—and fashion since again seizes the Gothic style, which, in its invention, arose out of ignorance, feeling its way through darkness. And it was to be wondered that in the prevalent fashion the Royal Exchange was not erected in the Gothic manner, or that the Bank escaped having a Gothic facade. John Bull now collapses in his prosperity, turns to the conquest of himself, and puts on the cow, until he becomes a monk. Still, in the midst of these fluctuations, nothing can controvert true beauty and magnificence: they are not to be doubted: true principles, with the aid of unknown functions, will eventually triumph over the architectural works of the nineteenth century.

The lecture was sparingly attended by the students, and only one member of the Royal Academy was present!

ON ORNAMENTAL ART, AS APPLICABLE TO THE INTERNAL DECORATION OF HOUSES.*

THE paper commenced by saying that the people of England had ever been remarkable for their domestic habits and feelings, and hence the comfort and neatness that generally pervaded even the humblest dwellings, the domestic propriety arising from which was proof of the nation's moral greatness. A man's solicitude in decorating his dwelling was a proof of his affection for those it contained. Among the higher classes, princely fortunes were often expended in erecting, decorating, and furnishing mansions, rivaling in extent and grandeur the noblest structures of antiquity. It might be thought that in this country the most common decorations would be those best calculated to awaken homely associations, instead of the mere reproduction of certain conventional modes of embellishment practised in other countries, without regard to the change of circumstance or place. This application of the decorations of the public buildings of Greece and Rome to modern private English dwellings was preposterous; and a style of decoration, in harmony with English character, yet remained to be introduced, and a correct standard of taste to be formed. Sometimes they would find the walls adorned with Gothic paper-hangings, the ceiling and cornice with Grecian foliage, while

* The following are the heads of Mr. Ballantine's paper already mentioned.

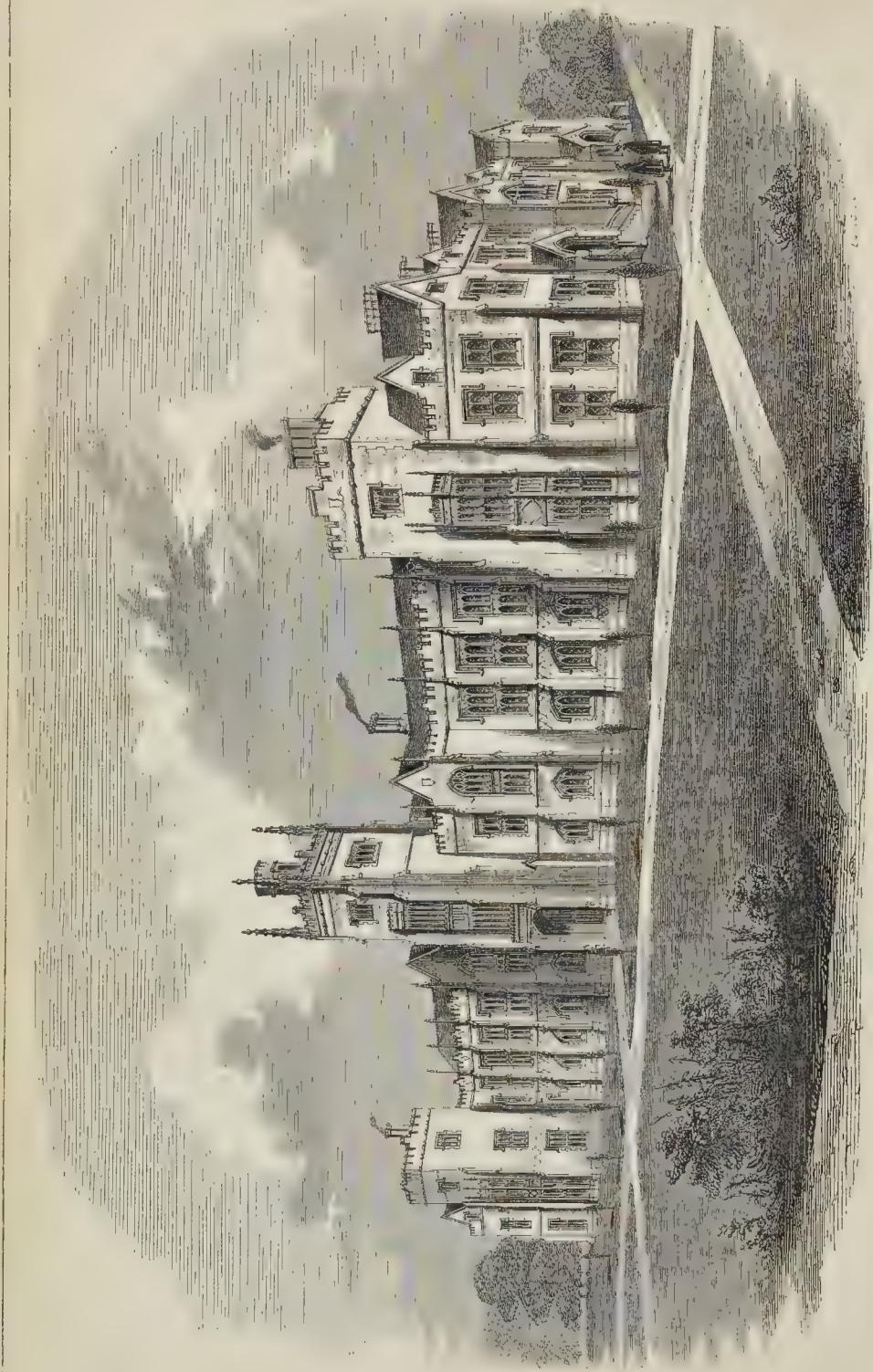
the furniture was of the light and fanciful style of Louis Quatorze. Sometimes they found carpet, chairs, sofas, and curtains of most gorgeous hues, while the walls, woodwork, and ceiling, were kept perfectly colourless. This state of things was unworthy the nineteenth century; and there was no reason why, in the great advances recently made in high art, the minor department of ornamental design should not keep pace with it. British history furnished as exciting subjects as that of Greece or Rome, while our native plants equalled the lotus of Egypt, or the acanthus of Greece, and were equally well calculated to form the basis of a British school of ornamental design. The monstrosities perpetrated half a century ago by Michaelangelo Pergolesi for "improving the public taste" had signally failed, while the fantastic improbabilities of Watteau had also become stale: the Louis Quatorze style was also alien to the genius and feelings of the people of England, and had fallen aside. The wainscotted halls, the tapestried chambers, and the massive oaken furniture, were connected with feelings of comfort and substantiality, and the revolution which had recently taken place in house decorations afforded promise of a change of a higher and more elevated character. Mr. Ballantine then defended the system of painting in imitation of woods and marbles, which a recent high authority had condemned, and which had almost arrived at perfection in this country. There was something gained, he held, in making a common fir door resemble some rare and beautiful wood so closely as not to be discovered without minute inspection, as a homely material, destitute of all beauty, had, at little cost, been converted into an object of admiration. As for deception, all nature was deception—the concavity of heaven, the rainbow itself was a deception. This art of imitating woods and marbles was practised some 250 years ago. One of the rooms of Hopetoun Tower was painted in imitation of marble in the time of James VI. Success in this art soon led to a more refined system of colouring apartments, and to using tints instead of full charged colours; and although this system of neutral tints at one time threatened the expulsion of positive colours, this style was being supplanted by more bold and vigorous arrangements of colour. The delightful tints and half tints produced in endless variety by the admixture of different proportions of the primary colours, tempered with the representations of light and shade, could be so distributed and arranged as to produce the most soothing effects on the eye; and in this respect we greatly excelled the ancients, who, though skilful in colouring and contrasting, knew little of the effect of modifying tints. Mr. Ballantine then stated his opinions as to household decoration in the following words:—"In decorating a house the house-painter ought to proceed on precisely the same principles with the picture-painter—namely, with a due appreciation of, and regard for, the effects of each detail in reference to the whole. He ought to introduce no jarring elements, no scraps and patches destitute of connection or association; and, of all things, let him beware of inconsistency and indecision. Every apartment ought to be treated in a manner corresponding with its purpose and use, and each portion in harmonic relation to another. In whatever way the walls are decorated, the ceiling should be ornamented correspondingly; but as the latter is farthest removed from the light, and as we naturally expect light to emanate from the space overhead, the colours used on it should be clearer and lighter than those on the walls. The floor, instead of being loaded with colour, as it is now in too many instances, by means of gaudy carpeting, ought to be kept of a low and deep tone: the floor, in fact, should appear a subdued and modified reflection of the ceiling. Treated in this way, the apartment would be kept entire, and any effect produced that might be wished. The ceiling is the only portion of a room of which we have at all times an uninterrupted view, and hence the necessity of having it decorated in a careful and pleasing manner. When seated, we naturally raise our eyes upwards, and when an agreeable combination of colour meets our view, the effect is peculiarly delightful. In some situations ceilings of a delicate tint of sky blue, studded

with golden stars, have a fine effect; and in some instances I have known the deception so complete, that when the apartment was artificially lighted, you could scarcely believe but that the canopy of heaven was your only covering. Stars, however, like everything else, ought to be kept in their place: when stuck on the walls of a room, they are not where they ought to be, and the effect is consequently bad. We do not look for stars in such situations, and are annoyed by their presenting themselves in such unnatural positions. A very legitimate kind of ornament for the walls of rooms seems to be well-balanced geometrical combinations of leading forms; well-proportioned panels or spaces, with combinations of foliage, the configuration of which has been carefully copied from nature, and which, in my opinion, cannot be too homely or too familiar. I trust, however, that the time is not far distant when artists of high talent will not consider it beneath them to paint representations of life on such spaces; and this must ever be considered the highest order of wall decoration. If the primary colours require to be used in their fullest intensity, they may be introduced into such combinations with excellent effect. They ought always, however, to be employed sparingly—a circumstance which will at once enhance their brilliancy and prevent them overwhelming the secondary colours and neutral tints that enter into the design. The effect of gilding on an apartment, when judiciously introduced, is highly poetical. It gives a new and more elevated character to everything in the room, while, without it, the finest designs look tame, flat, and insipid. Gold ought to be employed liberally in adorning cornices; and in almost all cases the primary colours can be used in connection with it in their fullest intensity with excellent effect. On the other hand, the richest furniture loses half its effect when placed in a room in the decoration of which no gold has been employed. Under the influence of artificial light, gilding becomes still more imposing; and at all times, and in all places, the effect is exceedingly agreeable." Mr. Ballantine illustrated this opinion by alluding to the brilliant effect of gilded balustrades in staircases. He next proceeded to recommend gilding in panelled ceilings. He repudiated the notion that the use of positive colours gave a room a contracted appearance, which could only arise from their being unskillfully used. "The use of paperhangings," he continued, "has of late years become very general and the reduction of duty on French papers which has taken place, will certainly have a tendency to improve the manufacture of English paperhangings, by engendering a new spirit of competition in the trade: nor can there be any doubt that we shall shortly rival, if not surpass, our neighbours in this department of art, as we have already done in the manufacture of other commodities. For my own part, I must say, that many French paperhangings which I have seen, though certainly remarkable for their skilful manipulation and delicate blending of colours, are by no means all that I should desire this species of decoration to be. The leading forms appear to me to be neither sufficiently distinct nor sufficiently simple, and, consequently, in large apartments, they appear *petit* and out of place. The attempt so frequently made in such cases to represent foliage in relief appears to me to be injudicious, as suggesting ideas of confusion and disorder. The flat configuration of Egyptian or Moorish ornament, filled in with tints of well-balanced colour, and defined by decided outlines, I consider infinitely preferable. The Chinese paperhangings, with all their crudities and absurdities, are remarkable for their balance of colour, while the colours themselves are so pure and decided, that, even in artificial light, the eye can discriminate between any tint as well as by the light of day. The blues and greens, which in our paperhangings, and even on our painted walls, entirely lose their identity in artificial light, retain their distinctive qualities on the Chinese papers. In one quality, however, both the Chinese and French paperhangings seem materially deficient—a deficiency which may be attributable to certain leading characteristics of both nations. This is repose—an essential in all great works of art, and especially required in

British decoration. There should, indeed, be repose as well as brilliancy in all designs. Where all the parts are equally dazzling the eye is pained and bewildered rather than pleased. What the middle distance is to a landscape, the due proportion of neutral tint is to ornamental decorations, and a considerable preponderance of such repose is in accordance with the staid character of the British people. What, for example, can be more out of keeping with the genius of British commerce than the petty scraps of foreign ornament, equally destitute of originality and grandeur, with which the ceiling and walls of the Royal Exchange in London are decorated? The former has no sympathy with the latter—the latter none with the former; and as to the emblems, if they have meaning, few understand what that meaning is, and fewer still care. One thing, however, is clear—nothing we see there appeals to any British feeling, or is calculated to awaken any association in any British bosom. Perception of beauty seems an inherent quality of the human mind, and man generally attains considerable skill in ornamental art before he has acquired any knowledge of the arts which contribute more immediately to his social comforts. Even in his rudest state, the productions of his taste and skill are often remarkable for their symmetrical beauty and delicate manipulation. The South Sea Islanders, with no other tools than such as they manufacture from sea-shells or bits of talc, produce specimens of carving closely approximating in excellence to the best efforts of our best artists; and in several authenticated fragments of ancient British art are to be traced vestiges of ornamental detail, remarkable for beauty of design and delicacy of execution. The adornment of the person seems to be the first stage in the adaptation of natural objects to decorative art. The child bedecks himself with daisies—the savage paints his body with ochre. When this propensity for adornment is extended to the dwelling-house, it evinces a more advanced stage of refinement and of social civilisation. Let the trophies of war, then, which bespeak the barbarism of the age that adopted them, be scattered to the winds, and let our ornamental devices be taken from the flowers of our fields—not fields of battle, but fields of peace and happiness; and thus shall our dwelling-houses be adorned with emblems suggestive of the domestic happiness and comfort of our own beloved country."

IRON STAYS TO OUR WOODEN WALLS.—We have hitherto had a highly-respectable prejudice in favour of oak, a prejudice which, perhaps, is to be attributed to our national taste for the solid and substantial in everything; but, in these times of eager competition in every department of mercantile affairs, speed becomes an equally important requisite with solidity and strength for vessels engaged in the carrying trade. Upon Mr. Jordan's plan, speed and durability do appear in an eminent degree to have been attained. There is a world of the latter quality in the very phrase, "ribs of iron," before which our "heart of oak," sanctified though it be by old association, dwindles into insignificance; while, in respect to the former, it need only be stated, that though the vessel launched on Saturday was nearly 300 tons burthen, yet her whole weight, hull, spars, rigging, sails, &c., would not weigh more than 100 tons, to convince us that the prime requisite for swift voyaging has been secured. A vessel, not exceeding 300 tons, constructed upon the old plan, would weigh, it is estimated, 200 tons at least. In reference to the *Marion Macintyre*, it has been confidently asserted, that if a cargo of double her tonnage capacity were placed in her, she would not draw more than twelve or thirteen feet of water.—*Liverpool Times*.

SOMERSET HOUSE TERRACE.—Will you allow me to mention that every time I journey by the "silent highway," I always regret, when passing the *terrace* of Somerset House, that upon each side landing-place, formed of rustic columns and couchant lions, should be permitted to remain composed brick chimney-shafts and common red chimney-pots: which I deplore the more, as by substituting Portland stone chimney-shafts in the form of pedestals, the eyesores can be at once removed at a trifling expense. W. P. GRIFFITH.



QUEEN'S COLLEGE, BELFAST.—MR. CHARLES LANYON, ARCHITECT.

SEDILIA OF COLERNE CHURCH, WILTS.



QUEEN'S COLLEGE, BELFAST.

This building (an engraving of which is annexed) has been lately erected from the designs and under the superintendence of Mr. Charles Lanyon, of Belfast, architect.

The total dimensions are—length of principal front, 310 feet; wings, 135 feet; the height of the central tower 98 feet. The residences of the president and vice-president are situated in the south wing. The remainder of the building is altogether devoted to the purposes of the lecture-halls, examination-hall, library, museum, laboratories, &c.

SEDILIA OF COLERNE CHURCH, WILTS.

THE church from which the accompanying sketch of Sedilia is taken has been a singularly beautiful specimen of Early English architecture. The plan is a nave with aisles, chancel, and north chapel, west tower, and south porch. The character and style of the sedilia can be gathered from the engraving: the four-centred arch in the groining is, however, an early example. A portion of the adjoining piscina (Early English) has been cut away to receive the easternmost stall. The restoration of the north chapel and sedilia, and a new roof to the chapel have lately been effected, chiefly through the exertions of the vicar. There remain, however, many abominations that ought to be cleared away. The "pens" in nave and chancel, a "drawing-room gallery," in the north aisle, and an overplus of monuments, which have sadly disfigured the church,—saying nothing of the un-Christian example set forth by their sinful epitaphs. It is our earnest hope that ere long a thorough restoration of this once beautiful church will be effected, so that the congregation may worship "in beauty of holiness, without order of pomp, decent and unimproved."—E. W. G.

ON THE ASSERTED "SECRET OF ANCIENT PAINTED GLASS."

I HAVE waited in expectation of seeing in your columns a disclaimer from Mr. Forrest of the honour asserted for him by Dr. Nevins, of having discovered as a grand "secret," a method well known to and practised by the veriest tyro in a glass-stainer's shop. The remarks in *THE BUILDER* were copied into two at least of the Liverpool papers, and must thus have come directly under Mr. Forrest's observation.

To answer Dr. Nevins at length, and in the spirit of the concluding paragraph of his paper, I will follow his remarks throughout, stating thus early that I will, at any time, show Dr. Nevins, or any one not connected with the trade, several examples of the "secret," both ancient and modern.

The modern appearance of cleaned ancient glass is certainly striking, but I demur to the notion that it always arises from the obliteration of the lights and shadows on the reverse. When they are retained the same result obtains. In corroboration of this I would appeal to those who have cleaned ancient glass by such means as would remove extraneous matter only, and would leave intact the glass itself and its paints and enamels.

As to the effect produced by the state of the surface I am unable to speak positively. Ordinary ground glass well exemplifies the great effect produced by the mere alteration of a surface, and I am unable to say whether a great part of the effect of ancient glass is not due to some general alteration or condition of the surface, or that it may not be due to artificial treatment. A very excellent effect can be produced by either method, probably the best by a combination of the two.

The Doctor says, "I have been informed a quantity of painted glass was lately made at St. Helen's, Lancashire, by being cast upon a sand bed." I suppose the remark must apply

to the company I represent. A few weeks ago, I must confess, I should have laughed at painted glass being cast, but having lately read the specification of Mr. Edwin Pettit's comprehensive patent for making glass, I am now a sadder if not a wiser man. Mr. Pettit not only speaks of the article, but tells us how to make it. He employs a sand bed, though iron is generally used for the purpose. Upon the sand bed he is to paint his ornaments, figures, &c., in vitrifiable colours: the glass is then to be cast upon the painting, which it is expected will leave the table and adhere to the glass. I can fancy Mr. Pettit's alarm should he have read the Doctor's remarks: the idea that his span-new scheme had been tried at St. Helen's must have horrified the patentee, but I can assure both him and Dr. Nevins that cast painted glass has never been made in these works, nor is it, so far as I am aware, at all likely to be.

But perhaps Dr. Nevins alludes to a kind of glass (coloured and white) manufactured to a large extent by Messrs. James Hartley and Co. of Sunderland. This glass requires much judgment in introducing it, but is occasionally used to advantage. We manufactured a very small quantity of coloured glass, under peculiar circumstances, in a somewhat similar manner; but, with changing circumstances, we relinquished the manufacture, and procure our supply from the makers. I must corroborate most fully the observations and so-called discoveries of Mr. Forrest, so far as stating for a fact, that a thin, dark coating is spread over the back of the glass, and that lights are taken out of this ground, leaving the glass bright and clear. I assent to and assert this fact as freely as I should the first fact of the multiplication table: it is a very stubborn fact; but I would add that it is exemplified in nearly every window since the fourteenth century and—and here's the rub—in modern ones too.

It is in the inevitable and natural course of events, that craftsmen should be judged by their craft; but I raise my voice strenuously to remonstrate against those who would assume the modern glass-stainers are so ignorant as to require or submit to a dictation of simple first rudiments as "secrets" of power and might; and if the so-called secret be in truth the place in which the moderns fall short, it must be said they lack the skill, though they possess the knowledge. HENRY DEACON.

WINDOWS STAINED AND PAINTED.

THE new east window of the fine old church of St. Wilfred, at Standish, has been completed. The style is Perpendicular English (we believe), in keeping with the general architectural idea of the edifice. The design was by Mr. E. Grogan, of Manchester, and executed under his direction. The expense of the masonry has been sustained by voluntary contributions of the parishioners. The window is filled with the stained glass from the laboratory of MM. Marechal and Gugnion, of Metz. The chief figures are those of our Saviour, his Evangelists, and the great Apostles of the circumcision and uncircumcision. The centre light of the five of which the window is composed, is occupied by the Redeemer, represented delivering his gospel, the substance of which is inscribed upon an extended scroll in the words, "I am the resurrection and the life." For this addition the parish is indebted to the liberality of the family at Arley, who present it as a memorial of the late Mr. J. C. Chishenale. Amongst the improvements which have been effected within the last few years to St. Mary's Church, Truro, must now be added three two-light windows of stained glass, which have been placed in the south wall; two of them the gift of Mr. W. Daubuz, of Killow; and the third given by the Rev. W. W. Harvey, rector of St. Mary's. Those added by Mr. Daubuz are memorial windows. The subjects of one are—Christ raising Jairus's daughter, with text on a scroll, and the Saviour blessing Little Children, with text. Of the other, the subjects are—Christ riding into Jerusalem, and the Pharisee and Publican praying in the Temple. Of the window erected by the rector, at the eastern end of the south wall, the subjects are—the Descent from the Cross, and the Entombment. In the tracery-light of each of the three windows is an angel bearing a shield with initials. The style of the windows corresponding with that of the original architecture of the church and of the stained windows previously erected in the chancel and aisle, is Late Perpendicular. The artist is Mr. Warrington. The *Cornwall Gazette* speaks highly of the colouring and the designs.—The west windows of the church of Holy Trinity, Halstead, have lately been filled with painted glass. There are ten subjects in medallions, the vacant spaces being filled in with a varied mosaic pattern. They occupy three lancet windows, with a smaller one above. Each window contains three medallions, with a scroll and text. The centre window contains the Crucifixion. Above is Christ parting from his Disciples, and underneath, the Brazen Serpent. The side windows contain Noah and his family entering the Ark; Christ receiving Little Children; the Children of Israel passing through the Red Sea; Nicodemus coming to Christ by night; Christ baptized in the River Jordan; and Naaman healed. The small upper window represents the Ascension. The whole was supplied by Mr. Clutterbuck, of London, at a cost of upwards of 100 guineas—a gift of the incumbent, Rev. Duncan Fraser, and his lady, aided by subscriptions. The new west window of the parish church (now under restoration) is to be filled with painted glass in memory of the late vicar, Dr. Adams.—At St. Mary's, Ware, in Hertfordshire, restored some time since from the designs of the conductor of this journal, two stained glass windows have been put up. They are executed by Mr. Wallis: the larger of the two cost 300*l.*, and they are the munificent gift of Mr. Edward Chuck, a wealthy inhabitant of the town. The *Hertford Mercury* gives the following description of them:—"The eastern window consists of five lights, and the subject represented is the Crucifixion. It contains six figures in the three central lights,—Our Saviour on the cross, with the

Magdalen at the foot, and St. John and the Virgin, one on each side of the cross—a group very similar to that in the celebrated picture by Rubens, in the Museum at Antwerp. Above are two angels in the air, one on each side of the top of the cross. In the two side lights stand Nicodemus and Joseph of Arimathea, under canopies decorated with Gothic tracery, which is continued up so as to form a kind of rich frame-work for the central subject. In this frame are two angels, bearing scrolls, with the inscription, 'Behold, the Lamb of God, which taketh away the sins of the world.' Above the whole is a tier of angels, on a reduced scale, in attitudes of prayer, and bearing scrolls, with the inscription, 'Holy, holy, holy, Lord God Almighty, heaven and earth are full of thy glory; Glory be to Thee, O Lord Most High.' The tracery above this is filled with Gothic arabesques, into which the instruments of the Passion are skilfully introduced, viz.—the scourge, crown of thorns, nails, hammers, ladder, sponge, and reed, the summit being occupied by the emblem of the Lamb of God. In the place of this, in the original design, was the pelican, which, in mediæval art, is sometimes employed as the emblem of the Church; sometimes, as that of our Lord. As, in this latter capacity, it appeared to suggest a doctrinal impropriety (*Christum signat avis, qui sanguine pascat alumnos*), the other emblem, which has the warrant of Scripture, was proposed in its place. The lower portion of the window is occupied by subordinate subjects, representing the different parts of the Passion, as divided in the Litany. The first is, the Agony and Bloody Sweat, a group resembling that of the painting by Raffaele, in the possession of Mr. Rogers, the poet; the second, the Bearing of the Cross; the third, the Burial of the Saviour; the fourth, the Resurrection; and the fifth, the Ascension. All these, which occupy the lowest third part of the five lights, serve, from their reduced scale, as portions of the rich frame-work of stained glass which surrounds the main subject of the window. At a distance they do not distract the eye, and when viewed from a near point, they furnish a complete history of the Saviour's sufferings. The western window lights a portion of the church which is employed as a baptistry. The subjects have been selected with a special reference to this. In one light, is the Baptism of the Saviour in Jordan, with the inscription, 'Thus it becometh us to fulfil all righteousness;' in the other, the blessing of little children, with the inscription, 'Suffer little children to come unto me, and forbid them not.' In the tracery above, are two angels carrying scrolls, with the inscription, 'That which is born of the flesh, is flesh, and that which is born of the spirit, is spirit.' The erection of these windows affords us an opportunity of suggesting to our readers the desirability of commemorating their deceased friends by memorial windows, instead of the wretched marble monuments (stone placards, as somebody calls them) which disfigure churches, and are really as expensive as painted windows. For 20*l.*, a single light of a decorated window may be filled with excellent glass, and a dab of marble costs as much, including all expenses.

ARCHITECTURAL COMPETITION AT AMSTERDAM.—We mentioned in 1848 that the Society for the Propagation of Architecture at Amsterdam had offered premiums for the best design for a theatre for a large town. We are requested by M. Warnsinck, the secretary, to say, that two designs have been considered worthy to receive each a prize of 300 Dutch florins and a certificate of honour. The first marked, "La critique peut faire éviter ce qui est laid, le génie seul peut faire trouver ce qui est beau," is by Mr. Lucas Hermannus Eberson, of Arnheim, Paris; and the second marked "Spectatum admissi risum teneatis amici," is by Messrs. Hermann Wentzel and Henry Marley Burton, architects, Berlin.

CANNEL COAL AND WESTERN GAS COMPANY.—On the 14th, Mr. Wright, the manager of the Western Gas Company, delivered a lecture on Cannel Coal to the Gas Fitters' Association and others, at the Company's fine works, Kensal-green. We will recur to the subject next week.

ARCHITECTURAL INSTITUTE OF SCOTLAND.

A MEETING of the Architectural Institute was held on Thursday evening, last week, the Duke of Buccleuch, President of the Institution, in the chair.

The Duke, in opening the proceedings, said this was the first time he had had an opportunity of expressing his satisfaction that such an Association had been formed in the city of Edinburgh, as a national Architectural Institute for Scotland. He was satisfied that it must be productive of great benefit, not only in the particular department of the fine arts to which its operations were mainly directed, but in diffusing information in regard to many subjects connected with high civilisation and improvements in social life. It would be of value as supplying a standard of taste, not only for the ornamental part of our national buildings, but also for practical details.

The first paper read was "Notes on Early Scottish Architects," by Mr. Joseph Robertson, which we shall print hereafter.

On the conclusion of Mr. Robertson's paper, a discussion of some interest arose as to the claim of William Aytoun to share in the merit of Heriot's Hospital. Mr. Rhind expressed his belief that Heriot's executor, the Dean of Rochester, had brought a plan of the building from London, and contended that Aytoun's claims must be restricted by the circumstance, that he did not succeed Wallace, the first "master mason," until the work had been four years in progress.

Mr. W. A. Parker, Secretary, then, in the absence of Mr. James Ballantine from indisposition, read a paper by that gentleman on "Ornamental Art as applicable to the Internal Decoration of Houses," which we have given in our present number.

Mr. P. Wilson, architect, then read a paper on "The Improvement of Dwellings for the Labouring Classes;" and after some remarks by the noble Chairman, the meeting adjourned.

RAILWAY JOTTINGS.

In consequence of a high flood, a portion of the railway bridge across a stream between Clifton and Shap, on the Lancaster and Carlisle line, broke down on Wednesday in week before last. The engine of a luggage train shortly after ran into the gap, but the engineer and stoker escaped, and there were no others on the train. The bridge has been temporarily repaired, and the trains now pass as usual.—According to *Herapath*, negotiations are going on for the working of the Eastern Counties line by contract. The proposed terms are said to be 40 per cent. of the gross earnings. This line, he adds, is, and has been, worked at 30,000*l.* to 40,000*l.* annually more expensive than it ought.—The railway employés at Portsmouth and its vicinity were entertained on Monday in last week at a dinner given by Lord George Lennox in the York Rooms, Southsea, when upwards of 100 were present, Mr. R. L. Sutton, superintendent, in the chair. Lord Lennox said, it was not to gratify any personal vanity that he had invited them three years ago to meet him at dinner, but because he considered no class of men were more deserving encouragement than those engaged on railways, whether as porters or managers; not only in this town, but in all parts of England. As one of their strongest friends, he wished to give them a word of advice. In the North of England a strike had taken place among the men employed on the railway, who, before long, he had no doubt, would regret the steps they had taken. He advised them to think long before they left their employment, even if there were slight grievances. Whilst they continued good servants, they would find good masters, and he would support every such individual.—A numerously-attended meeting of the working men of Leeds took place on Wednesday in last week, to confer with a deputation of the executive committee of the International Exhibition for that district respecting the arrangements now in progress for the purpose of securing cheap conveyance to London to see the Exhibition, and comfortable accommodation for visitors during their stay in the metropolis. Resolutions to form clubs, &c., were passed unanimously. One speaker said that besides artisans' clubs, there would be other associa-

tions—such as the Teetotallers and Oddfellows—who would probably go up in large bodies. The Temperance Societies were intending to go in a body, to have 100,000 teetotallers there at once, and hold a meeting, over which Prince Albert would be asked to preside. Parties by these trips would be allowed to remain in London six days, but he had a distinct understanding with the company that persons might return in four days if they desired. He hoped, before the close of the Exhibition, to see arrangements made for a poorer class, who could not afford to spend three, four, or five pounds—a class that would not object to sleep in the carriages by night, so that they could reach London and see the Exhibition by day. This class, he thought, might pay a visit in this way for about a sovereign. A servant of the Midland Company informed the meeting that that company were building 100 splendid carriages for the conveyance of passengers to the Exhibition. With regard to the terms of admission to the Exhibition, he had the best authority for saying that tickets would be issued to visitors enabling them to go into the Exhibition every day so long as they stayed in London. A working man said it appeared strange that they should charge 15s. for trips to London now that every body was going, when last year the trips were only 14s. A trip agent said he had mentioned this subject to the manager of the London and North-Western line, who replied that it was necessary to look to the interests of the shareholders in this matter, and make the best of it they could. So, in place of offering any special advantage or facility, to promote the national gratification, on so laudable a subject of curiosity, the railway authorities think to promote the best interests of their shareholders, by putting a positive tax upon the sight-seers over and above the full fare heretofore charged to excursionists. That they will only put a check upon the free influx of their own profits by such a course we cannot doubt. Their prospect is surely a fair enough one without such a futile attempt to "make the best of it" in this great year of excursions. They calculate rather too confidently on the strength of the national curiosity: at all events, a tax upon it of this sort is much more likely to turn the scale against the interests of the taxpayers than to yield such a return in their favour as appears to be anticipated.—It is calculated by those who have paid attention to the subject, that the traffic of some of the leading trunk lines will be doubled during the months of June and July next. It is expected, for instance, that the traffic of the London and North Western, which, at that season, is usually about 50,000, will not be less than 100,000, per week.—The amount of railway calls for the month of January, so far as they have at present been advertised, is 674,621*l.*, irrespective of the call due on the 10th inst. of 10*l.* per cent. upon so much of the Great Western Company's guaranteed 4*½* per cent. stock as may be issued. In the corresponding period of 1849 the amount was 3,926,342*l.*; and in 1848, 4,860,220*l.* In 1847, it was 6,157,863*l.*—The following railways were opened in 1850:—Ambergate, Nottingham, and Boston, 24 miles; Birkenhead, Lancashire, and Cheshire, 10½; Bolton, Blackburn, Clitheroe, and West Yorkshire, 12½; Buckinghamshire, 49½; Chester and Holyhead (Britannia-bridge), about half a mile; Colchester and Stour Valley, 7½; East Lancashire, 4; East and West India Docks, and Birmingham Junction (Camden Town to Blackwall at Bow), 6; Fleetwood, Preston, and West Riding, 4; Great Northern—London to Peterborough, 79—Branch to Royston, 14—93; Great Western—Oxford to Banbury, 24, extension to Frome, 5½—29½; Lancashire and Yorkshire, Silkstone Branch, ½; Low Moor to Bradford, 3; Halifax to Low Moor, 5½; Liverpool extension, ½; Huddersfield and Sheffield, and Holmfirth Branch, 15½—24½; Liverpool, Crosby, and Southport, 3½; London and North-Western, Clifton Branch, 3½; Rugby to Rockingham, 27½; Coventry to Nuneaton, 10—41½; Manchester, Sheffield, and Lincolnshire, 8½; Midland, Junction at Knighton, ½; North-Western to Lancaster and Carlisle at Milnthorpe, 10; Oxford, Worcester, and Wolverhampton, branch from Worcester to Midland, 4; Sheffield, Wakefield, Barnsley, and Goole, 13; South

Wales, Chepstow to Swansea, 75; Whitehaven and Furness, from Ravenglass to Furness Railway at Ulverstone, 18½; total number of miles opened in England during the past year, 448½. Aberdeen, 12½; Caledonian and Dumbartonshire, from Bowling to Loch Lomond, 9; Stirlingshire Midland, 5½; Glasgow, Dumfries, and Carlisle, 27; North British branches, 12; Stirling and Dunfermline, to Alloa, 17; total length of Scotch lines opened, 83. Belfast and County Down, 12½; Cork, Blackrock, and Passage, 6; Dublin and Belfast, to Wellington Inn, 10½; Dublin and Drogheda, Navan branch, 17½; Irish South-Eastern, to Kilkenny, 15; total length of Irish lines opened, 61½. The aggregate length of railways opened in the United Kingdom during 1850 was 593 miles, being 344 less than in 1849. In 1849, 750½ miles of railway were opened in England; 73½ in Scotland; and 114 in Ireland; the total, 937½ miles, being 270½ less than in 1848. The aggregate length opened in the latter year was 1,108; in 1847, 751; and, in 1846, about 600, so that the length of railway opened last year was less than in any year since 1845.—A new method of stopping railway trains has recently, it is said, been discovered in the United States,—electricity the means used. The plan contemplates the arrangement of a galvanic battery on the locomotive, under the eye and hand of the engineer, with a rod running thence to each wheel in the train connected with the different brakes, and to be connected with the battery so as to apply simultaneously and instantly any desired amount of pressure to every cog.—The Panama Railway Company are collecting materials and labourers, with a view to commence operations as soon as the dry season sets in: 400 men, exclusive of officers and engineers, according to the *New York Journal of Commerce*, have gone out from the United States, and vessels laden with timber and other materials are leaving almost daily.

ART-EXHIBITION AT PARIS.

NEW ARRANGEMENTS.

EVER since the annual exhibitions of art have taken place in the Gallery of the Louvre, it was considered a great inconvenience that the pictures of the old Italian and Dutch schools had to be hidden for a time, and overhung, as it were, by their modern rivals. It seemed inconceivable how a town like Paris should not afford, in its numerous public buildings, one to be devoted exclusively to modern art, so as not to deprive the many visitors and students of the view of great examples, while those of seemingly more transitory character were exhibited. For this purpose, after the revolution of 1848, part of the Tuilleries was appropriated to that purpose. But it seems that its splendid apartments were, after all, not altogether appropriate for the purpose. And thus, on the 3rd instant, the wide spaces of the *Palais Royal* (now *Palais National*) were thrown open to the public as the *locale* chosen for this year's Art-Exhibition. It is a strange occurrence, that in Paris, which for the last sixty years has experienced so many changes (in art and otherwise), the exhibition of 1851 should take place in the same locality where the first sight of this kind was witnessed in 1673, of which the very same catalogue, printed by Pierre le Petit, still exists. But then, only the *tableaux et piéces de sculpture* of the *Messieurs de l'Académie* enjoyed this new privilege. However this may be, laying aside the still vaster plans of French artists and statesmen for the future, even here these works enjoy the advantage of a roomy and free space, and an adequate share of light. The exhibition occupies thirty-four galleries and rooms, of which some, like Nos. 17 and 29, extend over a whole façade, or a great portion of one. The arrangement is the following:—From 1 to 4 is destined for paintings; from 5 to 9 engravings; from 10 to 12 miniatures, porcelains, enamels; 13 to 18, designs and pastel drawings; 19 to 28, paintings; 29 and 30, architecture; 31 and 32, paintings; 33, pastel; and 34, painting. The catalogue of this year enumerates 3,950 *articles*; and as the French journals truly say, far too much for the public, far more so for art. Another drawback is the yearly increasing number, and the increasing daring and recklessness of libidinous pictures. On the other side, architecture and

sculpture have surely gained in this new *locale*, as the sculptures were at the Louvre to be seen on a ground floor, where chilly temperature was no excitement for this study or observation. Beside the rooms devoted exclusively to sculpture, such works have also been distributed amongst the pictures of other apartments. But it is easy to understand that a statue or basso-relievo required an uniform, clear background, and does not improve by the varied hue of colour which may be placed around or behind it. As, in fine, the great Exhibition of this year is now the great shibboleth of the continent, plans and wishes start on every side in Paris, that an especial building for the annual exhibition, both artistic and industrial, should be constructed in the large *désert* which is now forming between the Tuilleries and the Louvre.

The Correspondent of the *Daily News* says of this Exhibition—"There is a style of art hitherto greatly attended to by French painters, which is on this occasion very ill represented,—that is, the grand religious style, which in France has a value, because there are places to hang and see such pictures. Save and except a Christ descended from the Cross, there is nothing in this style at all worth notice. The great historical works are far more successful; and the picture by Müller, entitled 'The Roll-call of the Last Victims of the Reign of Terror,' is extremely remarkable, not only for its size, which exceeds 35 feet, but for its execution. Mr. Müller has a great name. Horace Vernet admires it vastly, and has been heard to say, 'I wish I had painted that picture.' This picture will doubtless obtain the great prize—the one great encouragement given this year by the Government to successful merit. It may be, however, that M. Pollet, the statuary, who has exhibited a figure entitled 'Une Heure de la Nuit,' will dispute this grand prize with his rival in the other field of art. There is a picture of 'Jane Shore,' by Robert Fleury, which is distinguishable for the beauty of its colour, imitating, by its Titianesque manner, the works of the old masters. Some enormous stretches of space, painted over by Alaux, Philippotteaux, Yvon, Debay, and Alexander Hesse, are generally more or less bad—but they are bad. The *genre* class of pictures is remarkable. There are four admirable gems by Meissonnier; one of which especially attracts attention, being called 'Un Peintre montrant des dessins.' Works there are by Decamps, who, though less good than of old, is still Decamps. Wonderful touches of colour are exhibited by Eug. Delacroix, who, like Turner in England, seems yearly to have less idea of drawing. 'Un lever,' a naked young lady arranging her chesnut hair, is amongst the best of this master's pictures. Nor must we forget a nice little 'Tony Johannot,' very elegant, which will please ladies vastly, and splendid landscapes by Corot.

BIRKENHEAD DOCKS.—The committee of the Dock Trust have stated their report to the bondholders on the state of their affairs, and the best means of raising the funds necessary to complete the works. The report recommends the bondholders to assent to the bill of the Dock company, leaving open the question as to the price of the South Reserve. So far as regards the progress of the works, the terms intended to be carried into effect by the Dock Company's Bill are as follow:—1. Company to aid, by a guarantee on their property at Birkenhead, in raising 250,000*l.* towards the completion of the outer works and excavations of the great float. 2. Company to aid, in like manner, in raising 70,000*l.* for building the walls, not yet contracted for, around the great float; but all moneys received from the frontagers for the purchase of these walls to be applied in repaying the advance. 3. Company to purchase South Reserve at 130,000*l.*, to be applied in completion of the outer works. 8. The entire works to be executed under the direction of a committee of eight trustees, to consist of three trustees selected by the bondholders, three by the company, one by the Birkenhead commissioners, and one by the Wallasey commissioners. A meeting of the bondholders was held lately at the London Tavern, Baron de Goldsmid in the chair, when the report was presented and adopted.

THE PERMANENCY OF THE BUILDING IN HYDE-PARK.

The general opinion is, that it would be desirable to establish, and, if possible, perpetuate, the building as a winter garden: it would shock the public expectation to see so vast a pile cleared away when it had answered the transitory object of sheltering the accumulated tributes of industry at the close of the year 1851.

As the temperature would be equable, the verdure must be perpetual, affording to the inhabitants of this ungenial climate a biding spring.

Such a place of resort would not only supersede others now in use, but would be crowded at seasons when the "hard inhabitant" should otherwise keep his chamber; and if visitors were admitted at only 2d. each, 5,000 daily would yield a sum exceeding 40*l*.—an amount sufficient, not only to pay a staff of gardeners, but to stock the grounds under shelter with all the richest products of earth.

If, however, the structure is to be perpetual, it strikes me that the gutter-beams, which are scooped out by machinery, should be lined with leaden or other metallic ducts to carry off the water: being of deal, these gutters are liable to crack, from the alternate drought and moisture, and, if even pitched over, in the old fashion, they are sure to rot in a few years: besides, I doubt very much for the security of costly articles, even during one season, if the water furrows be not properly lined.

When the whole fabric is complete, there may be some difficulty in remedying this defect; and it is certain that unless some means are pre-arranged for obtaining access to the lofty exterior (for the repair of glass, &c., to say nothing of snow-drifts), it will be a work of great difficulty and danger to restore any accidental damage.

QUONDAM.

WORKS IN IRELAND.

The works on the Cork and Bandon Railway have been progressing rapidly for the last twelve months. Nine miles out of the ten between Cork and Ballinhassig are now ready to receive the rails. The Cork station on the Moncrea Marsh, adjoining Albert-quay, has been some time in progress, and the foundations are now above ground. The Goggin's-hill tunnel will be bored through in about three months: it is 1,000 yards in length, and more than three-fourths of it is at present executed. The first two great ribs of the viaduct, by which the railway is to cross the Chetwynd Valley, were raised and fixed last week. This viaduct is the largest of the kind "as yet" constructed in Ireland. It is 500 feet from abutment to abutment, and at a height of 100 feet over the valley. It consists of four opens, each of 110 feet span, with two abutments, and three massive cut limestone piers 70 feet high, decorated with Antae and bold projecting cornices, which impart to the structure an appearance of great solidity. The superstructure, which weighs about 1,000 tons, is composed entirely of cast-iron. Each span consists of four cast-iron arched ribs, 3 feet deep, 110 feet span, and having a rise of 20 feet in the centre. Resting on the ribs and piers, and running right through from abutment to abutment, are four lines of cast-iron spandrels, retained and braced across by cast-iron frames and wrought-iron tie-rods, connected on the top by the roadway, formed of cast-iron covering plates flanged and bolted together; the whole finished with a neatly moulded handrail and projecting cornice.

For the purpose of raising and framing the ironwork, two lines of whole timbers have been laid from pier to pier, 26 feet apart, and at a height of 70 feet from the level of the ground at the centre. Two distinct lines of framed scaffolding, composed of upright finished balks 26 feet apart, support these timbers, oblique struts from the uprights supporting the intermediate span: the whole is maintained in its position by numerous wallings, struts, and braces. Rails are laid on the top of the two lines of timbers, that the travelling platform erected on them may be moved longitudinally to any required position. The travellers, of which four are required to raise each rib, are composed of two vertical parallel frames, 26 feet apart, 25 feet high, and 5 feet wide on the top. Each frame rests on rollers on the

longitudinal beams, which, from the necessity of including sufficient space between them to admit of raising and permanently fixing the whole superstructure, could only be commenced at the top, where they support a wrought-iron trussed platform, capable of sustaining a weight of over 10 tons.

On the platform is placed a crab-engine for lifting the castings, and which can move laterally on iron ribs laid on the platform for that purpose. The ribs are cast in four pieces of about 4½ tons each. The pieces are formed with broad flanges at either end, by which they are bolted together when raised to their proper position in the arch. When a rib is to be raised, the four pieces of which it is composed, having previously been planed, fitted, and marked at the foundry, are placed on the ground, each under its ultimate position in the arch. The travelling platforms are then moved along the longitudinal rails, until each platform is over its particular casting. The crab engine is then moved laterally across the platform to a position directly over the line the rib will occupy when fixed: ropes are attached, and the four parts of the rib are lifted separately but simultaneously, by five men working each crab, and, when raised to the required height, the two parts next the piers are first placed, with their ends abutting against cast-iron shoe plates previously fixed in the masonry for them to rest in. The two centre pieces are then raised and placed with their flanged ends against those already fixed: both are inserted and screwed tight, and the whole rib is made secure. When two ribs have been erected, they are connected by diagonal bracing frames, bolted to each rib. The machinery is so contrived, that a rib of nearly 20 tons weight can be raised and fixed by twenty men in the course of a few hours.

The Evans Mausoleum, in the church of St. Peter and Paul, at Kilmallock, is nearly finished by an artist, Mr. John Purcell, of Limerick.

The Poor-law Commissioners purpose erecting some additional buildings (to accommodate 300 persons) in connection with the Killdysert Union Auxiliary Workhouse: the drawings, &c. for same have been made by the commissioners' architect, Mr. Wilkinson.

The Ballyteigne drainage and embankment are now approaching completion, and are likely to realise the expectations of the projectors. The work is divided into two distinct branches, the first of which is a catch-water, or navigable canal, about six and a half miles in length, crossing the north-west portion of the reclaimed lands, from the main channel at Lacken, to the village of Bridgetown, and intersecting in its course three considerable rivers, and several rivulets, and receiving the surface water of 300 acres of land, which it conveys to the sea. The second branch of this work is an embankment at Cull, by which 3,000 acres of marsh and slob land will be reclaimed. In order to perfect the drainage of this extensive tract after the embankment, a series of self-acting and fixed sluices, with other machinery, are constructed to act with the tide, and which at low water permit the surface water accumulated from the rain or land springs to escape. The canal is crossed at Baldwinstown, Redmoor, Liffey, and Salt-bridge, by four substantial bridges. The works, which are being erected under the supervision of the Drainage Commissioners of the Board of Public Works, are stated to be permanent and substantial.

The Commissioners of the Board of Public Works purpose erecting new school-rooms at the Royal Hibernian Military School.

The Poor-law Commissioners have decided upon building a new union workhouse at Urlingford, county Kilkenny, according to drawings furnished by their architect, Mr. Wilkinson.

A new church is about being erected in the town of Portlaw.

A new stand-house is to be built on the Curragh of Kildare: a number of gentlemen lately met in the Dublin terminus of the Great Southern and Western Railway to decide upon plans submitted for same by Mr. S. Wood, architect, which they finally approved of.

The building operations in Belfast are expected to be so extensive immediately, that much additional ground suitable for brick-

making has already been broken. In the new line of street alone, contracts to the amount of between 20,000*l*. and 30,000*l*. including that for the new Corn Exchange, will be commenced early in spring; and it is confidently expected that Government will give a grant for the erection of a new custom-house, although they have refused to supersede the present inconvenient post-office with one more suited to the requirements of a commercial town, like Belfast, unless the inhabitants raised a subscription to erect it.

The Board of Guardians of Ardee Union, purpose erecting an addition to the entrance building of the workhouse in the male probationary ward, according to the drawings prepared by the Poor-law Commissioners' architect.

The Board of Guardians of the Carrick-on-Suir Union intend erecting two additional wings in connection with the main building of the workhouse, according to the plans, &c. by the Poor-law Commissioners' architect.

A plan for a new road to the Queen's College, Cork, has been prepared by Mr. C. W. Law, and drawn by Mr. W. Fogarty, scholar of the college. It is proposed to open a new line on the western road directly opposite Mardyke-street, thence to run through the quarry, past the college up to the Bandon-road. It is contemplated that there should be branch entrances to the cathedral and palace.

The Ecclesiastical Commissioners purpose rebuilding the church of Upper Moville, county Donegal.

BISHOPS' THRONES IN EARLY CHURCHES.

CARDINAL WISEMAN, in his installation address, Dec. 6th, treated his audience to an archaeological disquisition on the episcopal seat, mentioning the fact that a seat for the bishop existed in every church, and that in the catacombs a marble seat for this purpose had been discovered. "And no sooner had the Christians emerged from their hiding-places, and taken possession of the temples of the heathen, or built for themselves basilicas, than they erected a seat or episcopal throne at the very extremity of the church under the apse, an ample well-built throne, around which the presbyters sat, that so the stability of that seat might denote the permanency of that succession that was to ensue therein." The cardinal must, indeed, have been hard pressed for an argument, and his courage assumed the aspect of desperation, when he ventured to allude to the arrangements adopted by the primitive Christians, and from their practices in these matters, deduce reasons in support of his own church. It is undeniably true that there was a seat at the end of each church, basilica, king's house, conventicle, or meeting-house, as it was commonly designated, on which the presiding elder or bishop sat, and from which he preached,—an arrangement followed in all times wherever a public body met together for social purposes: the bishop's seat was identical in use and intention with that which every corporate body erects for its presiding magistrate, identical with that which every public meeting provides for its chairman; and as the bishop's seat was, as the cardinal rightly explains, at the extreme end of the hall, and as from this seat the bishop always preached, this fact alone, even if we had not the ancient buildings to testify to the same truth, would prove that there was no screen existing between the bishop and the people: there was not even a distinctive name for the bishop's seat in primitive times, but the platform on which he sat was simply called a chancell, from the Latin word *cancelli*, the low railing at the edge of it. On this platform, in primitive churches, the communion-table was never placed, but invariably stood in the midst of the people. Bearing these facts in mind, and also recollecting that the people adopting these arrangements were converts either from Judaism or Paganism, having no other idea of religious worship than as connected with temples, into which the laity were not admitted, in which there was always a screened holy place, which the priest alone could enter, and a stone altar on which the priests invariably offered up material sacrifices,—bearing in mind these facts, and the difficulty of changing

habits thus ingrained into their very natures, it is impossible not to see that the primitive Christians, in thus discarding all semblance to a temple, but erecting large open halls in which there was no other division between those assembling in them than that necessary one of the raised platform for the president, and no semblance of an altar or a holy place, surely the evidence is perfectly irresistible that these primitive Christians interpreted Christianity to be a social worship,—in which all were equal before their common Father,—in which all were brethren, “partakers of the heavenly calling, kings and priests unto God.”—in which, that “all things might be done decently and in order,” one was appointed by the church, that is, the “congregation of faithful men,” to preside and teach—holding the same relation to the assembled families as the natural head of each family occupied in the “church which is in every house,” and called also by the endearing name of father.

Will Cardinal Wiseman venture to deny these facts, and will he vouchsafe to explain how this significant relation between the presiding father and his brethren, “partakers in the heavenly calling,” came to be changed? How it was that his simple seat came to be called a “throne?” How it was that a thousand years after Christ’s appearance, screens began to be put up between “the throne” and the people? How it was that the communion table became changed into a stone altar? How it was that, instead of standing among the brethren, it was placed in a deep recess, in a place still called by the name of chancel, but no longer having its ancient use? Will he further explain how it is that the old Constantine churches have had their old walls cut through for the insertion of side chapels; and these self-same Constantine churches, in which, as he truly says, the old episcopal seat still remains, but which is *not now used*, and is boxed out from view by comparatively modern tabernacle work over a stone altar, and the thrones in advance of that? Will he vouchsafe to explain these indisputable facts, and clinch his explanation by accounting for the extraordinary contrast in arrangement and use afforded by a primitive church and a Gothic cathedral, once called the king’s house or the people’s, but, when bishops’ seats became “thrones,” by a very natural process transmogrified into “cathedral,” from *cathedra*, the Latin name for this now all-important “throne?”

JOHN ELIOTT.

REPEAL OF THE LIGHT AND HEALTH TAX.

THE agitation for the repeal of the iniquitous window-tax—the tax on light, cleanliness, health, and morality—has now fairly begun. A very numerous meeting of the inhabitants of Islington was held last week for the purpose of adopting measures to obtain its complete and unconditional repeal. Mr. Wyld, M.P., was called to the chair, and in the course of his address said that, like Diogenes of old, who desired Alexander to stand out of his sunshine, they should say to ministers, that whatever their politics were, they must not prevent the sunshine from coming to the people. The meeting was afterwards addressed by Mr. Wakley, M.P., and by various other gentlemen. Mr. George, one of the churchwardens of St. Anne’s, denounced this tax as one which created another; for by driving the poor into wretched dwellings the result was disease and consequent expense, as well as other evils to be borne by the public at large.

At the Marylebone Court-house, two days after, a crowded meeting of the delegates of the metropolitan parishes was held, Mr. J. A. Nicolay in the chair. Messrs. Wyld, Wakley, Bell, and Williams, M.P.s, Lord Dudley Stuart, M.P., Sir De Lacy Evans, M.P., and others, were also present; and it was resolved by acclamation that deputations from each of the metropolitan parishes, accompanied by the metropolitan and other members, should be invited to wait on the Chancellor, and urge the total, immediate, and unconditional repeal of the window-tax, and that Viscount Duncan, M.P., be requested to head the deputation.

One correspondent, “J. W.” says,—I think a plan should be set on foot to rouse the whole of the kingdom forthwith. Suppose that a

circular were issued from an association in London to all the mayors or overseers, or other officers in each town, requesting them to call a meeting, and petition Parliament for a total repeal of the window tax; and at the same time advising them to use their influence with their own member, if any, and all the county members. I should advise them to solicit pecuniary aid at the same time, to defray expenses. I think by this means they might get as much as would cover their outlay. If something like this was carried out, I am satisfied the tax would be removed. Do not let us wait for Government doing it, but arise and show them that we are in earnest.

Punch comes in with a “Sonnet scratched on a Window-pane* up a Court,” which might be sent in the form of a petition to the Prime Minister by all who have not words of their own to express their wants:—

“We windows of this dwelling are the eyes,
And being very small and very few,
But half resemble those which sages view,
Scanning through microscope blue-bottle flies.
More might we be; but this the tax denies—
That seems contrived to pinch the poor outright,
Sinting them even in Heaven’s free gift of light.
From ruddy morning’s dawn till daylight dies,
No ray that passes us but pays its toll.
But not alone for sight we serve: as lungs,
Air we admit to feed the living soul,
Which, breeding pestilence like smouldering flame,
That tax excludes, cursed by unnumbered tongues.
Let its repeal, John Russell, gild thy name.”

FOREIGN NEWS.

Architectural Labours in Austria.—At one of the last sittings of the French Institute, M. Lenormand stated, that the number of essays and monographies on the works of the middle ages becomes high infinite. In France, the Comité des Arts et Monuments, being a Governmental department, has done a great deal. Germany has remained rather behind in these labours, also for the reason, that it is from *cast-iron* that some of its architects expect a restitution of ancient art-splendour. The present minister of public instruction in Austria, M. Thun, has, at a late meeting of the Imperial and Royal Academy at Vienna, endeavoured to try another way; proclaiming, that art has to dwell on the great historical recollections of the country, and to mould and improve the life of the people. Contemporaneously with Boisserée, it was Primmer who, at the beginning of the present century, directed attention towards the neglected monuments of the middle ages in Austria. Subsequently, Techischka, of the charter office of Vienna, attempted the description of the cathedral of St. Stephen, the last huge monument of the middle ages. Scheiber and Böheim described the ancient castles (Burg-ruinen), of which Austria is very rich. Works like that of Prince Lychnovsky, on the architectural monuments of Austria, and the splendid volume of Camesina on the Byzantine Antependium at Klosterneuburg, will always possess sterling value. Of works published in 1850, we mention the description of the west portal of St. Stephen. This structure, containing a great number of figures, is very interesting for its iconographic character, which has been rendered by very well-executed woodcuts. Dr. Hinder’s “Essay on Symbolics,” especially the symbolic of “the Lion in Christian Art;” and his description of the Polygon Chapel at Tulln, are interesting performances. We may state, in conclusion, that as Germany has always been foremost in *speculation*, in Austria, also, the thought seems to rise, that *intelligence* alone will never advance nor create new art. It is even talked of in earnest to establish masters’ schools (*Meister-schulen*) instead of academies, considering this as the only means to stay shallowness and want of character. The intended restoration (completing) of the cathedral of St. Vitus, at Prague, built on the same plan as Notre Dame, of Paris, may afford an opportunity for putting into execution those rather revolutionary ideas of our neighbours of Germany.

Art Union of Munich.—The prize of this Society for the present year will consist of a galvanography of Hanfstängel, after the famous Columbus picture of Rubens. It is the first time that an extensive application has been made of this important discovery, as the original plate has also been multiplied for the

use of other Art Unions, and it will now be seen what can be done in this way, especially for the copying of large gallery pictures. For the year 1851 four landscapes of Rottmann have also been chosen, and M. E. Neureuther commissioned with their engraving. These plates will as well be multiplied by Galvano-plastic process. As the family of the departed gentleman enjoys a privilege for the publication of this artist’s Italian and Greek landscapes (fine amongst the fine), it is spoken of, that other Art Unions will purchase from them the right of publishing the remainder of the series, by which means the whole might become accessible to the public. The Bavarian artists intend to present King Ludwig with a splendid album, and an invitation to the Germans in Rome has been issued, asking their co-operation, which combined will not fail to bring forth a deserving and worthy art performance.

Curiosum.—An idea of the great stir on the Continent about the Great Exhibition, may be formed by the announcements in German papers, by which tavern-keepers and others invite their guests to view the plans and elevations of the building exhibited at their rooms.

New alimentary Substances for the Working Classes.—The French consul at the republic of Ecuador has brought thence two alimentary new plants of great importance. The tuber of one, called *Hocas*, has the form of an oblong potato: the interior of the substance, however, has a red and yellow colour, and the taste is that of a chestnut. The other is called *Millico*, and its form and taste is very near that of the potato. Both grow wild, and in great abundance, near Quito, even in the most meagre soil. Experiments on their propagation are now being made at the *Jardin des Plantes*, Paris.

Discovery of a New Picture by Raffaele.—The *Gazetta* de Cremona states that a very splendid picture of this great master has been discovered. It represents the Virgin adoring the infant Jesus, St. Joseph standing at a distance. In a corner of the picture is the monogram S.R.U.—Sanzius Raffaele Urbinius.

Naples.—Besides the famous prohibition of Sophocles, Byron, Shakspeare, &c., the Neapolitan government is acting with the same severity towards art and artists. The room of the Museum containing the *ambiguous* pictures which could be formerly viewed, at least, by superior permission, has been altogether shut up, as well as that containing the Venus statues, &c. At the same time the MSS. of the library have been sealed up, and cannot now be consulted anyhow.

DOCTORING DAMP WALLS.

AT the request of several correspondents we shall here state, as nearly as possible, the proportions of the ingredients used in the composition referred to in the conclusion of our recent article on this subject, although, having no guide or precedent, and our purpose being merely one of temporary personal convenience, failing some previous attempts of others, we merely caused the ingredients to be mixed up to the desired consistency without precise measurement. We may state, then, that probably three parts of resin, pitch, or bitumen, to one of India-rubber or gutta percha solution will form a tough enough coating. The composition must be thinned with turpentine to a consistency manageable in cold solution on a cold wall. There can be no difficulty in this: but it may be necessary to point out how the ingredients should at first be united. Our own mode was simply this: we caused the resin and pitch to be melted in an iron-pot on a fire carefully covered up with ashes to prevent danger from fire; and when melted, turpentine was poured in so as to thin it to a consistency like treacle. To that the India-rubber solution (as purchased ready prepared) was added, and the whole stirred till the India rubber solution was further dissolved in the resinous solution. Requiring more of the toughening or gummy ingredient, and finding some gutta-percha solution at hand, it was then added in place of the India-rubber, and the whole formed an excellent paint when further thinned with turpentine and mixed with a little colour; but whether India-rubber alone, or gutta-percha alone, or a mixture of both, is best, remains to be tried by some one

* The tax itself should be called the Window-pain,—Ed.

else, unless we have further occasion to repeat the experiment, which at present we do not contemplate. A Birmingham correspondent, who has perused our article, informs us that he is the proprietor of a composition in which "certain quantities of India-rubber and gutta-percha are directly digested with oils and certain resinous and bituminous substances, as well as alcoholic liquid, and form with it one liquid solution, which therefore unites all the qualities for a water and damp resisting fluid you wish to recommend." Our correspondent's letter, however, or advertisement, would be but too likely to lead to a little misunderstanding with the Stamp-Office authorities, were we to say much more about it here. One thing we may add from it, however, namely, that our correspondent recommends not only the four walls, but the ceiling and the floor to be completely covered with such a composition, as the damp will probably exude from either the floor or the ceiling if merely prevented evaporating from the walls. To convert a very damp room into a perfectly dry one, we believe our correspondent is right; but the effect on ceilings and floors especially, of loading them with suppressed damp, must also be considered.

SELF-TaUGHT SCOTCH SCULPTORS.

In yours of the 11th inst., a correspondent, "W. R. C.," referring to "self-taught Scottish sculptors," expresses doubt as to Old Mortality being a work of J. Thom. Mr. Thom executed an Old Mortality some years previous to Corrie's attempt. Indeed, I believe Thom was in New York when Corrie "nobbled Wheatstone." But, Sir, having no wish to disparage Corrie, I will do him the justice to say, that I believe he was not aware of Thom's work until he had nearly finished his own. Thom also executed a colossal figure of Wallace, which is now in Lord Grey's beautiful grounds, Kinfauns Castle, near Perth. An equestrian figure of Tam O'Shanter was also a work of his. A self-taught sculptor, mentioned by Lockhart in his life of Sir W. Scott, used to accuse Thom of copying his Old Mortality. How far the charge was true, I know not. Old Mortality seems a great favourite with these self-artists. Another one, named Forrest, has also displayed his skill on the renovation of the "Hill Men" monuments. W. A.

THE IRON TRADE.

THERE has been more demand for rails, especially for exportation, within the last quarter than there was during the whole of the two years last past. Orders of a rather extensive description, mostly for rails, have been lately received from Germany, the Roman States, Russia, and India. There is a dread, however, amongst the iron-masters, that, as of old, there may be some degree of unsound speculation at the root of present appearances of returning prosperity. The English manufacturers are also jealous of the formidable competition successfully at work in Scotland, Wales, and Belgium. Notwithstanding that the prestige of the quarterly-price system has been so completely broken, and the attempt to impose impracticable prices on the great body of the trade formally abandoned, attempts are still being made to recur to them. A contemporary has just dished up the following stale composition for behoof of those who know no better:—"The meeting preliminary to the usual quarterly meetings is formed of the most extensive and important iron-masters in the trade. They fix a price, the highest which, under circumstances, the best iron can be expected to fetch, and from these prices the largest and most influential firms seldom, if ever, recede. But the small masters, who are not bound by the rules of this confederation, although fixing upon these prices as the legitimate prices of first-rate iron, continually undersell the largest and best makers, and by this means give a false and spurious tone to the iron-markets." Now the few great masters do not constitute the great body of the trade, but the mass of those whom it was ever attempted to concuss into the nominal price system, under pain of being called "needy" and "small." The legitimate tone of the market must ever be taken from the great body of the trade, however "small," and not from the few, however "great." The "false and spurious tone,"

therefore, is no other than that itself here still attempted to be imposed upon us as "the legitimate prices," and several of the main supporters of this gross system of humbug not long ago themselves confessed its "illegitimacy," and renounced it altogether. No sooner is there a poor little glimpse of supposed "returning prosperity," however, than endeavours are made to ride the same high horse over the trade at large as ever. But it is now too late: the quarterly price dicta have once and for all admittedly "lost their prestige."—Accounts at the late meetings were as usual satisfactorily settled. Hopes are entertained that the demand for railway iron will be large during the ensuing year. No attempt was made, however, to raise even the nominal price some time since fixed on. The following are the quotations, such as they are:—Bars and rods, 5*l.* 10*s.* to 6*l.*; hoops, 5*l.* 15*s.* to 6*l.* 10*s.*; sheets, 6*l.* 10*s.* to 7*l.* 10*s.*; pig iron, 2*l.* 12*s.* 6*d.* to 3*l.* 5*s.*

LEAD CISTERNS AND LEAD POISONING.

PROPOSED WATER FOR LONDON.

THERE can be little doubt that your correspondent's new cistern (see p. 13) has been destroyed by the absence of that very calcareous matter, which he thinks is in excess in the water. The "whitish fungoid substance" is most likely carbonate of lead, arising from the free carbonic acid in the water combining with the metallic lead, and acting, as it always does (probably through galvanic agency), on the projecting points of the lining, producing the spotted appearance he alludes to.

A new cistern erected at my house at Hershaw, in Surrey, in 1844, was completely perforated through the six*lb.* lead of the bottom and lower part of the sides, in two years, presenting the same white fungoid appearance. Concluding from this, and from several cases of lead poisoning that had occurred in the neighbourhood, that the water had combined with the lead, I determined to try the experiment of coating the cistern with mineral pitch, which was done with two coats, and up to this time it has remained perfectly water tight.

The water of this district acts very quickly on lead, and its effect at Claremont, which was principally owing to the spring, which had previously been exposed to the atmosphere, being covered to preserve its purity, must be fresh in the recollection of all.

A most important consideration here arises from the recent suggestion of taking the water supply of London from the same sources, and which, according to the report of the Hon. W. Napier, is "to be stored in a covered reservoir," to prevent the water becoming "warm, vapid, and badly tasted;" this, he states, will also prevent the action of its "extraordinary capacity for absorbing the impurities of the atmosphere;" but it will, at the same time, prevent its giving off its excess of carbonic acid, and, by combining with the lead, will fill our cisterns with an insidious poison.

In a question so affecting the health and welfare of thousands, I may be excused for entering upon a subject which, I trust, will be taken up more fully by better chemists than myself.

WILLIAM JEAKES.

Water may be defended from the action of lead on a voltaic principle. Discs of iron, attached to the bottom and the sides, one on each, with a thin layer of leather, Indian rubber, or gutta percha, interposed, will suspend the chemical action on the lead referred to.—J. MURRAY, PH. D.

THE BRITISH INVENTORS' PROTECTION COMPANY.—At a late meeting of this company, held at their offices, Aldermanbury, Mr. W. Harris in the chair, Mr. A. Campbell, the secretary, reported that he had received an official communication from "the council of chairmen of the Metropolitan Commissioners" for the International Exhibition, intimating "that space had been allotted for the exhibition of the company's model for the novomotive system of railway propulsion for superseding omnibus traffic." Mr. Campbell also intimated that the promoters of working men's associations were making arrangements to raise a capital of 1,000*l.* by subscriptions for the construction of a large working model to be used for conveying passengers during the exhibition.

ART IN IRELAND.

The Exhibition of Painting and Sculpture, at Donegal-place, Belfast, was opened a short time since. Some English artists have contributed some excellent works. The principal Irish artists, and their productions, are, Richard Rothwell ("Morning Orisons," and a portrait, "The Captives of the Harem," &c.), Charles Grey, R.H.A. ("First come, first served;" "A Jackdaw perched on a piece of bread, while a Terrier, afraid to bite, is watching it"). Mr. G. F. Mulvany contributes several, among which is "The Knight and the Jeweller's Daughter." There are a few landscapes by Mr. Hugh Frazer; sea pieces by Mr. Kenrick; a series by Mr. N. J. Croly; and a large number of others.

The exhibition of the Dublin School of Design has been for some time open in the gallery of the Royal Dublin Society's House. His excellency the Lord Lieutenant and suite visited the exhibition privately. The productions of the pupils show an improvement on the former exhibitions of the Royal Dublin Society; but the collection is not so numerous as might be expected from the large number of attendants at the school. In the modelling department some fair specimens have been exhibited; also some clever water colours and etchings by the female pupils. There are few works of interest exhibited in the architectural department. The tinted drawings are limited in number, and there are only four original designs for buildings in the exhibition.

PUBLIC BUILDINGS—ART IN THE COUNTRY.

THE last number of the *Athenæum* has several remarks which we feel inclined to extract. With reference to our coming visitors, our contemporary says:—"Having engaged in an enterprise so grand, no thought of a paltry economy should prevent the cleansing of our streets,—the drainage of our Serpentine and other standing pools,—the orderly arrangement of our parks,—the opening of our public institutions,—and so forth. We suppose, as a matter of course, that it will be considered possible to get down the hoarding at the British Museum, and clear away the obstinate fragment of the lodge before the festival of nations begins. Will the chapters of St. Paul's and of Westminster Abbey insist on taking twopenny perquisites from the nation's guests? In the name of hospitality and decency, we hope not. The Englishman rambles from vault to tower of the Parthenon—from tomb to chapel of the Invalides—from aisle to gallery of Notre Dame: shall the Frenchman be stopped and taxed at the Tower, at St. Paul's, and at Westminster Abbey? We should be doing no more than is done to every Englishman in France if we offered larger facilities to our foreign guests for inspecting Windsor Castle, and for wandering about its regal parks,—dear as the Forest of Ardenne to the readers of our old literature. No man is refused admission into Versailles. Greenwich Chapel should be thrown open: no charge is made at the Invalides. Surely, too, the State prisons of the Tower—so full of sad and touching historical interest—the chapel of St. Peter ad Vincula—the noble tower of William Rufus—and all the rest of that striking pile of buildings—should be given to the public inspection."

A correspondent of the same journal suggests that, "By a very slight alteration Exetel, Change might be converted from a dismal woe-begone solitude, into a well-frequented rendezvous,—if any one would engage the entire *locale*, and fit it up as a Café and Restaurateur's. Almost all the alteration required would be, to glaze the entrances and to remove the fronts of the shops,—which last would then become so many separate cabinets or boxes, with a dining-table in each. An extra consumption of gas would have to be calculated on,—as it would be necessary to begin to light up very early; and it would also be necessary to convert some adjoining house into the culinary offices requisite for an establishment of the kind on such a scale."

And, then, as to our country towns:—"The tastes which can enjoy and the means which can command the more perfect and durable forms in which art ministers to the intellectual

appetite are growing in our large towns,—if slowly, yet certainly. Liverpool, in its Custom-house, its St. George's Hall, its Sailors' Home, has erected edifices worthy of a great metropolis. The new front of the Exchange in Manchester, the almost completed infirmary, and the new borough gaol are features of that town which would hardly have been conceivable to the fathers of the present race of its inhabitants. Not to speak of the architecture only, there are men still living who remember a time when art was there absolutely a stranger alike to the home and to the street. Thirty years ago there were not 1000. worth of pictures in all Preston, and yet we had lately an opportunity of inspecting a single collection in private hands in that town said to be worth 15,000*l*. With the genius and enterprise which converted Newcastle into the finest provincial town in England, every reader is acquainted."

PROPOSALS FOR RE-ASSESSMENT OF THE PARISH OF ST. LUKE, CHELSEA.

THE Board of Guardians of St. Luke, Chelsea, proceeded on Wednesday last, the 15th, to open the tenders for revaluing the parish, agreeably to advertisement in THE BUILDER of the 21st December, when the following were found to have been put in:—

	Valuation to be	£	s.	d.	completd in
	0	13	months.		
W. Hudson, Doctor's Commons	1,080	0	12	0	0
C. Cantwell, Great Marlborough-street	920	0	12	0	0
J. Young and Co., King-street, Cheapside	875	0	12	0	0
J. P. Grassie, Lower Brook-street	679	0	12	0	0
— Williams, Robert, terrace Chelsea, with Randle and Corbett, Lincoln's-inn-fields	675	0	9	0	0
C. O. Lucas, Camden-town	600	0	10	0	0
Castle and Jayne, Chancery-lane	500	0	10	0	0
F. P. Thompson, Chelsea (with a new map of the parish)	630	0	11	0	0
C. Lee, Golden-square	500	0	12	0	0
J. Brown, Ryde-street, Islington	500	0	8	0	0
T. W. Collard, Adelphi	400	0	6	0	0
E. S. Gisborne, Nottingham	697	0	8	0	0
E. Roberts, Holles-street	475	0	6	0	0
T. M. Nelson, Charles-street, St. James's	472	10	6	0	0
— Bell, Thornhill-grove, Barnes-lane-park	450	0	7	0	0
C. Labe, Vere-street	450	0	12	0	0
J. Richardson, Whitnott-street	413	0	5	0	0
J. D. Paine, Basinghall-street	367	10	6	0	0
G. F. Dyke, Adelphi, with G. Marsland, Kensington	350	0	4	0	0
Austin and Co. Bristol	337	0	9	0	0

Mr. Paine's tender was accepted.

WIDE TENDERS.

SEEMING that carvers and masons are a little out in their calculations as well as builders, I beg to give you the particulars of the "turn up" for the fittings, &c. for Moulton Church, as advertised in THE BUILDER, as an example:—

	For Wood	For Stone
	Fittings, &c.	Work.
Gorers and Co. Winchester	£1,038	0 0 0
Raynor, Williams, and Jordan, London	993	11 0 0
Tingham, Ipswich	642	0 0 2187 10 0
Bell and Sons, Cambridge	612	0 0 215 0 0
Kattee, ditto	556	0 0 233 0 0
Feebles, Deodar	493	8 11 160 0 0
Tyler and Sharpe, Thetford	471	0 0 266 0 0
Bennett and Sons, Whitlesey	417	0 0 167 0 0
Watson, Norwich	301	0 0 167 0 0
Wentley, Newmarket	301	0 0 135 13 8
Clarke and Sons, ditto		

Query—Who was "blind?"

Cambridge. J.

NOISELESS WHEELS.—The patent noiseless wheel appears to be coming into use in the metropolis. It is understood that a company for noiseless omnibuses and cabs is in formation. Noiseless vehicles would be a greater boon than the wood pavement. The method of effecting this great desideratum, says a contemporary, is by placing a band of vulcanised India-rubber round the outer tire of the wheel. It is so disposed, that although passing over the newest macadamised road, it is uninjured by the stones; is easier of draught; perfectly noiseless; and, from its easy motion, is a luxury to invalids.

NEW FOREST INCLOSURES.—A Treasury declaration has been issued for throwing open and in common certain inclosures in which the growing trees are past danger by browsing of cattle and deer, or other prejudice, to the intent that an equal quantity of other waste lands in the same forest may be inclosed in lieu of the same for the growth of new timber, as the Act of William III. thereabout directs.

HALTING PLACES.

COMMON consent agrees upon the expediency of yielding to this requirement, and yet every inhabitant objects to the erection of fixtures in contiguity with, or within view of, his abode: it remains for him who, above two years back, remonstrated on the subject through the medium of THE BUILDER, to point out some fitting locations.

There is no *mauvaise honte* on this subject in Paris, where there is a population of about 700,000,—for there we see canvas sheds and tents in the causeways, as, indeed, we find them on the Epsom Course on great meetings.

In London, then, with two million souls, how much more does decency require suitable arrangements.

Since the notice given on the subject, stations have been made at Westminster-bridge, St. Martin's-lane (National Gallery), Hyde-park-corner, and possibly a few other places; but still there are various routes which present no "retiro" for two or three miles, unless crowded lanes and alleys, with the *densest* population, may be so-called, or mis-used!

Before allusion was made to this subject in THE BUILDER, the writer of this communication sent a similar article to *The Times*, but it was denied insertion! He then wrote to the Commissioners of Woods and Forests, with no better success, for they replied that there were no funds applicable to such a purpose.

The objections made on the part of householders is certainly reasonable; but as there are many householders, and that, too, in the very best quarters in the town, who are aggrieved by the *licences* taken, despite the police, the penalties, and the water-spout, the regular establishment of resting-places, at equal distances, would obviate many public abuses, tend materially to the health of the ambulant population, and relieve the peace officers of a most disagreeable duty.

There is in London, with good regulation, room enough for all; but as houses are so compacted in line that there is no disposable space to be had save by purchase of a tenement, I would recommend that apertures be made in the long lines of wall which are found near most churches, that suitable erections, in *elate*, with properly constructed hydraulic apparatus, be fitted therein, covered in (with regard to *ventilation*), and duly provided, as in private houses, in such manner that no noisome effluvia offend either the visitant or the passenger,—that, as in Paris, a custode be appointed to each by the parish or municipality, and that tubular drains communicate from each refugium to the common street sewer without the wall.

A space of 6 feet in depth, by 12 feet in width, would amply suffice for four compartments, or 18 feet for six. The municipality should properly be chargeable with the expense, and that would be trifling, whilst the advantage to public health and morality must amply repay it.

A glance at the crowd of frequenters to the already established and recognised resorts, will show their inadequacy for the object, even in the present thin state of the town, when if candidates await in expectancy, what must it be in the full season?

The construction of all, save that at Hyde-park-corner, is faulty; the slate slabs being but half visage high, and just enough to keep the nose within the "Ammonian shrine," which, from the want of proper lustration in the summer's heat, is no trifling penalty.

It may by some be considered unseemly to dedicate any portion of grounds overstocked, to nausea, with festering mortality, to the purposes, or even to the relief of the living; but how often do we find lock-ups, round-houses, stocks for obsolete punishments in town; and in the country, stocks of cattle feeding on the rank grass of these domains?

The dead will soon no longer be compacted in confused heaps in these charnel-houses, and they cannot (so far as the limited demand upon them needeth for this purpose) be better applied than in thus conducting to decorum, in withdrawing pollutions from the court or alley of the humble artisan; besides, the church is a definite and known point, and the distance of one from the other would indicate a palp-

able, though not obtrusive, and convenient reach.

The year we live in requires some attention to the habits of foreigners, as well as to the health of the land we live in; and as the only way to remedy abuses is to make them patent, these hints are thrown out broad east through THE BUILDER, without expectation of any more profit than has followed other patent divulgations through the same channel by

QUONDAM.

Books.

A Treatise on Bracing, with its Application to Bridges, &c. By R. H. Bow, Civil Engineer. Edinburgh, 1851. A. and C. Black.

IT is now several years since the description of bracing, chiefly dwelt upon in this work, suggested itself to the author; and he was surprised to find that a method of such simplicity and evident excellence should have been employed in only a few unimportant instances, and, in the majority of these, in a mixed or not very evident way.

He says, "The first example that is likely to occur to the reader is that of the spandrels of Southwark Bridge, but the arch, from its construction and depth of material, is quite independent of additional bracing, and the use of the *lozenges* of the spandrels is merely to connect the arch with the roadway; thus, the Sunderland Bridge, which is of nearly the same span, and of greater rise, and composed of voussiors of less depth and inferior character for rigidity, is, nevertheless, without spandril bracing."

But the most decided case of its employment, in its simplest form, which the author has met with, is that figured in THE BUILDER (page 100, vol. viii.): it is the wrought-iron roof over the Strasburg Railway Station at Paris."

This want of attention to an important principle naturally led him to investigate its qualifications, and it was his expectation to have had opportunities, in the exercise of his profession, of making practical use and exemplification of the results. Such opportunities, however, not having as yet occurred, he adopts the means of the pen to place his investigations in such a position that they may be capable of becoming useful.

As a foundation from which to commence, he assumes the following propositions:—

"PROP. I. In a triangle, an angle cannot increase or diminish without the opposite side also increasing or diminishing."

"PROP. II. When the angles of a figure are unchangeable, the shape is unchangeable, and, therefore, the figure is completely braced."

The converse of each of these is also true.

A triangular structure, having sides that are unchangeable, is a completely braced form.

If a quadrilateral figure alter its shape, the angles alter, and as the sum of the angles must be equal to four right angles, they cannot all increase or all diminish; therefore (considering the diagonals as third sides of triangles) the diagonals must one increase and the other decrease.

The subject of the book is interesting to all constructors, and Mr. Bow has treated it very lucidly and efficiently.

The Elements of Mechanism; containing a familiar Explanation of the Construction of various Kinds of Machinery, &c. By THOMAS TATE. Longman, Brown, Green, and Longmans. 1851.

BETWEEN training at Battersea and publishing in Paternoster-row, Mr. Tate's time, we should think, must be pretty well used up. The present useful little volume may be regarded as a twin accompaniment to the author's "Exercises in Mechanics and Natural Philosophy." It is intended for the use of private students and schoolmasters, and contains, besides an excellent compendium of all sorts of mechanism and machinery, new and old movements, &c., a profusion of well-engraved illustrations. Engineering students as well as elementary teachers would do well to make use of this familiar exposition of the leading principles of mechanism. Any thing difficult in the investigations is printed in small type, so that the student may legitimately skip these on a first perusal.

Miscellaneous.

A ROYAL ROAD TO DRAWING.—Another miracle, it seems, is now to be wrought in the fine arts. A Professor Richter, from Berlin, with due conditions of secrecy, "respectfully announces to the public of New York, that he has invented a new method of sketching, with facility and accuracy, all objects, in one lesson, and to effect this, no previous knowledge of drawing whatever is necessary. Portraits, landscapes, groups of flowers, interiors of saloons, churches, ruins, animals, &c., may be drawn from nature with the greatest facility and quickness. A knowledge of the rules of perspective, and of light and shade, will at the same time be acquired; as it likewise enables the pupil to colour his sketches. This method, after numerous trials, has been found most useful by architects, engineers, and ladies, as the most difficult drawing can be reduced or enlarged, on any scale, at the convenience of the pupil, without the aid of any instrument." Terms, "for the one lesson necessary to understand perfectly the method, ten dollars a pupil." &c. "The assertion," says the *Home Journal* (N. P. Willis), "that one may learn the difficult art—be able to make a faultless drawing of anything, that is to say—in half-an-hour, seems chimerical, but it is nevertheless true. We listened incredulously—but sat down, and had it proved upon our own head and eye. We cannot explain it, because to do so would be an invasion of patent. But we can say that it is an invention of exquisite simplicity, or rather half-a-dozen most ingenious inventions put to one use—a sort of daguerreotype worked by the muscles instead of by light. Any child, or any old person, can learn it in an hour, and afterwards make admirable drawings of anything."

IMPROVEMENT IN THE MANUFACTURE OF IRON.—R. Heath, Manchester, iron merchant, and R. H. Thomas, of Wolstanton, engineer, have patented certain improvements in the manufacture of iron. The patentees claim the use of revolving cylindrical surfaces or rollers, moving in the same direction, but at different rates of speed, for the purpose of converting a puddle ball of iron into a bloom. The peculiar motion given to the rollers causes the metal to revolve round its own centre, whilst at the same time it is gradually carried downwards and discharged at the bottom of the machine. The scales of metal which fall during the operation pass through a grating into a suitable receptacle underneath, and can be removed in the ordinary manner.—*Mechanics' Magazine*.

THE ASSESSING COTTAGE LANDLORDS.—The following case and opinion appear in the *Justice of the Peace* relative to a practice which we know has been adopted in many parishes in this country.—*Case*.—"The parish of A. has adopted the Small Tenements Rating Act, 13 & 14 Vict. c. 99. B. C., an owner, is liable to pay the poor-rates of several tenements occupied by different individuals. The collector, on making out the collecting receipt book, makes but one receipt for the above-named property; but distinguishes the names and amount charged on the several tenements on the back of the receipt. B. C., on the rate being demanded of him, refuses to pay unless a separate receipt is given for each occupier. Your opinion is requested as to whether the collector is bound to give receipts for each separate occupier or not?—*Opinion*. By art. 3, No. 1, of the general order of accounts, the overseers are required to prepare the rate receipt check book in the form there prescribed. That article requires that the receipts and notes 'shall be numbered consecutively with numbers according to those in the rate.' It is clear, therefore, that a separate receipt and note is required to be prepared for each property which is rated separately. And as art. 6 requires the collector to follow the same plan, he is clearly bound to give separate receipts for each occupier."

FLUXIONS AMONGST NEWCASTLE WORKMEN.—There appeared in the *Gateshead Observer*, on 7th December last, a paper by "G. W." (a medical student in London, who has the pen of an able and ready writer), entitled "Self-Education:—Hints for the Great Exhibition," and containing a paragraph which has been making the circuit of the world on the authority of "a Newcastle paper." Having met the eye of an eminent scientific gentleman,

he has favoured us with the following communication:—A paragraph has appeared in the papers stating the fact that the booksellers of Newcastle had observed that most of the standard mathematical works were purchased by pitmen: the following anecdote is one in point, and will probably be read with interest:—Some years since, a gentleman, on his passage from Newcastle to Shields in a steam-boat, went into the engine-room, and found one of the books mentioned—namely, Emerson's *Fluxions*—lying on the table, rather black and smutty, evidently much read. He asked the young engineer who read the book: he answered that he did, when he had time. Rather surprised at the fact, and presupposing that he was a young man of superior talent, he questioned him upon the subject, stating that he himself had studied these matters at the university—had passed, he believed, a fair examination—and obtained a creditable degree. With this prelude they entered freely into conversation; and from that time the stranger used all his influence to bring the studious engineer into notice. That engineer is now a distinguished mathematician, and the author of many of the very works alluded to. He had, a short time previous to this interview, "risen from a bank-trapper to a breaksmen" in a Newcastle colliery, as stated in evidence before the Lords' Committee, last session, and is now—Professor Hann, of King's College!—*Gateshead Observer*.

OBSTRUCTION AT PARLIAMENT-STREET.—We are still having letters on this subject, and we see that Lord Campbell has lost no time in denouncing it at the Court of Queen's Bench at the opening of Hilary Term. As soon as the Court sat, his lordship said, with great emphasis: "I think it absolutely necessary to call attention to the serious obstructions which impede the access to this Court, which cannot be approached without the greatest possible inconvenience and danger. These obstructions nearly amount to an obstruction of justice. Neither the judges nor the council, the attorneys nor the suitors, can get to Westminster Hall without being in peril of their lives. The Court has the remedy in its own hands, and if these obstructions are not removed, I shall think it the duty of the Court summarily to interpose and remove them." This announcement appeared to be received with great satisfaction by all in court.

AMERICAN SCULPTURE FOR THE GREAT EXHIBITION.—The *American Traveller* states—"We enjoyed an opportunity within a few days, of seeing what, for aught we know, is the first elaborate piece of statuary which has ever been wrought upon American marble. The sculpture to which we allude is a work upon which a young American artist, Mr. Stephenson, is engaged, and which is now nearly completed. The design is a dying Indian chief. The figure is the size of life, and the form and features are perfectly characteristic, the whole presenting a fine idea of the North American Indian. The marble from which this first work of a young and most promising sculptor has been produced, is of a pure and beautiful white, equalling, apparently, the best Italian. It is from a quarry in Rutland, Vermont,—the block originally having weighed three tons. Mr. Stephenson, who at present resides at Charlestown, is from the west, where he has had favourable opportunities of observing and studying the Indian form and character. He has spent two years in Rome, in the study of the art to which he has devoted himself. It is Mr. Stephenson's purpose to take it to the Great Exhibition in London in May next."

LIVERPOOL MECHANICS' INSTITUTION.—We are happy to notice, in connection with this institution, the formation of a class for the study of the principles of construction, as applied in engineering, carpentry, masonry, and shipbuilding, and which is to be conducted as a branch of the second evening school, by Mr. W. Gray, B.A. teacher of natural philosophy and chemistry. This department of study has, strange to say, never yet—or, at least, never within our knowledge—been introduced, in a comprehensive manner, into institutions intended, *par excellence*, as their name implies, to promote the education of mechanics; although in it are involved principles which ought to form the groundwork in the practical

education of the artificer, and which, indeed, should be understood by every one. The instruction will be given in lectures, illustrated by diagrams and models. The course will extend over eighty or ninety lectures,—on the laws of force, centre of gravity, mechanical powers, deflection of beams and strength of beams, columns, axles, &c.; on roofs, timber, lattice, girder, and suspension, as well as tubular bridges; on the pressure of earth and strength of retaining walls; on foundations and the strength of piers and abutments; on the principles of arches; and on the principles and various adaptations of wheel-work. After the elements of hydrostatics have been elucidated, lectures will be delivered on the pressure upon embankments, floodgates, locks, &c.; on water-wheels; on the principles of flotation and stability; and on shipbuilding. The force of the wind, the laws of heat, and the construction of steam-boilers and of the steam-engine, will be among the other branches of the subject, to the explanation of which Mr. Gray will devote himself.—*Liverpool Times*.

GRAND MAUSOLEUM AT HAMILTON PALACE.—There is at present in course of erection near the ducal palace, at Hamilton, Lanarkshire, a mausoleum which is said to surpass any erection of the kind in Great Britain. The work has been gone about very quietly for nearly three years. The entire height of the building from the ground on the south side to the top of the dome, will be 120 feet. The base, covering an area of 110 feet, is formed by a plinth of 7 feet. After a further ascent of 7 feet, composed of three colossal steps, the main part of the building commences. The basement, which is to be rusticated, is surmounted by a Roman-Doric façade, formed by pilasters, which, including the entablature, is 30 feet high; the portion of the building being all square, and extending 53 feet on the side. Above the façade is a circular building, 40 feet high and 47 feet in diameter, surmounted by a stone dome, rising 15 feet above the last elevation. On the south side, which is the front of the building, there is to be a piazza, 19 feet high, and 86 feet long, terminated by large pedestals, 14 feet long, on the top of which sleeping lions are intended to be placed. The diameter of the interior is 40 feet, having eight recesses with dome tops. A cornice is carried round, at the height of 40 feet, immediately over which is a range of coupled pilasters, sixteen in number, and 33 feet high, including pedestal and entablature. Between the pilasters are eight niches, which may be afterwards filled with sculpture. From the entablature of this range of pilasters the stone dome springs, which is to be formed of square panels, with deep sinkings. In the centre there is to be an opening, 14 feet in diameter, which it is intended to fill with a single plate of glass. The floor is to be paved with jasper and the finest marbles, in mosaic.

THE TIMBER TRADE.—Messrs. Churchill and Sim's circular states that the quantities imported for the United Kingdom have been nearly the same as in 1849, but less than in 1848 and 1847. In London, however, while the import of deals and battens is 10, 15, and 20 per cent. less than in the three preceding years, the consumption exceeds that of the same years by 10 per cent. on their average, and by nearly 15 per cent. in excess of the present importation. At the same time there appears to be an average import of square timber, with the consumption also 15 per cent. in excess of it, and 28 per cent. above the quantity consumed in 1849. We must, therefore, have consumed those arrears of prior importations which exceed a wholesome supply, and are justified in thinking that the trade, after several years of difficulty, is at length sound and satisfactory. The consumption of wood has increased, and will continue to increase, unrestricted by high prices. Freight and duty combined, the import charges from America or the Baltic are so nearly alike that these great sources of the supply of wood are in direct competition, controlling or tending to equalise the English price. The industry of all nations in active development—full work and cheap food for every one—peace at length in Europe, and a rapidly advancing trade at home—are ample reasons for looking to the increased consumption of every necessary, and, ranking second to none, cheap wood.

THE BUILDER.

A WORKING ASSOCIATION IN AMERICA.

—In the *New York Tribune* is the following from the *Williamsburgh (L.I.) Times*:—The Journeymen Coopers' Protective Union Shop, in North Sixth-street, presents a very busy scene, and thus far proves conclusively that labour need not be the slave of capital. Some twenty-four men are at work in this shop, who average from eight to eleven dollars per week as earnings. Besides this, they have a per centage accruing on the capital stock, of which each workman holds from one to five shares, at ten dollars each. The profits arising are in this way shared by the workmen, instead of passing into the pockets of the employer. There are thirty barrels made each day in the shop, beside one hundred pieces of smaller size, making the weekly earnings of the establishment from 350 to 400 dollars. A large supply of barrels, casks, and work of smaller description is kept constantly on hand in the store-room of the shop. The building is fifty by fifty-two feet, and does not afford the space requisite for the purpose, so that the union contemplate purchasing or leasing more ground immediately adjoining. Surely, it is better to have a voice in your own affairs than to be the dumb recipient of whatever a master may dole out. It is the want of a fair remuneration which drives men and their wives and children to a residence in a room, suited better for a respectable pig-sty than for even a single lodger. The journeymen coopers are in a measure the pioneers in establishing the system of associated labour by joint capital. To them, thousands of down-trodden, but talented and worthy, mechanics are looking as standard bearers of a great principle, which will eventually be the means of elevating whole classes to be their own employers, and thus ensure "to the labourer the profits of his labour."

PAISLEY ARTIZANS' INSTITUTION.—A recent exhibition by this Institution is described by the *Glasgow Reformers' Gazette*. Besides steam-engines from the size of a mouse-trap to a two-horse power, carding machine, miners' safety cage rope and appendages, various paintings, specimens of embroidery, the bust of Professor Wilson (who is a native of the town), and a variety of other articles, the report says:—"But what drew our attention forcibly was a panoramic view of Lochlomond, by Mr. James Drummond, architect. The view is taken from a hill on one of the islands a little below the village of Luss, and commands the whole expanse of the loch, sweeping round the whole of the coast, and presents to the eye, most distinctly and minutely, every headland, mountain, and glen of this singularly extensive and romantic scene. We have no hesitation in saying that this is one of the noblest efforts of genius that our country can boast, and that it is a specimen of Highland landscape which perhaps has never been equalled."

FREE LIBRARIES AND MUSEUMS.—A Public Free Library and Museum, for the working and other inhabitants of Manchester, is about to be established. It is proposed to raise, including the purchase-money of the building, a sum of about 7,500*l.* to accomplish the object in view. Seventy-seven gentlemen and firms have given 4,369*l.*, to which may be added the sum of 2,000*l.*, which has been appropriated by the overseers to this purpose, believing that it is essentially a public purpose and for the public advantage. A meeting was held on Wednesday in last week, the Mayor in the chair, for the purpose of reporting progress. The hall (late "Hall of Science") had been purchased, one-half of the value having been contributed by Sir Oswald Mosley, the proprietor. The purchase-money and the chief-rent purchase, the chairman also stated, had been already paid, viz.,—2,147*l.* The room in which they were met (the lecture-room) was to be occupied as the reading-room, to be filled with newspapers and the magazines of the day. The lower room was intended to be the library for circulation. The circulating feature of the intended public library was, he believed, as yet entirely an experiment in this country. It was his firm conviction that no public library could meet the claims of the community, or be of value or usefulness to the parties who sought its benefits, if they were not able to obtain information, not only within the walls of the institution, but also at their own

homes, by reading the books of the library among their friends. The experience of France and Belgium distinctly proved that the public lending libraries in these countries were of immense advantage to, and that their privileges were not abused by, the population. Mr. Brotherton, M.P., and other gentlemen, afterwards addressed the meeting, and resolutions to forward the object in view were unanimously passed.—It has been resolved, all but unanimously, by the Sheffield Council, to put in force there, also, the Act for Establishing Public Libraries and Museums. The half-penny rate requisite will there yield 572*l.* 8*s.* It is proposed to make one building do for the projected Municipal Hall, and the museum and library.

PROPOSED UNIVERSITY AT LIVERPOOL.

—The proposal which has recently been made to apply the money subscribed in Liverpool for a Peel testimonial to the endowment of scholarships at the Universities of Oxford and Cambridge has raised the question why further endowment should be added to these already wealthy establishments, and why the opportunity should not be availed of to call into existence a Liverpool University. The advantages to be derived from a Liverpool University are apparent to all, and its establishment should not be matter of difficulty. "The year that has passed away," remarks a correspondent of the *Albion*, "has been productive of great wealth to our merchants. A tenth of the mere income of the past year from a few, who shall be nameless, would more than suffice to endow their own imperishable monument, confer a lasting benefit upon ages yet to come, and take away that reproach of stinted liberality which is sometimes addressed to Liverpool. The museums and libraries constantly met with on the continent, particularly in the Low Countries, owe their origin to the merchants of older times; and the proportion in which Liverpool has outstepped Antwerp, and the many famous ancient marts, should be the measure of our liberality, the extent, durability, and value of our institutions."

ELECTRO-TELEGRAPHIC.—The British Electric Telegraph Company propose to assimilate its charges to the American tariff, and thus to call into existence the use of telegraphs to an extent hitherto (owing to the heavy charges in this country) not contemplated by the public. In America, where the monopolizing effects of a single company do not prevail, the telegraphic system has made gigantic strides, and whilst largely benefiting the public, has in consequence (for the public are ever substantially grateful for such benefits) handsomely remunerated the proprietors. This new company, then, is but looking to its own enlightened interests in the proposal to assimilate its charges to the American tariff.—The Government, we learn, intend to carry the electric telegraph from the Horse Guards to every barrack in and around London.

DOMESTIC INGENUITIES OF BROTHER JONATHAN.—We saw at the late fair at Castlegate a churn making butter in the most independent manner, without the slightest aid from human manipulation, literally on its own hook; and by the side of this a washing machine, which required no other aid from the washerwoman than the cradle demands from the nurse when the baby is sleeping. By-the-bye, we saw a self-rocking cradle a little beyond the self-churner and self-washer. This is, indeed, "a real blessing to mothers." All mamma or nurse has to do is to wind up the cradle as she does the clock, and it will rock as long as the other runs. As of Sherman's lozenges, so of this self-acting soother, it will soon come to be said, we suppose, that "children cry for them." Since the invention of the baby-jumper, there has been nothing to compare with this.—*New York Express*.

OPENING OF THE STATE APARTMENTS AT WINDSOR CASTLE.—The state apartments were opened for the first time to the public on Thursday week, since they were closed for the purpose of carrying out the works for warming and ventilation. We have been through the apartments, and so far as we can see, there has been very little alteration in the appearance of the rooms. We observe that a handsome pendant has been made in the centre of the Vandyke room. This is perforated for the

ventilation, and will, when the chandelier is appended to it, be a considerable improvement to the room. There does not seem any other architectural embellishment that requires notice from us; but in all the rooms there are vomitories for the warm air, and the genial warmth of the rooms, as compared with the chilly damp of the external atmosphere, speaks forcibly as to the efficiency of the method adopted.—*Windsor Express*.

NEW BUILDINGS IN EDINBURGH.—In your remarks on the New-town of Edinburgh you say that "each street is a transcript of its neighbour." "A nod is as good as a wink to a blind horse," but the same system of copying, it would appear, is to be perpetuated, as may be perceived by the plan of a new crescent in the course of erection near the Dean Bridge. Try the effect of another word or two.—**DAN EDEN.**

CHESTER ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—On Monday evening last the first monthly meeting for 1851 was held in the Commercial Newsroom. The subjects for the evening were the continuation of Mr. W. Harling's paper on "Sculpture," and a paper by Mr. Beaumont, of Warrington, on the "Battle of Blire-heath."

ALMSHOUSES FOR INDIGENT FOREIGNERS.—We understand that her Majesty and his Royal Highness Prince Albert have jointly presented to the Society of Friends of Foreigners in Distress the sum of 200*l.* towards the Almshouses for Indigent Foreigners about to be erected by that society.

"PUNCH" AND UNDERGROUND ROOMS.—*Punch*, that "great creature" who grasps the universal, yet descends to the minute,—*Punch*, the moralist, the *soul-squeezer*, the fun-maker of the world, speaks to us personally on "kitchens under ground, literally—sinks;" and, while he jokes about the evils of areasteps and policemen's cupboard love, hits a real evil, which we, one of these days, will treat more prosaically.

TENDERS

For the interior finishings of the Guildhall and Assize Courts, Swansea. Mr. Thomas Taylor, architect. The quantities supplied by Mr. Roberts:—

Myers	£1,760 0 0
Smith and Appleford	1,018 0 0
H. and R. Holland	1,416 0 0
Locke and Nesham	1,327 0 0
E. Hughes (Swansea)	1,314 13 6½
William Rayner (ditto)	1,214 1 4
Seal and Jackson (London)	1,121 0 0
B. Richards (Swansea)	1,200 0 0

Mr. Richards has been accepted, on the condition of receiving payment four years after the completion of the contract.

TO CORRESPONDENTS.

Draught of Water.—Can any of your engineering correspondents inform me, whether it is practicable for a fixed steam-engine, of 7 or 8-horse power, to draw water from a pond about 800 yards distant, nearly level ground?—**J. B.**

Steam on Shop Windows.—A correspondent, who wishes to get rid of the condensation of vapour on the interior surface of his shop windows, would find ventilation assist, as we have frequently said before.

"P. A.," "W. H.," "Subscriber from first Number" (with such an arrangement of the cable, there would be a considerable thrust, with little to resist it. We decline, however, giving any positive opinion), "S. H.," "W. A." (will find reply in "leader"), "J. J. F." (ditto), "F." (ditto), "G. S. K." (the filter will doubtless be advertised), "Eurevie," "W. W." (is not forgotten), "Rev. E. B. E." (thanks), "H. W." "E. E." (we shall be very happy to see it), "M." and "G." (thanks; shall appear), "J. J. L." (plan not now required), "E. A. F." (next week), "T. L." (under our mark), "E. O." (ditto), "Competing Surveyor" (we shall always be glad to receive information on the matters named), "G. P. C." (this remedy was given last week), "W. B. C." "J. E. W." (under our mark. We have printed these differences for years; but mark. We have printed these differences for years; but without effect, "H. B." (shall appear), "J. B." (the Publisher attends to the advertisements; not the Editor), "E. G. G." "T. T." (shall hear from us), "B. B." (the evil complained of is not an uncommon one. We will not pretend to advise in general terms), "W. H. V. S." "F. W." "G. S. H." "The School of Painting in Italy." Translated from the German of Kugler, by a Lady; edited with Notes, by Sir Chas. E. Eastlake, F.R.A.S. Second edition. John Murray, Albemarle-street, 1851.—"A Practical Treatise on Benefit Building Societies; embracing their Origin," &c. &c. By William Stone, Attorney-at-law, W. Maxwell, Bell-yard, Lincoln's-inn. 1851.—"The Forty Five." By Lord Mahon. Being the Narrative of the Insurrection of 1745; also Letters of Prince Charles Stuart, copied from original MSS. at Windsor. John Murray, Albemarle-street.—"General Board of Health. Report on the Supply of Water to the Metropolis." Appendix 1, 2, 3, and 4.

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editor, and not to the Publisher.

The Builder.

No. CCCCXVI.

SATURDAY, JANUARY 25, 1851.

WATER, Water! is the cry everywhere in the metropolis just now; and a very important cry it is. It ought to be reiterated, as we said long and long ago, as loudly as if half London were on fire. Cleanliness ("next to Godliness," it has been long said, but not thought), health, public safety, morality, general progress, are all involved in it. Pure water, and plenty of it, must be had: the question yet to be solved is, "where from?" The Thames, at all events within certain distances, has been unfitted for the purpose,—in parts, indeed, where some of the present supply is obtained, it is pregnant with disease and death. What is to be done for the Thames is as yet unknown:—

"The river Rhine, it is well known,
Does wash the city of Cologne,
But tell me, nymphs, what power divine,
Shall henceforth wash this river Rhine!"

That some of the contaminating influences will be stopped one of these days we may suppose (or we must expect fearful consequences); but we are unable to believe, weighing all the evidence on the subject, that it can ever be made to afford, close to London, a healthful, economic, and sufficient supply. Twenty out of twenty-five schemes submitted to the Board of Health propose still to obtain the supplies either from the Thames itself (between Twickenham and Mapledurham) or its tributaries; but the officers and advisers of the Board pronounce the water of the Thames, irrespective of exact position, to have inherent objectionable qualities. The Board's own scheme, already described by us, is open to objection, and has been strongly assailed in several quarters, but it does not seem to us to stand in any worse position than it did. The Board have been taking further evidence upon it (we should have been glad if they had examined foes as well as friends), and we do sincerely hope that prejudices will not be allowed to exert any influence, and that the greatest obtainable amount of information and knowledge will be brought to bear upon the inquiry, so that a right result in so momentous a matter may be arrived at.

We are led to these remarks by the reception, from the Board of Health, of four appendices to their "Report on the Supply of Water to the Metropolis," which was made in the middle of last year, and reviewed by us at the time. No. 1 consists of Returns to the Queries addressed to the several Metropolitan Water Companies; No. 2, Engineering Reports and Evidence; No. 3, Reports and Evidence, medical, chemical, and miscellaneous; and No. 4, a Report on the Cesspool system in Paris, by Mr. Thos. W. Rammell.

In No. 2, Mr. Austin gives a brief account of the various schemes for the improvement of the supply which have been laid before the Board, and pronounces against the sufficiency of any of them. Mr. Rawlinson submits some remarks on the Croton Aqueduct, New York,* in the course of which he says:—

"In examining the Croton Aqueduct, there are several things to be considered, as example, and also as warning. It was a bold step in

modern times, to cast about and look for the best supply the district would afford; and, contrary to existing usage, fearlessly to undertake a work which may be fairly considered to parallel the great works of antiquity. That water may with advantage be brought from a distance is now pretty generally allowed and practised, and as the subject becomes better understood, works of this character will be extended; but modern means and appliances in the use of bricks, tiles, and the metals, should prevent any repetition of such works as the Croton Aqueduct. In the Croton work, nothing has been learned or forgotten from the time of the Romans: every feature of it would have been equally well constructed 2,000 years ago. It would be difficult to devise a more expensive work: to cross valleys, or where the natural surface of the ground falls below the plane of grade, the aqueduct is supported upon a foundation wall of stone, forming a solid wall or pier, 17 feet thick, varying in height to suit the natural contour of the valley, and the plane of the aqueduct: placed upon such wall or pier, the true aqueduct or water-way is constructed with a brick lining upon a concrete foundation: the side walls are backed up with rubble masonry. The whole structure thus formed is banked up with earth on each side, trimmed off to a side slope of one to one, the surface of the embankment being paved with rubble. The sectional area of the water-way is in some instances about one-thirtieth that of the whole work, including pier and embankment. On portions of the line, as at Sing-Sing, the Mill River, Jewell's Brook, Hastings, at Jonkers, Clendinning Valley, and other places, masonry structures of the most expensive character have been constructed; but, nevertheless, in several instances it has been found necessary to line the water-way with iron: this is the case over the Clendinning Valley, and at Sing-Sing Kill. At the Harlem River and Manhattan Valley two cast-iron pipes, of 3 feet interior diameter, descend into, and crossing both valleys, delivers the water into the masonry aqueduct on the opposite side. The cost of the Croton Aqueduct may be contrasted with the following table:—

COST OF CANALS IN ENGLAND.

CANALS, including Land, have cost per mile as under:—

	Length in miles.	Total cost.	Cost per Mile.
		£.	£.
The Rochdale Canal.....	2½	281,000	13,000
The Ellesmere Canal.....	57	400,000	7,017
The Kennet and Avon.....	73	430,000	5,834
The Grand Junction.....	90	500,000	5,555
The Leeds and Liverpool.....	120	800,000	6,201
The Clyde Canal.....	53	200,000	5,714
Total.....	410½	2,611,000	About 6,370
The Croton Aqueduct.....	38½	2,500,000	About 71,000

The writer suggests that iron, wrought and cast, may be much more extensively employed in waterworks than has hitherto been the practice. He says,—

"If modern science has taught us how to make a steam-engine, it has not yet fully inculcated the necessity there is that rigid economy should be studied in all engineering works. This, however, must be applied in an especial degree to all works connected with towns' improvements, namely, drainage and water supplies. If twenty houses can be perfectly drained and supplied with water for the cost hitherto charged upon one, and the work much better done, it is the duty of all concerned to see that so desirable a work is accomplished. In laying out new works, due regard must be had to efficiency as to economy, and it must ever be considered that there may be many degrees of cost up to an extreme maximum estimate, but there is only one minimum; and it will require constant attention, labour, and care, to secure this. Incompetency is adequate to any of the first; knowledge and judgment, with care, are requisite to secure the latter."

Mr. W. C. Mylne says, as to the advantages of the constant supply,—

"I think that where a domestic supply is required for a moral and well-conducted population, the constant system of supply is, under certain provisions, the most efficient, and in annual cost, I conceive, the cheapest. This opinion is given independent of sanitary re-

quirements, with the extent of which we are at present but little acquainted. To work such an establishment well, it should be originally constructed for this system of supply, and the pipes should be laid deep in the ground to avoid the effects of frost. In expressing this opinion on the constant supply, I do not support the abandonment of the cisterns and tanks in respectable dwellings: one or more in every large house is essential for closet purposes, for steam apparatus, and to meet cases of unavoidable interruption of supply during repairs."

Captain Vetch says that, considering the probable increase of London, he considers all the best supplies of water that can be obtained near London should be secured, and recommends, first,—

"The Lea aqueduct, 14 miles long, to bring in a supply of 7,000,000 of cubic feet per diem, and deliver the same at an elevation of 140 feet above Trinity high-water mark.

Secondly, The Darenth aqueduct, 13 miles long, to bring in a supply of 3,000,000 of cubic feet per diem.

Thirdly, The Colne aqueduct, 12 miles long, to bring in 3,000,000 per diem.

Fourthly, The Mole aqueduct, 15 miles long, to bring in, from a point on the course of that river, a little way above the village of Betchworth, about 3,000,000 of cubic feet per diem."

Mr. W. Gale gives full illustrations of the Gorbals Gravitation Water Company's works, at Glasgow.—Mr. F. Braithwaite says, relative to supplies from artesian wells, as the result of a large experience in sinking wells;—

"I am of opinion that the result of my observations warrants me in conforming to the views of Dr. Buckland and other geologists, who consider the water in the deep springs under London or of the London basin as exhaustible, and that, comparatively, in a very rapid degree. I therefore differ with the projectors of the Artesian wells, who are, in my opinion, led into error by the partial success of wells sunk in a deeper part of the assumed basin. I allude more particularly to the three wells sunk, one opposite the National Gallery, and two others in Orange-street. If I may be permitted to digress, I am of opinion the Commissioners should obtain correct information touching these wells. But I wish it to be distinctly understood that I admit that there is still a large quantity of water in certain localities both in the land and sand springs, but I entertain serious doubts if any large quantity of water is to be obtained from the chalk under the metropolis; for in several of the chalk-spring wells, although but recently sunk, the water is sensibly declining."

The same appendix contains evidence in favour of the small-pipe system of drainage, and of combined back drainage instead of front drainage. As to the small pipes, Mr. Lovick, one of the metropolitan sewers' surveyors, says:—

"A great number of small 4-inch tubular drains have been laid down in the several districts, some for considerable periods. They have been found to keep themselves clear by the ordinary soil and drainage waters of the houses. I would refer to fifteen houses in the cloisters at Westminster Abbey, which have now for upwards of fourteen months been drained by small stoneware pipes, varying in diameter from 3 and 4 inches for the houses, to 9 inches for the outlet, and which have acted and continue to act in the most perfect manner. I have been furnished by Mr. Morris, of Poplar, with accounts of blocks of houses in his district drained by small pipes. One is a block of twelve houses in a court, six on each side: each six are drained at the back by one 4-inch pipe. They are connected with the closets, one to each house, to which the water is not laid on, the water being thrown down them by the inmates: the only other source of supply is from the overflow of the butts in the yards, yet the pipes have kept themselves clear from the period when first laid down, now upwards of twelve months since, to this time, and are still acting efficiently."

* Described in THE BUILDER some time ago.

A good supply of water; pipes of good form and material, properly laid; and fair usage, are necessary to insure success. As to the pipes now manufactured, complaints are made that they have not advanced in quality; on the contrary, it would seem that the increased demand has led to slovenliness and overhaste. The manufacturers should look to this in time, or they may be superseded.

Mr. Grant, another of the surveyors, says, on this point,—

"Within the last few weeks I sent to know how the 4-inch drains I had put in at Exeter, twelve or eighteen months ago, had answered, and in every case I found that they had done so perfectly, notwithstanding that some of them had been put down without water supply. The parties concerned are perfectly satisfied with them.

What is the largest number of houses in one block that you have drained on the tubular system?—130 for one gentleman, but it was not convenient for him at the time to lay on water. The drains have, however, acted well, notwithstanding the risk thereby incurred."

When asked if the drain-pipes now manufactured are not very imperfect, he said,—

"They are, both in form and finish. A great many of the quality called "seconds," as well as of common red clay pipes, are used by private bricklayers, when they can escape supervision.

Do not the potters continue to make right-angled junctions, and other improper forms of pipes?—Yes; because the importance of better forms is not generally understood, and a trifling saving of 9d. per pipe is made by using a straight in connection with a right-angled pipe, instead of a curved with an acute-angled junction.

Will a 4-inch tubular drain take off the water falling upon the roof, and yard, as well as that coming from the interior of a house of the largest class?—It will, if properly laid at an inclination of not less than 1 in 120.

What number of fourth-class houses may be drained by a 4-inch drain?—This will vary with the inclination and the extent of ground attached. In 1848 I drained five houses through such a pipe, and it has answered ever since perfectly and without any stoppage. Since then I have laid out the drainage of several blocks of eight, ten, and twelve houses, through 4-inch pipes, where the inclination was good; that is to say, 1 in 30 to 1 in 60."

Mr. Cressy, Jun., an assistant-surveyor in the Sewers' Office, was asked as to the competition Plans for the Drainage of London, sent in to the previous Commission:—

"You were instructed by the Commissioners to examine and classify the plans for the drainage of the metropolis: did any of them make back-drainage a main feature of their projects?—So far as I at present remember, none of them: some may have introduced the subject incidentally in their memorials, but had it constituted a main element in their plans, I should have retained a distinct recollection of it, having been anxious in examining them carefully to select any striking point as a characteristic of the individual scheme.

Did the competitors appear to deviate from the old practice of draining down the centres of the streets?—I think none of them; certainly the great mass of the plans was entirely upon the old system.

Did these schemes appear to evince a knowledge of the effects of concentrated house-drainage in reducing the size of main lines and the superfluous dimensions of the present sewers?—So far as the internal evidence of the plans themselves goes, to which alone I am enabled to speak, I can safely say that they did not. Of course it is distinctly understood that I speak solely of the plans, and am not in any way pronouncing upon the information possessed by the authors on these points.

Did you find any extensive advance upon the system which has hitherto regulated the metropolitan drainage?—No. Of course the proposals of many were on a much larger scale than anything hitherto done, but I think I may safely say that no principle remarkable for its novelty in an engineering point of view is to be found among them. I do not mean

that neither ingenuity nor merit is to be found there, but that no new scientific principle is advanced by them, nor any novel practical application of an existing principle; hence I cannot say that any advance upon existing systems has been made, or rather there being at present nothing deserving the name of a system, that a scientific basis for one has been created by the competition."

We shall return to these reports next week.

THE EFFECT ON ARCHITECTURE OF THE BUILDING FOR THE GREAT EXHIBITION.

ALTHOUGH the Great Exhibition of 1851 is an object of intense interest as well as hopefulness to the great bulk of the inhabitants, not only of this country, but of all the civilized nations of the world, there is a large class of philosophers of the "nil admirari" school whom one meets with every where, who go about asking *cui bono?* and prophesying nothing but evil and disappointment from this great industrial concourse of nations, and utterly unable to discover what good can arise to any one or to any art from such a monster exhibition.

It is not easy to meet such reasonings except by a counter prophecy, a *tu quoque* kind of argument, that leads to nothing, and the answer may safely be left to the result. In the mean while, however, it will be well to point out satisfactory results as they arise, and gather in our harvest of lessons as they ripen. My own impression is, that a result has already been obtained so striking and so important that, were no other to arise, I, for one, would think that all the trouble and expense already incurred had been well bestowed. I should rejoice that the exhibition had been projected, though the experiment terminated to-day, and went no further than it has gone, for I feel certain that the art of architecture—certainly not one of the least important—has received a lesson from it which must sooner or later be felt in every branch of it, and will create a new and, I trust, a brilliant era for that hitherto misunderstood and misused art.

To make my meaning clear, it will be necessary to go back a little, and also to state the argument rather more egotistically than is quite pleasant—but let that pass. I have all my life been trying to find out and elaborate the true principles of architectural design, and for the last few years have done little else than try to expound, both orally and by writing of various shapes and sizes, what I conceive to be the only principles on which success in the art has ever been attained, or is now possible, which is simply, in as few words as I can express it,—“Aggregation of experience, under the guidance of common sense, for all essentials, with the addition of a moderate amount of good taste for the ornamental parts.” Following out these principles, there is no nation in the world, however low it may have been in the scale of civilization, that has not been able to achieve success in this art. We alone in modern Europe have chosen to substitute a principle of copying instead, and as a necessary corollary, we alone have failed to do any thing satisfactory.

While I was trying to elaborate these principles theoretically by examining the works of all nations in their various climates, Mr. Paxton, guided only by his own native sagacity, was practically carrying them into effect; and, following them out literally, has arrived at the splendid result we now see daily growing, as if by magic, under our eyes. Indeed, so completely has he put into practice my theory—he, of course, being ignorant of it at the time—that I would ask for no better appendix to my “True Principles of Beauty in Art,” than the lecture he delivered at the Adelphi on the 13th of November last. In it he enumerates, if not in the identical words which I had used before, at least in substance, every step I had pointed out as necessary to success; and showed how such a process had led him, as it must inevitably lead every one, in every art, to as satisfactory a conclusion. He told his admiring audience how, when he had built his first greenhouse, he set himself to find out its faults, and see how it could be improved: how his next was in consequence an improvement on the first—his third on the second, and so on. As

materials improved, he adopted them: any new process that was invented he greedily seized upon, combining all by his own sagacity, never looking back, but steadily progressing forward. He explained how, at last, it only required a few hours’ thought to enable him to elaborate the whole design of the great exhibition house.

Following the same path, the Greeks were enabled, after aggregating the experience of some centuries, to build the Parthenon; and the same process enabled our Gothic forefathers to build the cathedrals of Rheims and Cologne; and, were we content to walk steadily in the same way, a century hence our children would be content to see, without remorse, the Parthenon burnt for lime, and Cologne cathedral used as a stone quarry,—simply, because they could do so much better that they could easily afford to despise such erections as these.

Let us now turn, for a moment, from the horticultural to the architectural side of the question.

When the commissioners for the great building were appointed, they advertised for designs: 240 were sent in, not only by English, Scotch, and Irish architects; but French, German, Italian—men of all nations entered the lists. Those who saw the designs, when exhibited in the rooms of the Institute of Civil Engineers, will admit that not one of them was equal to the occasion, and that the commissioners were perfectly justified in rejecting them all.* There were, as their report expresses it, “the Egyptian hypostyle, the Roman *thermae*, the Arabian or Saracenic invention,” and, they might have added, the Gothic cathedrals,—every form of copying, and every thing but what was wanted.

The next task, then, was for them to select from these rejected plans such suggestions as could be gleaned, and to make a perfect design for the purpose wanted. As occurs to all architects when they attempt to make a design for a large interior, the first thing that presented itself to the minds of the commissioners was the dome of the Pantheon, which, accordingly, was to be adopted, but the engineer suggested that with iron, and modern appliances, a far larger one could be erected; so one 200 feet in diameter was determined on as the principal feature. The next building that suggests itself to all architects from Michaelangelo downwards, is the Temple of Peace: this was rather too solid for present purposes, but the other *thermae* of Rome presented modifications which were feasible; so immense arches enclosing smaller openings formed the ends, and long rows of aqueductal arches made up the sides. With all this array of ancient authority, and the prestige of best names of the profession, the design was published, but the public did not approve: people were this time in earnest, and it was not this they wanted. They felt this, but seeing what pains had been taken, and by whom the design was prepared, they were forced to admit that the problem was insoluble, and all that could be done was to try and stop the Exhibition altogether. At this juncture Mr. Paxton appeared on the scene,—either profoundly ignorant of or profoundly despising Vitruvius and his disciples,—had confidence in his faith in the 19th century, and was strong in his own common sense. For the first time in modern times it was a fair fight between the two antagonistic principles. The public, however, were now fairly roused, and unhesitatingly declared for common sense. The Exhibition was saved, and we have got a building of which every one approves.

Supposing the same principles had been carried into effect in the design for the Parliament Houses, the result would have been that the nation would have saved a million of money, and got a far more beautiful building than the House of Industry, because built of more solid and durable material, and its variety of purposes would have saved it from the monotony of the latter building. Had common sense guided the designers of the British Museum, half a million of the money wasted on that building might have been spent on the collection, and the whole been far better lodged in a more beautiful building than the present. Had the same principles guided the Com-

* We must guard ourselves from being supposed unreasonably to admit this.—Ed.

missioners for the Building of new Churches, they might have provided twice the amount of church accommodation they have, in far handsomer buildings, and we should have heard nothing of Papal Aggression.

To return, however, to our building. In spite of all the praise that has been lavished upon it, the design is far from being either artistic or satisfactory, or even such a design as might easily have been obtained with better arrangements. Its great, almost its only merit is, that it is a common-sense design, but the public are amazed as well as delighted, at having at last got what for centuries has been denied them. The best feature in the design is, beyond all doubt, the circular roof of the transept, but that was Mr. Barry's suggestion, and had his idea been adopted of carrying the same roof down the whole length of the centre aisle, the building would have had some pretension to architectural beauty.

But it may be asked, if Mr. Barry could thus design the best feature of the building, why could he not design the whole? Simply because he is an architect, and is, by the charter of his guild, bound to copy. Neither his education nor the taste of his employers will allow of his doing any thing that is not *correct*: and the consequence is that he must spend his life puzzling over Greek mouldings, and Gothic details, neither satisfying himself nor pleasing any one else; and so it will continue to be, unless this great experiment open the eyes of the public, and they perceive that an ounce of common sense is worth a ton of mimicry; and when they do, there will no longer be that dissonance between an architect and his works that at present exists, nor that disservice of opinion that unhappily prevails between them and the public. It is true it took the Greek and Gothic architects some centuries of perseverance in the path of common sense to accomplish what they did; but when we see what has been accomplished in one short life-time, we need not despair. Fifty years ought easily to put us in advance of all that has gone before.

My letter is already too long; but, before concluding, allow me one word of peroration, in the form of an assertion, which I think architects would do well to ponder over before going further. It is this,—that the first building which has been erected in this country with which all are pleased, is also the first in which copying has been wholly abandoned, and common sense, and common sense only, has dictated the design of every part and of every detail, wholly irrespective of all the so-called rules of art; and the unsatisfactory corollary to this is, that to obtain this result, it was necessary to take the work out of the hands of the profession, after they had been fairly called on to compete, and to put it into the hands of a gardener!

If architects will take this "shining example" to heart, and be warned by it in time, they have nothing to fear; but if they neglect it, I am afraid that, in spite of all that was said at the late meeting of the Institute, engineers and gardeners will take the bread out of their mouths. Once the people see what can be done by common sense, they never again can be satisfied with copying.

JAS. FERGUSSON.

NOTES ON EARLY SCOTCH ARCHITECTS.*

SCARCELY anything has been collected as to the architects of Scotland before the eighteenth century. Not much perhaps was preserved, but no attempt has been made to gather or illustrate even the few and scanty memorials that survive. Of the builders of our many cathedral and conventual churches only one name had been handed down to us—that of Gilbert of Murray, a kinsman of the great lords of Sutherland, who, towards the middle of the thirteenth century, reared the High Church of Caithness, at Dornoch. He was a churchman—the bishop of the see whose cathedral he built; and Sir Robert Gordon, writing two centuries ago, records the tradition that "all the glass which served that church was made by St. Gilbert his appointment beside Sideray (now written Cyderhall), two miles west from Dornoch." At a much later

period we have the names of several of those to whom was entrusted the repairing or completing of our great ecclesiastical structures. They would seem to have been Frenchmen for the most part. He was a Parisian by birth, John Murdo or Murvo, who towards the end of the fifteenth century had the charge of the cathedrals of Glasgow and St. Andrews, of the conventual churches of Paisley and Melrose, and of the abbeys in Nithsdale and Galloway. A few years later, Thomas French built one of the transepts of the cathedral of Aberdeen, and the fine bridge of seven arches which spans the Dee about two miles to the south of that city. The first secular buildings, possessing any architectural character, which arose in the north, were perhaps the design of the unknown masters to whom we owe our monasteries and cathedrals. It is recorded of St. Gilbert of Murray, that beside his cathedral of Dornoch, he built many royal castles. Kildrumny, in Mar, is said to be one of them. Mr. Robertson doubted not that a little intelligent research among our extant rolls and records would recover at least the names of a good many of the builders of our greater palaces and castles—perhaps also of an occasional church—from the middle of the fourteenth to the close of the seventeenth century. He had himself noted a few. In the year 1368 Sir William of Dischington, knight, steward of the King's house, and sheriff of Fife, was "master of work" of the church of St. Monan, in Fife,—a not unpleasing example of the Decorated or Middle Pointed style. In the year 1451, Alexander of Crichton—a kinsman of the subtle chiefs who reared the stately towers of Crichton—was master of work of the royal castle of Kildrumny. Other names were those of Gray, Spot, Gulde, Livingston, Valandy, Weddell, and Weir, who appeared during the first half of the fifteenth century in connection with the palaces of Linlithgow and Leith, the castles of Edinburgh and Stirling, and bridges over the Tay at Perth, and the Dee at Aberdeen. The architect's fee for the last mentioned work was to be 20*l.* a year for ten years. The name of Thomas of Cochrane—master of works to King James III.—has a place in history. The King, it is said, wished to raise him to the peerage; but the proud nobles, indignant that "a mason," as they termed him, should be made an Earl, put him to an ignominious death at the bridge of Lauder in 1492. Under King James V., in the beginning of the following century, Sir James Hamilton of Fynewart was employed in building or repairing the palaces of Falkland and Linlithgow, and the castles of Edinburgh, Stirling, and Rothsay. Passing to the early years of the seventeenth century, we notice a nobleman whose "great skill in architecture" was especially commended by his contemporaries—Alexander Seton, Earl of Dunfermline—under whose care the lordly *chateau* of Fyvie assumed its present shape. To Lord Dunfermline, also, may be ascribed much of the beauty of Pinkie House. Another noble architect of the same century was Patrick third Earl of Kinghorn and first Earl of Strathmore, who died in the year 1695, at the age of fifty-two. To him we owe the imposing pile of Glamis as it now stands. In a minute history which he has left us of his labours, he takes blame to himself for not consulting "any who in this age were known and reputed to be the best judges and contrivers." In the works hitherto spoken of, Gothic or Mediæval styles either reigned uncontrolled or greatly predominated. Classic features would seem to have owed their first introduction to foreigners—natives of Italy—who brought with them the taste for Roman architecture newly revived beyond the Alps. Perhaps no earlier traces of *renaissance* are to be found in Scotland than those which present themselves in the collegiate chapel of Roslin, built about the middle of the fifteenth century, and, according to an ancient tradition, by an architect from Italy. King James IV. had in his employment "an Italian mason," who had a salary of 7*l.* a month, and to whose hand, perhaps, may be ascribed certain architectural peculiarities of Holyrood and Stirling. When taste and art began to revive after the tempest and wars of the Reformation, classic types rapidly advanced in prominence. In the elaborate ceilings of the castles of Craigievar in Mar, and of Balcarres in Fife, we see the

warriors of Troy mingling their effigies with those of the Judges of Israel and the elder Kings of the Scots. This was early in the seventeenth century. The middle of that age saw the building of Heriot's Hospital, in which classic detail mingles still more largely with the spirit of the Middle Ages. He thought that they might now, without much hesitation, venture to vindicate the chief merit of this beautiful structure for a Scottish architect, William Aytoun, whose portrait, inscribed "Measter Meason to Heriot's Vorke," hangs in the Governors' room of the hospital. Beside his share in this edifice, Aytoun is known to have been the architect of Innes House, in Murray, receiving as his fee "for drawing the form of the house on paper" a sum of 26*l.* 13*s.* 4*d.* The name of another Scottish architect of the seventeenth century (John Montgomery, of Old Rayne) has been preserved in connection with the fine Market Cross of Aberdeen, built in the year 1686. Melville House, in Fife, was built in the year 1692, by Mr. James Smith, who is described by the editor of the "Vitruvius Britannicus," as "the most experienced architect of that kingdom (of Scotland)." The same work gives a plate of Drumlanrig Castle, in Dumfriesshire, built in the time of the first and second Dukes of Queensbury, but does not name the architect. Mr. Robertson reserved the last place in his catalogue—a meagre and imperfect one, he said—for Sir William Bruce, of Kinross, who might be regarded as standing between the obscure or forgotten builders whose names had been enumerated, and their successors the Gibbess, the Adames, and the Myles, whose works were known to every one. Like so many of the earlier architects of the north, Sir William Bruce was a man of some rank—the hereditary sheriff of the small shire of Kinross. He appears as King's architect ("his Majesty's surveyor," as it was termed) in 1671. He had the dignity of Knight Baronet before 1685. Married to a lady named Halkett, he had a son, his successor, Sir John, and a daughter, who carried his estate and lineage into the knightly family of Hope of Craighall and Pinkie. He himself died about the year 1720; and, strange to say, his name did not seem to have found a place in any Scottish biographical collection. The mansion-house which he built for himself at Kinross, about 1685, was long one of the architectural boasts of Scotland. His plan of Hopton House—since built over by Adams—is engraved in the "Vitruvius Britannicus." The structure is there said to have been begun in 1698, and to have occupied four years in building. An earlier work of the architect was Holyrood Palace, begun about 1671, and finished, apparently, about 1679, though not, unhappily, altogether as Sir William first designed it. The first royal tenant of the new palace was the Duke of York, afterwards King James II. One memorial of that prince's taste survives in the name of "the Duke's Walk," another rests upon less certain authority. He is said to have contemplated the erection of a city upon the site on which the New Town of Edinburgh arose nearly a century afterwards; and, so far had the matter gone, that his architect, Sir William Bruce, is reported to have planned a bridge for spanning the valley of the North Loch. This, at least, was affirmed by a tradition which was committed to record about seventy years ago. Alexander Kincaid—whose History of Edinburgh was printed in the year 1787—while giving all credit to Provost Drummond for the building of the New Town, adds that he was informed on good authority, that even this gentleman was not the original projector of so grand a plan. "The Duke of York," he continues, "afterwards the unfortunate James VII., was the person who, in a visit to Edinburgh, had the penetration to discover at one view the improvements that might be made, and pointed out to the magistrates the extension of the city both on the south and the north sides. No person, however, from that time, seems to have formed any design of putting in practice those improvements which the monarch thought possible, until Provost Drummond, by an indefatigable exertion of his interest with Government, obtained Parliamentary sanction for the improvement of the city, and by an equally unwearied exertion of the influence which his superior merit deservedly gave him over the people, prevailed on them to concur in the proper methods of

* The Heads of the paper by Mr. Joseph Robertson read at Architectural Institute of Scotland, as mentioned in our last.

rendering their city an ornament to the country and an honour to themselves." Kincaid gives some further details in a note:—"There are some people yet in life," he says, "who can attest the fact that Provost Drummond declared to them, when the foundation of the North Bridge was laid, that he only now began what the Duke of York (afterwards James VII.) proposed. And I am further informed," says Kincaid, "that a plan of a bridge across the North Loch was drawn by Sir William Bruce, of Kinross, and is supposed to be lying in the Exchequer here."

THE EXHIBITION AND ITS BUILDING.

SIR,—Your readers will be glad to learn, if they have felt the force of your well-meant and kindly-expressed remarks as to the strength of the building in Hyde Park as strongly as I have, that the contractors are strengthening the structure at the junction of the nave and transept, by the introduction of a second column at each angle, firmly bolted at intervals to the existing columns. This, as you pointed out some time ago, is a very weak part of the building, and could not safely have been left as at first constructed. A second girder ought to be put in on each side, over the wide span. I should not have written this note, but I heard you very improperly blamed and condemned for your remarks, a short time ago, in the presence of some very distinguished persons connected with the Exhibition, and I feel it to be my duty to point out that the justice of your observations has been fully proved by the additions made to the building, and to offer you my earnest thanks.

A COMMISSIONER.

On the 14th inst. a paper was read at the Institution of Civil Engineers by Mr. D. Wyatt, on the Construction of the Building in the Park.

In the course of it he said that the contractors' tender was only verbally accepted on the 26th of July, 1850; that possession of the site was obtained on the 30th of July; that the first column was fixed on the 26th of September, and at the present time (only 145 working-days since the commencement) but little of the building remained to be finished. To give an idea of the size of this building, it was noticed, that the width of the main avenue was within 10 feet double that of the nave of St. Paul's Cathedral, whilst its length was more than four times as great. The walls of St. Paul's were 14 feet thick, those of the glass building in Hyde-park were only 8 inches. St. Paul's occupied thirty-five years in building, whilst the Hyde-park building would be finished in less than half that number of weeks. Each man fixed about 200 superficial feet of glass per day.

In the course of the paper, Mr. Wyatt, to whom, from the commencement, has been entrusted the superintendence of the construction of the building, gave praise to Mr. C. H. Wild and Mr. Owen Jones, who had been associated with him; to Mr. Barry and Mr. Brunel, who, as members of the Building Committee, had made very valuable suggestions; as well as to Messrs. Fox and Henderson, and to Mr. Brounger, Mr. J. Cochrane, and others, for their exertions in the execution of the construction; and he concluded by reminding the members, that the weight of responsibility, the arduous duty of supervision, the honour of acting as the master-mind, to weigh the requisites, to determine the design, and to govern the construction of this great apparatus, had been reserved for Mr. Cubitt, the president of the Institution of Civil Engineers.

On the 21st the discussion of the subject occupied the whole evening, and was adjourned to the 23th. It was a stormy one, and we shall recur to it next week.

We have received several letters relative to these proceedings, but we are unable to give them a place. Those containing personal allegations should have been accompanied by the writers' names.

The following prices for exhibition counters and stands have been forwarded to Manchester by Messrs. Fox and Henderson:—"These prices are for the work in deal, and for the entire sale. Design No. 1, Deal stand 24 feet

long, by 17 feet 6 inches high, 6 feet wide, without cupboards or drawers, and not covered in on the underside, 25s. 10s.—Design No. 2, Deal stand, 24 feet long, 12 feet 6 inches high, 12 feet wide at base, with three shelves, and close boarding underneath counter, not including cupboards or drawers, 33s. 15s.—Design No. 3, Deal stand, 24 feet long, 11 feet 9 inches high, 6 feet wide, boarded at ends and sides, 18s. 11s."

The *Fife Advertiser* says, speaking of the West Wemyss Coal-field, "Mr. Williamson is making a sofa wholly composed of coal: it is 9 feet long, with three compartments or divisions, and is sufficient to contain seven people sitting on it. The front standards are beautifully carved, displaying three mongrel animals, which forcibly remind the spectator of those richly-carved figures that appear so frequently in Dr. Layard's remains of ancient Babylon. This rare geological curiosity was ordered by General Wemyss, and it is highly probable that it will appear at the Great Exhibition, as it is ordered to be finished previous to that time."

The *Atlas* has a clever article on the huge block of coal which is to be exhibited—"Dark and solid in outward semblance, but animate with a spirit of intense activity—passive to the weakest hand, and yet possessed of energies which, like faith, can remove mountains—cheap in cost and priceless in worth—exhibited where itself is the exhibitor, nay, creator of the exhibition—type of types, and monument of monuments, amidst the countless stores of all things typical and monumental of human industry—one black sombre-looking mass will hold a chief place within the walls of the Crystal Palace in the department appropriated to 'raw materials.'"

A few days since we heard how the 'Exhibition block of coal' was hewn out of a seam thirty feet thick in a Staffordshire colliery; how it was fashioned into a cylinder, of size just sufficient to pass up the shaft into daylight, and of weight barely within the strength of the lifting tackles to support without breaking. Now it lies at the mouth of the mine, expectant of the time when it may be transferred to its destination beneath the transept. What other among the million glittering articles around, will have a better right to that post of honour?

Si monumentum queris, circumspecte. In the multitudinous contents of those vast arcades—in the glass and iron edifice which contains them—in the means whereby the former were brought and the latter built—and, extending our range of vision, in the wide country round, with its incessant, prosperous, and world-defying industry—we see but the outcome and essence of the force that lies latent in that carbonised block. It needs no inscription. In homely guise it contains the summary of all virtues, the fountain of all power. Everything within reach of sight or thought pays silent homage to its beneficent attributes."

We have been favoured with a copy of a letter from Mr. Paxton to Lord John Russell, urging the free opening of the Exhibition to the public nearly from the outset, on the ground that a large addition will accrue to the revenue from the very fact of the Exhibition, an addition which Mr. Paxton states has been estimated, we know not on what data, at upwards of two millions. The deficit onerous on the royal Commissioners he proposes should be met by a Parliamentary grant. We confess we cannot agree with Mr. Paxton, as it appears to us that inconvenience and confusion would be the result of such an arrangement.

RATING BATHS AND WASH-HOUSES.—At the Middlesex Sessions, held at Westminster on the 20th, the committee for promoting the establishment of baths and washhouses for the labouring poor, appealed against an order of Special Sessions, touching the poor-rate of St. Mary, Whitechapel. Mr. Bodkin, Mr. Pashley, Mr. Parry, and Mr. Huddleston were engaged in the case, and after a consultation between these gentlemen and their clients, it was arranged that the assessment upon the property rated should be reduced to 200L., subject to a case, as to the liability of "Baths and Washhouses for the Labouring Poor" to be rated. The Court made an order to that effect.

PROFESSOR COCKERELL'S SECOND LECTURE ON ARCHITECTURE AT THE ROYAL ACADEMY, JAN. 16.

In alluding to the great requirements of architecture as an art, the student was reminded of the leading topic inculcated in the preceding lecture—the necessity for an intimate acquaintance with the exact sciences, and to become conversant with the handicraft of labour, thus combining the skill of the head and hand. Alberti dwelt on the great importance of geometry, and the foundation of the Gothic style was unquestionably traceable to this science: without it the beautiful cloisters adjoining Westminster Hall would not have existed, and it was also the leading element in all Saracenic works. Perspective was also a first essential in design, and must be studied intimately; for it was perspective views of a building which revealed its beauties, there being no such thing in Nature as a geometrical elevation. All designs where this was not duly considered smelt of the office-lamp. The students were recommended on this point to consult the tenth book of Vitruvius.

When the Professor was present in Scotland on the occasion of laying the foundation of the National Monument, he was particularly struck with the indifference of the assembled dandies to the three great stones employed, each weighing two tons or more: it created no interest with them: they had no minds capable of appreciating the large masses used by the Greeks in their glorious erections. We should look at our work with the eyes of workmen, and reason upon the employment and magnitude of materials. The great writers, Vitruvius, Alberti, and Palladio urged our attention to this distinction, that all the Greeks did was large in thought and material, while the Gothic was formed of the union of all that was small. In criticism, the sneering and finding small faults was never useful: the soundest judgment on works of art are good-natured remarks. The veneration for antiquity was to be received with limitation. There were remaining many fine and wonderful works deserving inquiry; but a blind admiration because of the mere antiquity made Cæsar, once dead, become a demi-god, and transformed a pious man of the Middle Ages into a saint of today. Egypt, India, and Greece followed a favourite model, and remained true to it; but we find a superstitious indolence more agreeable to our nature, and yield to its influence. We should eschew this, and reflect that nothing is worthy of science but what is conceived for the purpose. Sir C. Wren says, "The study of architecture as a fine art is the study of antiquity." His great work of St. Paul's shows how truly he studied what had been done in the Middle Ages, as its structure was entirely Gothic in principle. There were the aisles for processions, the system of buttresses throughout, and all the other known means. It was much to be regretted that the magnificent first model he offered was not accepted: the study of it, as it still existed in the cathedral, was worthy of the highest attention, being so peculiarly adapted to our pure and simple ritual. But Sir Christopher Wren lived when the bigot James II. influenced the choice, and had to prepare the design of the present structure. The architect is said to have wept on the occasion. In all his churches the same intention of construction adapted to our ritual would be found. But in the churches lately built or now building, instead of designating their consecration to Protestant worship, they are as much as possible conceived to make believe they are Roman Catholics.

The grammar and syntax of the art was to be acquired by a diligent study of the great writers, Vitruvius, Alberti, Serlio, Palladio, Vignola, and De Lorme. Their works ought to be found in the library of every architect. Dr. Johnson says,—"Theory is a scheme, a speculation, a plan." Art is a system of good rules for a certain end; therefore, the study and analysis of the great authorities previously named would enlarge the mind of the student to the importance of reading diligently the learned investigations contained therein.

Vitruvius quotes from forty-one Greek authors, whose writings are lost. His work is the great text-book of antiquity, written 1800 years ago. There is nothing of the epoch so extensive, having only a few scattered notices by Pliny, from Vitruvius to the Middle Ages.

Although his style is very prosy and plebeian, every student must have his Vitruvius, and carefully digest the meaning, although it is often difficult to be got at, from the complete absence of his relation being divided into periods, there being no full-stop made in any page. The entire manner of Gothic construction will be found in his rules, and every edifice of Athelstane, William the Conqueror, and Edward III. is derivable therefrom. The church at Nuremberg is precisely what he describes as a tetrastyle, with the columns placed inside instead of externally. Vitruvius's book is divided into ten parts or divisions: the third division has been ably illustrated by the late professor of architecture, Mr. Wilkins. Fourteen hundred years after Vitruvius, when great changes were operating, Alberti wrote his work, also divided into ten books: there is no other writer so logical. The next writer in point of date was Serlio, who lived a good deal in France, where he was employed by Francis I. The earliest edition of his work is dated 1545: he employed Peruzzi, also an able painter, who treated perspective admirably in his pictures. It was a subject of sincere regret that his writings were not translated and published for extensive use. The first edition was so rare that the Professor had never seen it. Vasari, although a text-book of the first order in the fine arts, had never been translated: a talented lady was now occupied on it. After Serlio came Philibert de Lorme, who published a curious and valuable work, the more interesting to us, as he is the earliest writer on the architecture of northern Europe. He treats particularly of vaulting in stone, and was very ingenious in adapting Italian and classical ideas to the requirements of northern habitations, by introducing, among other things, the use of large windows, so essential in our dull and often clouded atmosphere. He treats also of the high curved roofs so often seen in France, and gives many notions to make chimneys ornamental to a building. One of the best examples of grouping chimneys for architectural effect is seen at King's Weston, near Bristol, by Sir John Vanbrugh. A more glaring deforming of a beautiful building could hardly be devised than the spikes of all kinds and irregular form that surmount Somerset-house, when viewed from the river. In general, De Lorme's learning goes to show that in French works a good deal of ingenuity is thrown away. He is also facetious in his instructions how the architect is to conform with civility to all the gradations of a household, from the butler down to the gentleman's gentleman, and does not fail to paint a vivid caricature of a busy body discovering a mare's nest. The succeeding lecture will continue the analyses of other writers upon the science and practice of architecture.

BATH CITY WATERWORKS.

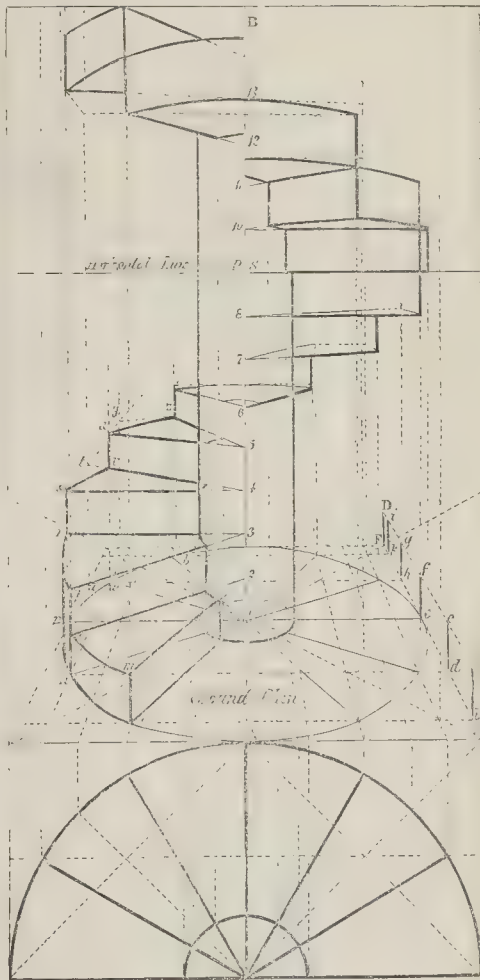
CONTRACTORS' ACCOUNTS.

At a meeting of the Bath town-council, held on the 14th inst., a report was received from the committee relative to the arbitration case that had been pending between the corporation and Mr. W. Baker, of Bristol, their contractor for the formation of reservoirs at Bathaston. These reservoirs were designed by Messrs. Manners and Gill, of Bath, for supplying the city with water, and were completed in 1849: since that period difficulties have existed in the settlement of accounts, and in May last the parties agreed to refer the matter to arbitration. Mr. James Simpson was chosen by Mr. Baker, and the corporation named Mr. Thos. E. Blackwell: these gentlemen, not agreeing, determined on availing themselves of their powers, and called in Mr. Brunel as a third referee to act with them. Mr. Baker's claim was as follows:—For cash remaining due to him on account of his contract for reservoirs, 636*l.*; for pipes furnished by him, 200*l.* 10*s.*; for extra work, 2,128*l.* 16*s.* 4*d.* Mr. Baker's total claim, therefore, was 2,965*l.* 6*s.* 4*d.* The arbitrators having held numerous sittings at Westminster, and taken depositions on oath from both parties, have awarded to Mr. Baker 1,132*l.*, having struck off from his demand 1,833*l.* 6*s.* 4*d.* The cost of the works, therefore, will have been, exclusive of iron pipes not in contract, 77,181*l.* 10*s.*, being an excess above the contract sum of 295*l.* 10*s.*

TO DRAW A WELL OR SPIRAL STAIRCASE.

PREPARE a ground plan by describing a circle and dividing it into as many parts as there are steps passing once round the column in the centre, then the usual method of drawing the circle in perspective will pro-

duce the ground plan. Draw at any height the horizontal line and the perpendicular AB from the centre of the circle: the place where this perpendicular cuts the horizontal line will give the point of sight PS. At one side of the ground plan make a vanishing scale, CDEF. Let CF be the height of a



step on the same scale employed in the circle: CF, *ab*, *cd*, *ef*, *gh*, *ik*, and DE, will represent the heights of the steps as they recede from the eye. The whole of the ground plan must be carefully prepared before the elevation is commenced; then begin by laying off the first step at *lm*, equal to *ab*, and upon the perpendicular from the centre of the ground plan mark off the other end of the step 1, 2, equal to *ef*; repeat this measurement upwards, producing the points 3, 4, 5, 6, &c.; draw *m* 2; from the point *n*, the place over which the next step commences, draw *no*, equal to *cd*; join *o* 2, and *o* *m*, with a slight curve, to correspond with *n* 1, over which *o* *m* is placed: this will finish the first step. For the second, make *o* *q* equal to *on*, or *cd*; join *q* 3; make *r* 3 parallel to *p* 1, because this line is placed exactly over the line *p* 1 in the ground plan; make *r* *s* equal to *ef*; join *s* 4, which will be parallel to *r* 3; produce a line from *s* towards the point of sight, stopping at *t*, which will represent the *p* *u* of the ground plan in an elevated position; join *t* *v* parallel to the horizontal line,—this will be an elevated representation of *u* *w*; join *s* *v* by a curve corresponding to *p* *w*; join *v* 4, and the third step is completed. Make *v* *x* equal to *h* *g* on the scale; join *x* 5, draw a line from *x* towards the PS, stopping at *y*, which will represent *w* *a* of the ground plan; draw *y* *z*, parallel to the horizontal line, to represent *a* *b* of the ground

plan; join *x* *z* by a curve as *w* *b*; join *x* 5, and another step is finished. The same directions may be repeated for each of the remaining steps. Care must be taken to place the corners of each step upon the perpendicular line which comes from their representative corners in the ground plan, as each step has its corresponding portion of the circle perspectively given in the ground plan.

JAMES CHAPMAN.

MILDEW IN BOOKS.—I send the following receipt, which I have copied from a book containing many others:—"Take a feather dipped in spirits of wine and lightly wash over the backs and covers. [Indebted to THE BUILDER for this.] To prevent mould, put a little into writing ink." Another, "To take mildew out of linen:—Mix powdered starch and soft soap with half the quantity of bay salt: mix it with vinegar, and lay it on both sides with a painter's brush. Then let it lie in the open air till the spots are out."—Notes and Queries.

The following is a quotation from the "Jeu des Perspectives," taken from the directions for drawing the same subject on a square:—"Qui voudra faire ces montées rondes il n'a qu'à suivre le querron sur lequel les praticiens se sont appuyés et il aura toute la même facilité qu'à tracer en co qui est de tout le reste." With all due deference, it will be found, upon examination, that the detail soon ceases to be like that of the square; therefore, I have employed a method of working it out which differs so far as regards the rounding off each step to produce the circle as it ascends, which is the characteristic difference between the two subjects.

ON CANNEL COAL.

We mentioned last week the visit of the Gas-fitters' Mutual Association to the works of the Western Gas Company. We now give an outline of the lecture which was delivered by Mr. Wright.

The lecturer commenced by expressing the gratification he felt at observing the strong desire manifested by the Gas-fitters' Association to obtain information respecting Cannel coal gas. He had felt great interest in that Association since its commencement, because he was convinced that it was the interest of gas consumers, gas manufacturers, and gas-fitters, to be united together, study each other's departments, and work into one another's hands. Until the gas manufacturers and gas-fitters understood what kind of commodities they had to deal with, and were prepared to receive suggestions from one another, they could not accommodate themselves to the public desires, and neither party could go on prosperously. He was therefore happy to find a union springing up between these parties, from which union he anticipated the best results. Within the last few years, the use of Cannel coal gas had greatly progressed; and it would be their fault if it did not continue to do so, for he was satisfied that from Cannel coal they obtained the greatest quantity of light for the least money: still it was difficult to deal with the many prejudices engrained on the public mind on this subject. It had been studiously instilled into the public mind, that gas was a measurable commodity, like water. That was not the case. The specific gravity of water was universally the same—it was a unity, for salt-water differed but very little from fresh in its specific gravity. But the difference between the common coal gas and that derived from Cannel coal was very great, indeed. That was one of the vulgar errors which they had to root out of the public mind. The commissioners of St. James's had, within the last few months, fully and fairly investigated the matter, and they found Cannel coal gas, at 6s. per thousand feet, to be from 40 to 50 per cent. cheaper than the old gas at 5s. per thousand feet. Since the Western Company applied to lay their mains in St. James's, the opposing companies were obliged to improve the quality of their gas from 20 to 30 per cent. He was glad of this, for he had attached himself to the Western Gas Company from a desire to spread good gas through London. He was not in the habit of using strong language with respect to other companies, but now that they were in the habit of putting half Cannel coal in their gas, he thought it fair to explain. Before the House of Commons, twelve months ago, it was proved by scientific men, that every 5 cubic feet of their gas were only equal to twelve sperm candles. He would be able to show presently, by the photometer, that 5 cubic feet of the Cannel coal gas were equal to thirty candles. If, however, the other companies should raise their gas to sixteen candles, it could not be expected that the Great Western Company could raise its gas to thirty-two. He would now go a little into the natural history of the coal from which this gas was produced. They were all well aware that coal was universally produced from decayed vegetable matter: geologists were all agreed in this. He had before him some specimens of vegetable matter, which time and the rapidity of chemical action, and other circumstances attending their submersion in the bowels of the earth, had converted into coal. One of these was a specimen of brown coal, in which some of the leaves were quite perceptible. This specimen was from the tertiary formation. It was useless for the manufacture of gas, but was employed in France for the manufacture of naphtha. The next specimen was a Cannel coal, called "Boghead Cannel." It produced a very dull sound when struck. In that respect it very much resembled wood, from which it was little removed; but it yielded 12,000 feet or 13,000 feet of gas of astonishing illuminating power. It was the most extraordinary specimen of coal with which we were acquainted. The Wigan Cannel was almost the opposite extreme of the Boghead Cannel. The Wigan Cannel was a bright, lustrous, pitchy, and compact mass. Between these were the Wemyss, Lisnahago, and Newcastle Cannels. He remarked, about two years ago, that the illuminating power of the gas was in

proportion to the dulness of the coal from which it was produced; and he was bold enough to attack the common theory, which was the very opposite. The coals which had the least amount of basis were the brightest. The manufacture of Cannel coal gas was similar to that of common coal gas. The coal was first put into retorts about the heat of melting brass. The whole of the vapour was expelled from it, and the pure carbon and earthy matter remained in the retort. The specimen which he held in his hand was nearly pure carbon. It would be easy to conceive that if that had been deposited in the bed of a river, or in an estuary, a portion of sand or silex would be washed into it, and cause it to have something like its present appearance. In all coke there was some of this earthy matter mixed, and the less of that matter it contained, the more excellent in quality was the coke. After the vapour was expelled, ammonia-water, tar, and naphtha, were the secondary products arising from the condensation of gas. Sulphuretted hydrogen was then extracted by means of the lime purification, and the process was completed. Gas was valuable in proportion to the weight of carbon contained in it. The Western Company's gas was a little more than half the weight of atmospheric air. It was from 550 to 560. It had much olefant and very little carburetted hydrogen gas in it. The ordinary coal gas possessed little olefant gas. The specific gravity of ordinary coal gas was about one-third of that of atmospheric air. The Western Company's gas was 550, as compared with 400, which represented the ordinary gas. The former gas contained 150 more particles of carbon, which made its illuminating power double. While on this part of the subject, he would observe one advantage which gas-fitters and the public would derive from the use of the Cannel coal gas. If only half the quantity of vapour were required to pass through the meter, then a three-light meter would do as well with cannel-coal gas as a five-light meter with any other, and a saving of 15s. would be effected in that matter alone. For if you only wanted, in order to obtain a given amount of light to transmit half the usual quantity of gas, the pipes would be much smaller, and therefore a considerable saving would be effected. Some gentlemen might think that a reduction of price would not be a favourable matter for their profession, but he was persuaded that the more prices were reduced in a fair way, the better it would be for all parties, and ere long he thought gas-fittings, and everything connected with gas-lighting, would not come to more than three-fourths of what they cost under the old system. The first outlay on account of gas-fittings constituted the great objection on the part of consumers, and if that could be diminished one-fourth by the introduction of Cannel coal gas, a very great impetus would be given to the business of gas-fitters. He called attention to the combustion of gas, and the particular circumstances under which combustion was effected. No part of the lecture could be of so much importance to gas-fitters as to know the precise steps gone through during the process of combustion, and to know the burners that gave the greatest amount of light and occasioned the least amount of nuisance. That burner which produces the greatest amount of light is not always the most agreeable, and therefore it was sometimes advisable to sacrifice the greatest quantity of light for convenience. Some supposed that where the greatest quantity of light was given the flame was the brightest. That was not always the case; for of the eight burners of different kinds then in operation, those whose flame was the most dusky in colour gave the most light. The gas coming out of the jet before him was composed of hydrogen and carbon. The first operation that took place was this: the hydrogen, having a greater affinity for the oxygen of the atmosphere than the carbon, flies out, and seizes the oxygen. The bottom of the flame is blue, because there the hydrogen and carbon are combined, and no two gases can produce light. In the inside of the column of flame a series of little balls of carbon, or particles of soot (too minute to be seen, perhaps, by the microscope), are passing: the oxygen attacks them; and, in the instant of combustion, they become red hot, and that causes light.

There could be no light without smoke. The ancients had a proverb, which implied so much—*Ee fumo dare lucem*. If a piece of iron were passed through the lower part of the flame, no smoke would be deposited upon it, but if placed at the top it would become smoked at once.

FOREIGN NEWS.

Omnia Omnibus!—This singular and rather Communist inscription on the splendid Gallerie St. Hubert, Brussels, seems to have, after all, received a practical corroboration and confirmation in England, by the fact, that public baths and washhouses, established at an almost nominal admission-fee, have not only paid their expenses, but even yielded a considerable sum of profit,—in some instances 130*l.* in one year. Yet, it was the great expense attending on the establishment of such public commodities (necessities?), which delayed their execution for such a considerable time, as the necessity of public baths and washhouses had been urged in London *forty years* ago. And, thus, a novel and hitherto unknown axiom of political economy has come to light, viz. that "every commodity which the mass of the people require for their human-like and human-worthy existence, may and can be obtained at a price accessible to them . . . if the establishment and management thereof be conducted wisely, cleverly, and honestly,"—a theme on which it does not convene to dilate here more extensively. We may only state, that in Cologne, Hamburg, and other German cities, *cheap dining-houses* have been established, which do well and pay their expenses. It cannot be said that such an establishment would encroach on the business of keepers of dining-rooms—but suppose it did; why, it is better than to let (especially in the inclement season) the poor go without a warm dinner, and subsequently and consequently saddle the whole community with taxes for infirmaries, dispensaries, and the ultimate keeping and burial in workhouses. The price of a meal in Cologne is five pennings (one halfpenny), for which a person can obtain a basin of substantial soup, made of peas, groats, &c.; but, of course, he may take two, if he likes, and bring a piece of meat and bread with him.* The utmost cleanliness is observed in these places, the tablecloth is changed every day, the floor scoured; the rooms in Cologne and Hamburg are well lighted (no window-tax!), adequately warmed in winter: in fact, after the experience of the baths, it is no more *charity* which is dispensed in these places, but they are only one of the *new moves* of our century. If the managers make and keep such places cheerful and homely, *why*, the people ought, as a matter of course, to behave as if they were at home. A German proverb says, "It is a bad bird which soils its own nest."

Lighthouses in France.—According to an official report, there are on the sea-coast of France, at present, 57 lighthouses of the first class. Besides those destined to mark at a long distance the points of the coast, 107 lights of less reach indicate the entrance of the ports and bays of France. Of the 57 large lights, 17 are in the Channel, 25 on the Atlantic, and 15 on the Mediterranean.

Cologne.—**Rhenish Archaeological Society.**—*First Conversazione, 8th Jan.*—The secretary, Dr. Overbeck, recapitulated the previous activity of the society, whose meetings had been interrupted since 1847. Professor Welker explained the painting of an antique vase, which had never been properly understood, although it contained an interesting inscription of Doric names. Before Arkesilaos, the famous ruler of Kyrene, *siphion* (a medicinal drug) knitted together in masses, is weighed and placed in vaults. *Siphion* was one of the chief exports of Kyrene, as it was extensively used by the ancients both as a medicine and a spice; and it seems to have been grown as a *regale*, as Arkesilaos assists the present act with his sceptre in hand, and a clerk seems to make a report to him. Dr. Overbeck then directed attention to a lecture delivered at the Berlin Congress of Philologists, "On the Scope and the present Position of Archaeological Science," which contains a very sys-

* We are convinced, that if sound bones be boiled in Papinian coppers, a pint of substantial pea or other soup, with some meats and herbs added, can, at present prices, be furnished here for five farthings, or even cheaper.

tematic and logical disquisition of that branch of knowledge, dividing it into the history of art, history of monuments, technics, &c. M. Freudenberg concluded the meeting by a memoir on some monuments found lately on the Cribitzaerfeld, in Styria, whence he proved this to be the locality of the ancient *Flavianum Solense*, mentioned by Pliny, as one of the towns of Noricum.

Nürnberg.—Harmony between Master and Men.—On the 31st December, the workmen of the engine manufactory of Messrs. Cranes and Klette honoured their employers with a festival procession by torchlight. More than 400 such flambeau-bearers gave to the assemblage a very imposing aspect. Messrs. C. and K. had, at much personal sacrifice, retained all their men during the calamitous year 1848; and on this occasion they have promised to establish, by their own means, a pension fund for their workmen, which, is however, to be managed by a committee of the men themselves.

THE SOCIETY OF ARTS.

At the meeting on Wednesday evening, January 15th, Mr. Henry Thomas Hope, M.P., in the chair, an address from the Council was read by Mr. Henry Cole, as its chairman. With reference to the success which has attended the recent efforts of the Society, Mr. Cole observed:—"It is with societies as with individuals, they do not, cannot, prosper by following mere formulas. An individual who has no purpose in the world but to vegetate may as well not exist; and, whether he be rich or poor, the world soon finds out that he is little else than an incumbrance, and treats him with indifference. To prosper, indeed, in these times, the man must be at work. We find the same analogies existing with societies. Unless they prove their ability to work, and work to some useful purpose, they become virtually extinct. A society cannot exist merely upon its name. Not only must it be alive to perform the functions it affects to do, but it must perform them in accordance with the advancing knowledge and increasing demands of the time. Men's wants in 1851 are very different from what they were in 1751, when the public wants created the Society of Arts. The arts, the manufactures, and the commerce, at the two several periods of development, appear to be scarcely the same class of things. To teach or practise art as it was taught in 1751, would be held to be ridiculous at the present day. So with manufactures. The Hargreaves and Hoyle, who print calicoes by miles, would smile at the manufacturer who should propose to re-establish a factory at Chelsea, and paint patterns on cottons by the camel's-hair pencil, as was the case a century ago, in the early days of calico-printing! To go to market again on pack-horses, and not by railways; to carry guineas in pouches, and to be robbed of them on the highways, rather than to use blank cheque-books of the Bank of England; to pay postages in shillings rather than pence,—would be only to revert to the practices of commerce in 1751."

The Council do not propose to hold any further Exhibitions this season; in order that the rooms of the Society may be free at all times to promote the interests of the Great Exhibition. It is their intention, during the period of the Exhibition, to hold several conversations and meetings for the discussion of topics which, it is foreseen, will arise out of the Exhibition.

"But it is not only upon the direct, but also the indirect circumstances and wants arising out of the Great Exhibition, that the Council will bestow their attention, and contribute the influence of the Society. There can be no doubt that the Exhibition will give rise to many new relations between men and things. Already a stronger connexion between the artist and manufacturer is springing up, beneficial to both. It will be the duty of the Council to foster this connexion; and they are considering a plan by which a friendly meeting for the discussion, investigation, and best means of promoting the union of art and manufactures may take place every year, in some one of the great manufacturing centres, somewhat on the principle of the meetings of the British Association and the Archaeological Societies. Connected with such an union, the Council feel that much remains to be done to educate the

mass of the people in the perception and practice of art, which the Exhibition is likely to make but too apparent; and taking advantage of the lesson we are likely to be taught, the Council purpose making an effort to establish elementary drawing and modelling schools throughout the country. They have submitted this proposal to His Royal Highness the President, and they have the satisfaction of knowing that he thinks it may prove very useful."

FREE PARK.

It cannot be questioned that the parks of London are not only highly ornamental, but eminently useful, as places for healthful recreation for the masses, as well as for the display of fashion: by day they are all thronged with health and pleasure seekers, and with open gates their drives serve as agreeable lines of intercommunication between the extended districts of town, which now encompass all these reserves.

At night, however, there is no thoroughfare open through them, and the inhabitant at one side of Hyde-park, who is removed but half-a-mile from a house on the other side which he wants to visit, must, after nine o'clock p.m., take a circuit of two miles and a-half, or three miles, to effect his object: this, added to the like distance on return, imposes on him the loss in time of one hour, and in labour of four miles!

For what purpose this great central space is encircled with iron palisades, and guarded by closed gates, it is hard to conjecture: there is no herd of deer, nor yet kine, now to disturb; no plantations to damage, nor other public treasure to guard. It may be very requisite to debar the multitude from lying out in summer on the herbage, and even requisite to save wayfarers from being plundered, by restricting intercourse to certain broad ways, but there is no good reason wherefore there should not be at least one open carriage-way, well lighted, and guarded by police, free for passengers throughout the night.

That upwards of two miles—from Park-lane to Kensington Church on the south side, and a like distance (from Park-lane to Notting-hill) on the north side—should be wholly sealed up, appears to be unnecessary, as it is unjustifiable, and is a severe infliction of cost and trouble upon the residents of the great suburbs of Brompton, on one side, and of Bayswater and Westbourne, on the other.

At this particular crisis a line of road across the centre of Hyde-park, from north to south, is essentially required for the freedom of transit to and from the Exhibition, and as there is a bridge (close to Kensington-gardens) ready built, a wall on one side (the Hahn) ready constructed, with a gate and lodge at the end of Westbourne-terrace, but little expense could be needed to complete the traverse so as to issue upon the Kensington high road at or near Gore-house.

The progress of society demands the accommodation here pointed out, and the further continuance of exclusion from the park by night, and of the severance of two great townships containing a population of at least 20,000 persons (the greater part of whom suffer frequent inconvenience from the prohibition), is a wanton injury to the residents.

That the boundaries should be railed and spiked, does seem a piece of railway, and can be continued but in accordance with usages in times gone by, when the surrounding districts were rural, when there might have been game to preserve, and when the office of a ranger might have been essential to chase marauders from those then unfrequented liberties.

Were it essential to rail in both sides of the proposed route, an open wire-fence would suffice, and could be of no detriment to the sylvan or verdant aspect of the park, any more than the wire-fences (round the private concessions) in Regent's-park, may be considered to mar the character of these fields for commission-ships.

If there are to be night reserves of wide extent, do let them be inclosed and bastioned at a distance from the vitals of the metropolis: the fancy for iron spikes and exclusion might be harmlessly enjoyed by functionaries, say at Battersea-fields, or (for amusement sake) in some sportive reserves to be yet retained in the

New Forest. Such fantasies might there fence in rank and station, whilst the adventurous and hurried artisan returning home by night should escape being impaled, as has frequently happened to the trespasser traversing our iron-bound park. QUONDAM.

THE PLANS OF YORKSHIRE CHURCHES.

In the December number of the *Ecclesiologist* (page 257), in an attack on a local architect, it is stated, "that he should have not cared, in his plan, for right angles, following the precedent, for example, of the old parish churches of York, in which there is hardly a right angle to be found." Now, the old parish churches of York were in the olden time perfectly rectangular, and are still so, and the aisles are all parallel, with one exception, and that appears to have arisen from contiguous excavations and decay of materials.

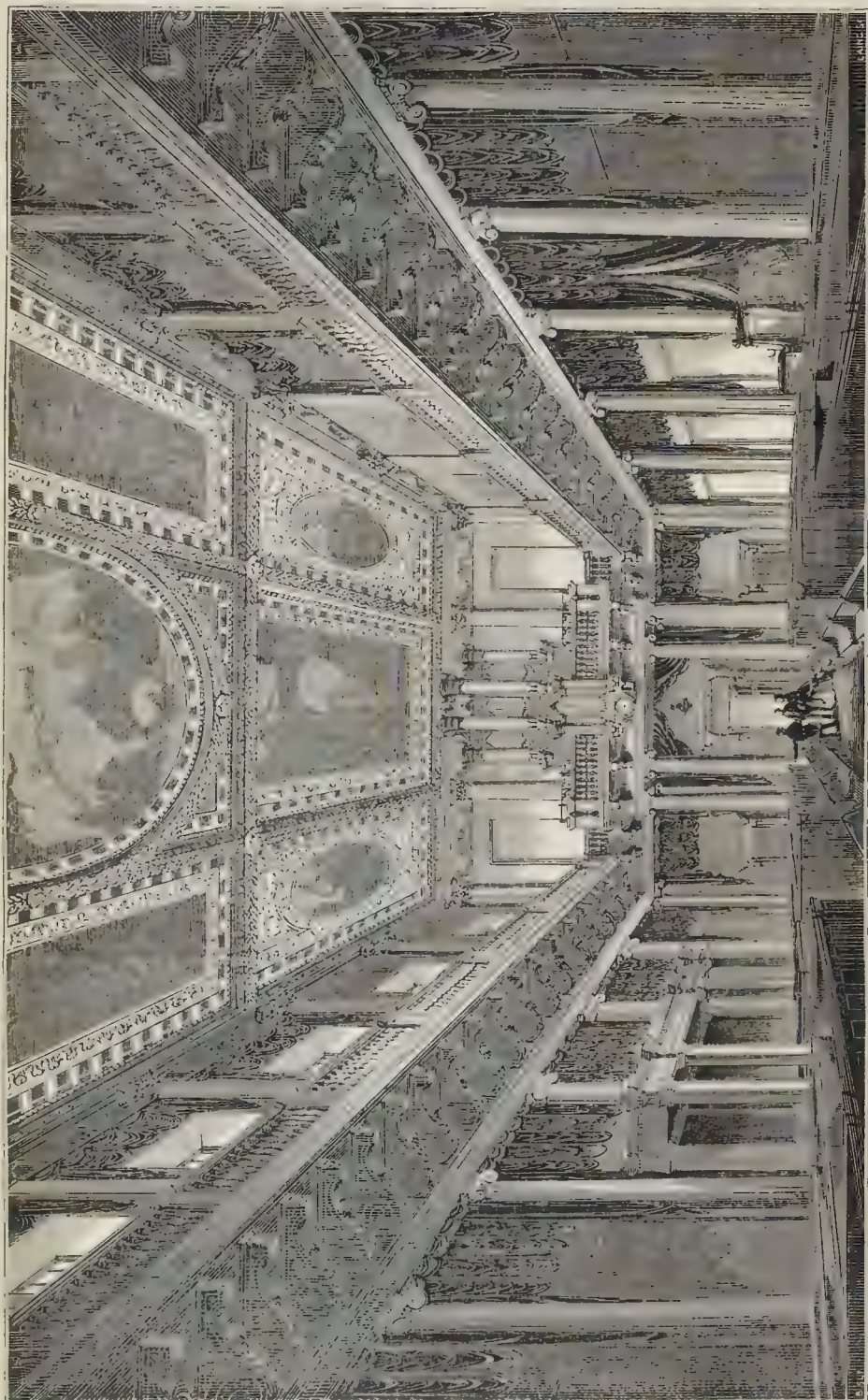
Of the twenty-three churches in York, nineteen are rectangular, of which three are modernised; the remaining four are fragments, viz., St. Crux, or the Holy Cross, on the Pavement, with its brick tower, and western oblique end, rebuilt to widen the shambles, in 1697, but the east end remains perfectly rectangular; Christchurch, in Colliergate, with its oblique east and west ends of recent creation, which is but a fragment of the original building, the ends having been made to accommodate Colliergate on the east and the before-named shambles on the west; the south aisle of St. Helen's in the square, which has been rebuilt with two oblique faces at the west end, to give space entering to Davygate; and the fourth, St. John's, in Micklegate, which had its north aisle rebuilt oblique to the east, and the whole of the east front is now in progress of skewing or building obliquely, to form a wider entrance to North-street, which conducts to the railway terminus. EUREWIC.

WHAT IS TO BE DONE ABOUT WESTMINSTER BRIDGE?

You occasionally favour your readers with some observations regarding Westminster Bridge and the New Houses of the Legislature. It would be a great boon to the entire neighbourhood, both ends of the bridge, if you could enlighten us as to the intentions of the Government respecting the new bridge, the proposed temporary bridge, &c. There are so many rumours about, that, with many of my neighbours who are leaseholders, I am in a state of perfect perplexity as to what is about to be done. I am told, on pretty good authority, that the new bridge will certainly be erected on the old site; that Mr. Barry has quite changed his opinion about the bridge being injurious to the new Houses; but that he wishes the new structure to be 100 feet broad, and flatter than the present one, allowing 15 feet only from high-water mark to the key-stone of the arches: To this proposal, I hear, the City Navigation Committee object, and say they must have 25 feet clear above high-water mark.

I believe Mr. Barry, in wishing a low bridge, urges the utility of a lofty one, as all the barges and steam-boats lower their masts and funnels when passing under. Now, can you not take up the cudgels for us a little in your journal? Every one believes that this entire neighbourhood will undergo great changes shortly, and as we here are all so much interested, it is natural we should feel a little anxious about these proposed changes. It does appear to me most lamentable and melancholy to see such a thing trifled with and shelved session after session—a work of such acknowledged utility and greatness; and is not the present bridge, with three arches blocked up in the centre of the Thames, a disgrace to the country—the centre arches of a metropolitan bridge kept up by a wooden leg! When could there be a better time to commence such a work than now?—money abundant and cheap, and a full exchequer. What a delightful thing it would have been to have had the new Houses of Parliament and the bridge finished in such a year as this, that our fellow-men from the ends of the earth might see and admire the seat of England's greatness and glory—the assembling-place of her people's representatives.

W. H. ROWE.



THE INTERIOR OF THE BANQUETING HOUSE, WHITEHALL.

[THE CHAPEL ROYAL]

CARVED CAPITALS FROM PARIS.



THE CHAPEL ROYAL, WHITEHALL.

THE INTERIOR OF THE BANQUETING HOUSE.

ALL the world knows the appearance presented by the outside of the Banqueting House, at Whitehall,—the work of Inigo Jones,—but very few know what description of apartment it forms within.

The site of Whitehall was purchased in the reign of Henry VIII., the ancient palace of Westminster having fallen into decay, and the king built upon the void ground, "many distinct, beautiful, costly, and pleasant lodgings for his Grace's singular pleasure, comfort, and commodity." These occupied both sides of what is now the road, and there was a public way through the palace from Westminster to Charing-cross, by two gates, one called Whitehall-gate, the other the King-street-gate. The character of the buildings was late Tudor, and included galleries, courts, and a banquetting hall. On the 12th of January, 1618-19, the old banquetting house was burnt down, and Inigo Jones was ordered to erect a new one. The first stone of this was laid on the 1st of June, in the same year, and the building was finished in March, 1622.

When reviewing the "Life of Inigo Jones," issued a short time ago by the Shakspeare Society, we mentioned the discovery at the Audit Office of the account of the "Charges in building a Banqueting-house at Whitehall, and of erecting a new Pier in the Isle of Portland, for conveyance of stone from thence to Whitehall." The pier cost 712l. 19s. 2d.; and the banquetting-house, 14,940l. 4s. 1d.

In that account, the new banquetting-hall is thus described:—

"A new building, with a vault under the same, in length 110 feet, and in width 55 feet within; the wall of the foundation being in thickness 14 feet, and in depth 10 feet within ground, brought up with brick; the first story, to the height of 16 feet, wrought of Oxfordshire stone, cut into rustique on the outside and brick on the inside; the walls 8 feet thick, with a vault turned over on great square pillars of brick, and paved in the bottom with Purbeck stone; the walls and vaulting laid with finishing mortar; the upper story being the banquetting-house, 55 feet in height, to the laying on of the roof; the walls 5 feet thick, and wrought of Northamptonshire stone, cut in rustique, with two orders of columns and pilasters, Ionic and Composite, with their architrave, frieze, and cornice, and other ornaments; also rails and ballusters round about the top of the building, all of Portland stone, with fourteen windows on each side, and one great window at the upper end, and five doors of stone with frontispiece and cartoozes; the inside brought up with brick, finished over with two orders of columns and pilasters, part of stone and part of brick, with their architectural frieze and cornice, with a gallery upon the two sides, and the lower end borne upon

great cartoozes of timber carved, with rails and ballusters of timber, and the floor laid with spruce deals; a strong timber roof covered with lead, and under it a ceiling divided into a fret made of great cornices enriched with carving; with painting, glazing, &c."

"The master-mason was Nicholas Stone, the sculptor of the fine monument to Sir Francis Vere, in Westminster Abbey. His pay was 4s. 10d. the day. The masons' wages were from 12d. to 2s. 6d. the man per diem; the carpenters were paid at the same rate; while the bricklayers received from 14d. to 2s. 2d. the day."

The Banqueting Hall formed but a small part of Jones's design, which contemplated a palace of great magnitude and beauty, but nothing more was done.

King Charles I. was beheaded in the front of the Banqueting Hall, and Charles II. entered it in triumph at his restoration. His speech to the Commons, delivered in this Hall, March 1662, shows that the tide rose here at times,—he called upon them to pass laws for amending the ways, so that his wife might enter the town with decency, and "not find Whitehall surrounded with water."

In 1691 some part of the palace was burnt down, and a second fire in 1695 (N.S.) destroyed all but the Banqueting House.

Vanbrugh built a house in Scotland-yard (so called from that portion of the palace precincts having been appropriated for the residence of the Kings of Scotland when in England to do homage) out of the ruins of the palace.

It was of this house Swift said,—

"At length we in the rubbish spy,
A thing resembling a goose-pye."

Inigo Jones also lived in Scotland-yard.

The Hall was converted into a chapel in the reign of George I., who ordered, in 1724, that the duty of preaching there should be performed by twenty-four clergymen, half of Oxford, half of Cambridge.

It was shut up in 1829, and remained closed till 1837, during which time it was restored and refitted, as we now see it, under the direction of Sir Robert Smirke, for which a very large sum of money was expended. The roof was found to be decayed and worm-eaten to an extraordinary extent, and was therefore wholly renewed. The ceiling, though also of wood, was very sound, and was retained. The pews, of wainscot; the royal closet (seen in our engraving on the west side), and the columns which carry the organ-gallery, were put up at this time. Great inconvenience was found in performing service; the echo was so great that the minister was unable to make himself heard. To remedy this, the lower windows were closed up, but this had no effect. The walls were then hung with drapery † (as shown in our engraving), and the floor carpetted, by which means great improvement was effected.

ing), and the floor carpetted, by which means great improvement was effected.

The ceiling, which is divided into panels by bands, ornamented with a guilloche, is painted black and gilded in parts. The panels contain pictures by Rubens, painted abroad in 1635, in honour of King James I. The northernmost of the three large compartments represents the king pointing to Peace and Plenty, embracing Minerva and routing Rebellion and Envy. The centre compartment shows the king trampling on the globe, and flying on the wings of Justice (an eagle) to heaven. At the south (the altar) end, the king is on the throne pointing to Prince Charles, who is being perfected by Wisdom. For these pictures, in the execution of which Rubens is said to have been assisted by Jordaens, he received 3,000l. The effect of them is greatly injured by the loops by means of which they are affixed to the ceiling, and to be seen at all they must be viewed from the south end of the apartment. Van Dyke was to have painted the sides.

The Hall is exactly a double cube, being 111 feet long, 55 feet 6 inches high, and 55 feet 6 inches wide.*

CARVED CAPITALS FROM PARIS.

WE add to our former examples of Capitals from the French capital two other specimens of elegant design.

A SUGGESTED LOCALITY FOR THE INSTITUTE OF BRITISH ARCHITECTS.

THE very limited space and indifferent accommodation at present enjoyed by the Institute in their apartments at No. 16, Grosvenor-street, have naturally led to many suggestions: among them the following is, I think, worthy of attentive consideration:—

To take the premises, No. 24, Great George-street, Westminster, adjoining the Institute of Civil Engineers (these can possibly be had at a rental of 300l. per annum), to form openings in the party-wall, and have a joint use of the lecture-room (one very well adapted for the purposes of a public meeting): in consideration of this the Institute of Architects to make an annual contribution of books to the library of the Institute of Civil Engineers.

I have reason to believe that such a proposition would be favourably received by the Institution of Civil Engineers, and would be a manifest advantage to all parties.

PACLAUTIN.

SANITARY MOVEMENT IN OXFORD.—The town-council having asked Mr. Cubitt to recommend a fit person to inquire into the sanitary condition of the city, that gentleman has proposed Mr. McDougal Smith for the purpose.

* The statue of James II. behind Whitehall, is the work of Grinling Gibbons, and was put up December 31, 1688.

* P. Cunningham's "Life of Inigo Jones."

† Malcolm.

‡ 1,400 yards of druggut were used for the purpose.

* Malcolm's *Londonian Redicium*.

BALBEC.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

At the ordinary monthly meeting, held on the 16th inst., Mr. William Farrell, V.P., in the chair, some architectural fragments from the ruins of Balbec were produced by Sir Thomas Deane, one of the three vice-presidents of the Institute, who read the following paper on the subject:—

Balbec, or Balbeck, called by the Greeks "Heliopolis, or the City of the Sun," is too familiar to architects and antiquarians to render it necessary that I should detain the meeting with any lengthened description. The city of Baal, or the Sun, is now better known by the Syriac name, "Balbec." It remains in doubt when this city was founded, and though the style of the architecture of the ruins is for the greater part of the Corinthian order, yet the exact period of their erection is not handed down. The building of the Great Temple is attributed to Antoninus Pius, and on several coins of the Roman emperors the Temple of Heliopolis has been struck.

The city is enclosed by a wall encircling the Great Temple, with its courts and fora; a smaller temple, a column, and an unique circular temple, with its exterior entablature sweeping into deep graceful curves, forming concave spaces between detached Corinthian columns, with its walls decorated by niches of peculiarly elegant design. The study of the stupendous ruins of Balbec will repay the architectural student, whom I refer for ample description to the writings of Pocock, Volney, Bruce, Wood, and Dawkins: the latter visited and measured the ruins in 1751.

The object of my addressing the Institute is to bring to their notice two fragments of architectural sculpture which were presented to me by a gentleman of great intelligence, who visited the ancient city of Balbec—one, a portion of a Corinthian capital; the other, a part of a moulding, with a leaf sculptured thereon. Before I draw the attention of the meeting to the peculiarity of these specimens, I would endeavour, as it were, to fit or prepare our minds by dwelling on some of the details of the Balbec temples.

The Great Temple is 290 feet long, 160 feet wide, has 10 columns in front and 19 at the side. The height to the top of the pediment is 120 feet, the columns are 7 feet 10 inches in diameter, the entablature 11 feet 9 inches high. The columns are of one stone. Volney says "of a white granite, with large shining veins like gypsum." The more ornamental parts were carved out of a coarse white marble brought from a quarry west of the city. Some of the stones employed are of immense size. There are in one part of the foundation three stones, which make in their united length 182 feet by 12 feet thick. In one quarry there remains an unfinished stone nearly 70 feet in length and 14 feet square.

My reason for giving dimensions is to induce a contrast in the mind with the pigmy architecture of our country, with its oft ill-applied column, from 3 to 4 feet diameter. How noble must the temple be whose columns remain to this day in majestic grandeur of double these diameters; let us realise in our thoughts columns nearly 80 feet in height, nineteen in number, at the side of a temple! However, I must not mislead as to great general dimensions being always necessary to produce sublimity. A Greek Doric temple, from beauty of form—beauty as well as greatness of parts,—with obvious simplicity of structure, is universally allowed to be sublime, yet the general dimensions of the Parthenon and of the Temple of Thesus are small. We have it stated, and truly so, by Mr. E. L. Garbett, that "no Gothic building ever possessed a particle of sublimity, unless double the extent and treble the height of an ordinary Doric temple;" here there is sublimity by totally different means.

Sir Joshua Reynolds, in his Discourses on Art, says,—"The more extensive your acquaintance is with the works of those who have excelled, the more extensive will be your powers of invention; and, what may appear still more like a paradox, the more original will be your conceptions." I truly believe in this observation, and therefore urge on all to study ancient art abroad and at home. It is with these feelings I would approach the ruins

of Balbec; with these feelings (in this necessarily conversational paper) I lay before the Institute the fragments of sculpture I have alluded to.

In both of these specimens you will discover exalted mind in the composition—a peculiar adherence to characteristic nature—a power of producing effect by simple means, rarely in our day acquired or applied. This, you will perceive, is by an artistic use of the drill. I mean by an artistic use, a feeling for, and knowledge of, art in the workman, which produces that indescribable feeling best expressed by what may be termed the poetry of art.

In all sculpture drilling the points for what is called "hosting" has ever been applied; but in the specimens under consideration the drill has been otherwise used in the formation of foliage, and producing effect by deep shadows and undercutting, but all by a master hand, knowing and feeling his subject.

To elevate our minds to the beautiful in art has been this evening my object. When I consider that the standard I have brought before you is a work executed 1,400 years back, as sharp as the day it was wrought, so natural, so beautiful, my mind turns to the past with wonder—to the present and future, with hope of improvement—an improvement to be attained by the principles I have taken the liberty to put forth; by mutual good feeling—mutual instruction—and teachable minds,—the exhibition by every means, and at all times, to the artisan of the highest models of antique and modern art. The British Institute of Architects, our own with some vigour infused into it—the Dublin Society, a school of design established years before the present schools of design were thought of, now so nobly followed up by Government, disposed to act in the arts, when we are disposed to help ourselves. These united means must bring about a better feeling for the fine arts, so that in the end good taste will be conspicuous in every art and manufacture.

The Corporation of Cork have wisely contributed in aid of the school of design—they wisely look to the future effect of first principles being well grounded. The Corporation of Dublin, so nobly constituted, no doubt will follow the example. I fear that I have digressed, that I have ridden my hobby, the advancement of the fine arts—a love for, and knowledge of which, I trust, ere long, will pervade all ranks of society, and that in ages to come the productions of our time may be looked on with the same pleasure, that I have no doubt you have felt on the inspection of the fragments of Balbec sculpture I have had the honour of laying before the Institute this evening.

A discussion followed.

According to *Saunders's News Letter*, it is expected that the institutes of engineers and architects will be able speedily to obtain some suitable premises, which they can conveniently occupy in common; and we hope that this very desirable end may soon be realised, being satisfied that the non-professional public will often derive much pleasure and instruction when invited to attend the meetings of the institute.

COMPETITION—SOUTH METROPOLITAN SCHOOL BOARD.

In the month of May last, advertisements were issued for competition designs by the *South Metropolitan School Board*, and between fifty and sixty designs were submitted. The plans were delivered on the 16th of July, and in about two months afterwards my designs were returned to me; but up to this period, through your publication or any other, I have not seen any information as to the building being proceeded with, or who was the successful competitor. But I am informed, upon private authority, how true it may be I cannot say, that the idea of building altogether is abandoned.

Would you oblige me, and I dare say the other unfortunate competitors will be also obliged, by stating if you have heard anything upon the subject?*

I am quite alive to the truth of the remarks which have appeared at various times in your valuable journal relative to competitions, and the great and palpable injustice to which architects so quietly submit, and I would gladly be

one in endeavouring to establish a more substantial and respectable footing for the profession.

Supposing, in this case to which I have called your attention, fifty or sixty gentlemen have submitted designs, each of which would take on an average from five to six weeks' labour, and an expenditure of from 5*l.* to 10*l.*, and the committee, for some cause or other, do not proceed with the building, and they consequently return all the plans without selecting any. Is there no remedy? Are we quietly to submit to such a barefaced act of injustice?

Surely there must be some obligation on their part, or at least I understood so, or I should not have been induced to have expended my time and labour in preparing designs; and the obligation I take to be this,—that they make a selection of some one of the designs submitted, and if the author be a competent person, that he should be engaged to carry out the works; but provided circumstances should arise over which they had no control, and the building were not proceeded with, then that he should receive such remuneration according to the usual charges in the profession. But supposing they do not think there is any such obligation on their part, what then—are we quietly to submit?

We might not be able to succeed in law, but we could act in equity, and I would gladly subscribe my 5*l.* towards the prosecution of such a suit, to prove to such men that we are not to be treated with greater indignity and injustice than any other class of her Majesty's subjects.

But perhaps I am wrong in this particular instance, although there have been too many such cases, and I should be glad to obtain any information on the subject.

T. S. EDWARDS.

BUILDING ACCIDENTS.

Islington Sewer.—On Friday in last week two men were drowned in a sewer at Lower-road, Islington, by a rush of water from the bottom of the New River tunnel there, while attempting, against the regulations of the Sewers Commission, to open a communication into the sewer from a house-drain in the course of formation at the King's Head public-house. The sewer itself was a new one, but had been safely cut across the New River tunnel at a lower level, and the sewerwork was at a stand for want of blue bricks. One of the workmen of the commission, meanwhile, had contracted with Mr. Kesteven, builder, to work at the drain, and was so at work when the accident took place. In his evidence at the coroner's inquest, he stated that he did not know where the water-work tunnel lay, and supposed that he had got beyond it. In course of some boring to ascertain his position the water rushed in, it was believed from the bottom of the aqueduct, the invert of which is supposed to be only one brick thick, and is very old—as old indeed as the New River cut altogether. Being asked by whose authority he acted in this particular instance, the witness alluded to, (Bevan) asserted that he acted on no one's authority but his own,—that Mr. Kesteven had gone to the Sewers Office to obtain leave to open the communication, and that he merely went in "to try and get the thing done." Mr. Forster, the engineer of the commission, volunteered a statement to the coroner and jury to the effect that the tunnel being 250 years old, it might have been unsound, and the company were now constructing an iron tube to go under it; that he attributed the falling-in to an accident, and not to any negligence, although Mr. Kesteven had no authority to carry the drain as far as he did. The coroner said in that case there was no necessity to adjourn. The jury acquiesced, and returned a verdict of *Accidental Death*.*

New Chinese Exhibition Building.—For some time past a building of considerable extent for the Chinese Exhibition has been in course of construction near Albert-gate, Hyde-park; and about the hour for leaving off work for the week, on Saturday last, a number of

* By this lamentable accident two widows and nine young children are left totally destitute. An effort is being made to place the widows in a position that will enable them to support themselves and their children. Mr. Henry John, of No. 46, Hatton Garden, has consented to act as treasurer, and will receive any subscriptions that may be offered.

the hands approached one end of the high scaffolding, when their weight, resting upon one of the putlocks, lifted a portion of the brickwork, and caused the scaffolding to fall. Five or six of the bricklayers and labourers were precipitated to the ground, and three persons, seriously injured, were removed to St. George's Hospital.

Newington Causeway.—A coroner's jury, in the case of a man who recently met his death by an accident, alleged to have arisen from the disgraceful state of the road at Newington causeway, has returned a verdict of "Manslaughter against Mr. Pocock, chairman, and the five trustees of the South District Board of St. George, Southwark." The coroner took the recognisance of 50*l.* from Mr. Pocock for his appearance at the Central Criminal Court, and stated that he would accept the recognisances of the other trustees in a similar amount.

Mill near Belfast.—A large building, in course of erection as a preparing (flax) mill, at Beer's-bridge, near Belfast, fell to the ground last week, burying in the ruins a number of workmen, several of whom were killed. The building was roofed in, and the slating all but finished; and no cause could be assigned for the accident, save the supposition that heavy rain of the previous night had loosened the brick-work to such an extent as to unfit it for the support of the beams. The mill was the property of Messrs. Steen and Boyd, and their loss will be about 3,000*l.* Most of those engaged in the lower apartments, having been warned by the noise of the metal beams giving way on the first floor, escaped with trifling injuries. One interim result of the inquest which is being held on the deceased persons, has been the committal of Mr. Magee, the contractor, who built the mill, to prison. The coroner, however, afterwards consented to take bail—Mr. Magee in 500*l.*, and two sureties in 250*l.* each. Another interim arrangement was the appointment of Mr. Lanyon and Mr. Godwin to inspect the ruins, and report. It will be necessary, however, that a clearance be first of all made in the rubbish, which prevents inspection of the walls. The inquest has therefore been adjourned.

Charing-cross Hospital.—We are not a little surprised to observe, from the committee's annual statement of the operations of this valuable institution, that, during last year alone, no less than 3,200 cases of accident and emergency from falls off scaffolds, ladders, buildings, lofts, staircases, windows, excavations, and such like causes, were ministered to by the officials in this hospital, besides a host of other cases. Such an Institution demands our best support.

LLANDAFF CATHEDRAL.

I AM sorry to find any person speaking of the restoration of Llandaff Cathedral in the tone assumed by your correspondent, "H. B.," in your number of December 14th. However, he appears to have either observed with so little attention, or to have reported with so little accuracy, that I think it quite possible that the reputation of the dean and his coadjutors may survive his censure. How any person who "lately had occasion to visit that most interesting spot" could sit down and so completely misrepresent one of the greatest works of modern times, is something which quite passes my powers of understanding. "H. B." was astonished on his approach to notice the unusual appearance of a gable and cross standing, to all appearance, at the end of a ruined nave; but still too new (even at the distance of half a mile) to bear out his first impression. On a nearer approach, however, it was soon accounted for by a flat roof (added by our "modern restorers"). Surely, out of the merest respect to external effect, a roof of the same pitch as the gable could have been constructed (however bent the architect might be on spoiling the effect of the new nave internally by a flat ceiling). "H. B." is an ingenious person, having turned the cathedral right round, and apparently confounded the works of the eighteenth and nineteenth centuries, mistaking the devastations of Mr. Wood for the restorations of Dean Conybeare! There certainly is "a gable and cross forming," not only "in appearance," but in reality, "the end of a

ruined nave;" but they are the original work of the thirteenth century (slightly altered in the fifteenth); so that if these be "new" (even "at the distance of half a mile"—a curious standard of novelty), I am at a loss to know what may be "H. B.'s ideas of antiquity. There is also "a gable and cross," "to be accounted for. (in "H. B.'s" phraseology) by a flat roof added by our modern restorers;" but they do not "form the end of a ruined nave," but the east end of the restored Lady Chapel. To which does "H. B." refer? As to the latter, you know from my published remarks on the subject that I disapprove of the flat roof and sham gable as much as "H. B.," but the desire "to spoil the effect of the new nave internally by adding a flat ceiling," which he, not very graciously or charitably, attributes to "the architect," exists wholly in his own imagination. There is no "new nave" at all; the nave remaining in ruins, according to the showing of his own first paragraph: the renovation of the eighteenth century affected the choir, that of the nineteenth the presbytery and Lady Chapel. There is certainly no flat ceiling of less than a century's standing, none in any connection with any cross or gable: the Lady Chapel retains its ancient stone vaulting; the presbytery has a modern roof of timber: even of Mr. Wood's choir, the ceiling is, I think, not quite flat, and at all events will not last much longer, if it still exists. It is, indeed, true that I individually very much wish to see a flat ceiling in the nave and choir; but so far is the architect from being "bent on spoiling their effect internally by adding" anything of the kind, that he differs completely from me on the subject; and probably my flat ceiling—Peterborough being the model—would not very much resemble that which exists in the imagination of "H. B."

In his last paragraph your correspondent would almost seem, by the censure with which he concludes, to have attributed the structure of Mr. Wood to the present restorers! I will not ask "H. B." whether he has read what the dean and myself have written on the subject; I will only ask, has he really entered the church whose zealous guardians he has taken upon him to malign?

EDWARD A. FREEMAN

THE LIGHT-TAX ABOLITION MOVEMENT.

NEITHER the Government, in according their warm support to the International Exhibition movement, nor the Industrial Commissioners, in selecting the design of the Great Glass Building, we dare say, calculated on one excellent end subserved by these proceedings,—namely, the concentration of the public attention, spite of the "drum ecclesiastic," upon GLASS. The steady contemplation of the public eye upon whole acres of that glittering and attractive material has naturally begotten a desire to have a few more acres of it spread over the country and distributed amongst them: and they are likely to insist upon it now that they have thought of it,—now that the Government and the grand Commission have presented them with the leading idea, which, by the natural and inevitable laws of psychological association, suggests not only all that is good in glass, but all that is evil in its absence. The movement for the abolition of the tax on window-glass, and through that on light and air, on health and comeliness, on cheerful spirits and on cleanly habits, has fairly begun. May it speedily come to a prosperous issue.

Meetings of a determined character are being held in all quarters of the country; and our present purpose is to notify the occurrence of a few of these as they transpired. At a meeting last week of the inhabitants of St. Anne's, Westminster, held in Dean-street, Soho, it was unanimously determined to petition Parliament for a "total, immediate, and unconditional repeal of the obnoxious tax." At this as well as at every other, all those arguments which have been so repeatedly urged in our columns were rehearsed; but on these we need not now enlarge.

The work is not yet done; and nothing but a determined perseverance in the present auspicious course will do. At the meeting under notice, it was also unanimously resolved to urge a refusal of further supplies to Govern-

ment, should they refuse the total repeal of this odious tax. With reference to the deputation from the Metropolitan Sanitary Association to the Chancellor of the Exchequer, Mr. Nicholas stated that he had that day accompanied the deputation to the Chancellor, and his name (Mr. Nicholas's) being mentioned, the right hon. gentleman stated to him that he had proposed next Tuesday to receive the metropolitan delegates' deputation on this question. He told the Chancellor of the Exchequer that that would be too short a time, because the organisation was so great and so extensive that it would astonish him. After entering into a variety of details, it appeared that the meeting was postponed for the present, on Mr. Nicholas assuring the Chancellor of the Exchequer that if pressure from without were wanting, he should have it to his heart's content. Various meetings, Mr. Nicholas added, were yet to be held in the Tower Hamlets, Hackney, &c.

Since the meeting in St. Anne's, Westminster, took place, a great meeting has been held in St. Marylebone (on 20th inst.), Mr. Nicholas chairman, when delegates attended from Islington, who wore broad blue scarves, on which were traced, in white letters, the words "No Surrender," "Unconditional Repeal." On the hustings were Lord D. Stuart, M.P., Sir De Lacy Evans, M.P., Mr. C. Lushington, M.P., Mr. Williams, M.P., Mr. Mowatt, M.P., &c. &c. Resolutions similar to those voted at the meeting before noticed were here also unanimously passed, contingent refusal of supplies inclusive.

At Bedford, a numerous meeting was held on Wednesday in last week, when resolutions were also unanimously passed, which are formally based, as indeed were all those already noted, on the idea first struck out by ourselves, but now so entirely public property that we are almost ashamed to claim it,—that the window tax is virtually a tax on light, air, and health: petitions to parliament were at once made out, based on these resolutions, and are in course of signature.

In Southampton similar petitions are in progress. At Salisbury, the same, with resolutions in which even stronger references are made to the bearing of the tax on Sanitary Reform in general, and ventilation and light in particular.

A large meeting was held at Bath on the 16th inst., in which no surrender—no modification—but total repeal—was the password, as it has been everywhere else. Here, too, of course, appropriate resolutions were passed by acclamation. One of the town councillors said he had only two ideas on the subject of the window-tax—one was that the tax was a very bad thing, and the other that its repeal would be a very good thing. It had been said that the tax must have originated in the regions of darkness: whether this was so or not he would not undertake to determine, but they all knew it came from a Pitt. They might remember that a poor but witty fellow, who was obliged to block up some of his windows when the tax was put on, had them painted in the shape of the back of a book, and labelled them "Pitt's Works, Vol. I." and "Pitt's Works, Vol. II." Now he wanted no more of Pitt's works—no modification of the tax—all or none—the bill, the whole bill, and nothing but the bill!—a total and unconditional repeal of the window-tax. Petitions were also determined on.

The citizens of York held a meeting on the subject on Tuesday week, and meetings of a similar character have been held in several other towns; but our space and time are both up for the present.

TENDERS FOR THE BRENTWOOD LUNATIC ASYLUM, ESSEX.—Mr. Editor, what do you say to the following?—

Smith and Appelford.....	£80,420
Kirk and Parry.....	74,125
Sanders and Debham.....	73,500
Trego.....	71,676
Hoof and Hill.....	68,545
Harrison.....	67,972
Jackson.....	67,651
Lucas, Brothers.....	66,809
Curtis.....	61,840
Piper.....	57,980
Myers (accepted).....	57,920
Mortimer (withdrawn).....	43,875

A. Z.

RAILWAY JOTTINGS.

A wooden bridge, covered with gas tar, on the Sheffield and Rotherham Railway, caught fire lately in consequence of the contents of the fire-box having been thrown on the bridge.

—The rate on the Eastern Counties Railway, in the parish of St. Matthew, Bethnal-green, comprising 67 furlongs of line, with stations, has, after a sharp contest, been adjusted at 5,000*l.* per annum.—Messrs. Fox and Henderson have contracted for the new station of the Oxford Branch of the North-Western, at Oxford, to be opened in May. The station will be 100 yards in length, and will be entirely built of glass and iron. A committee from London is expected at Oxford in a few days to decide on the locality of the station, which it is expected will be in the Botley-road, near the Castle. The tender to build it on the "Crystal Palace" plan, modified to suit the peculiarities of railway requirements, was nearly 20 per cent. lower than any other it is said.—The site of the great central station at Birmingham has been marked out so far by the plans and estimates of rails and crossings already prepared. The junction of the Midland with the London line has been completed, and on Wednesday some part at least of the Derby passenger traffic was to be brought up to the London station.—The Hereford and Shrewsbury line is on the way to realization. The tunnels will be begun first: these have been surveyed and all marked out: four shafts of seven feet diameter will be sunk at Dinmore-hill. The contractor, on applying to Mr. Arkwright as to where he was to quarry the stone, was granted permission to do so wherever he could find it most convenient for his purposes. The contractor will commence simultaneously at many points of the line. The sub-contractors will sign their contract in the course of a week or two; so that, in the beginning of February, the works will be in operation throughout the line.—The works on the Londonderry and Coleraine line will commence immediately. Mr. McCormick, the contractor, has purchased Lisahally House and lands, and yesterday Mr. George Green, his agent, bought the farm nearly adjoining it, at 930*l.*, at Walters's Auction Mart. This farm is held under lease, renewable, at the rent of 14*l.* 6*s.* 6*d.*, and contains 32 acres of land. The first fruits of the railway formation here, as elsewhere, is the enhancement of the value of property in the vicinity, this farm having been sold at about twenty-eight years' purchase.—The Prussian minister of commerce has concluded an arrangement with the Prussian railway companies, by which all Prussian workmen and industrials going to England to visit the "world's fair" will be conveyed in second-class carriages at third-class fares.—A company is being formed at Madrid to convey our Spanish visitors to the great gathering of the nations. They are to pass through France, and to stay three days in Paris. Their residence in London is to be about a fortnight, and the expense of the whole trip will not exceed from 1,000*l.* to 1,200*l.*, according to *Galignani*.—Mr. F. E. Colegrave, of Brighton, has patented improvements in slide-valves, in causing the driving-wheels of locomotives to bite the rails, and in supplying water to steam-boilers. For causing the wheels to bite the rails, the patentee proposes to convey a stream of heated air against the rails, immediately in front of the driving-wheels, which, in damp and slippery weather, it is said, would be almost instantaneously dried; and also to connect together by a band the leading, driving, and trailing wheels, securing cohesion between the wheels and rails. The patentee also proposes to heat the water before it is conveyed to the boiler, by causing it to pass through water spaces on three sides of the ash-pan.—Mr. J. W. Hoby, of Blackheath, has taken out a patent for a method or methods of securing rails upon longitudinal or transverse bearers, by curved or angular lips on one side, and by bolts and nuts passing through one of the flanges of the rail on the other; or by curved or angular dogs, and bolts and nuts, or by means of ribs or studs, and keys, on the other; the application of chucks along each side of a line of rails, either with or without keys, for securing rails to sleepers; a method of constructing the troughs of longitudinal iron trough-sleepers, for holding and securing the rails, so

that one side of each trough shall fit to and support one side of the rail placed within it, and that a key may be introduced on one side of the rail; for a method of constructing stretchers of hollow iron, and railway keys, of bent and curved forms, of metallic tubing, filled with wood; and also for an application of a combination of rollers or dies for forming strips of sheet-iron for the purpose.—Mr. J. C. Hadden, of Bloomsbury, has patented some improvements in the construction of railway carriages and wheels. The sides and end pieces of the under framing of railway carriages are to be constructed with bars or plates, the ends of which are bent so that, when placed together, the bendings may lap round each other, in such manner that the corners of the carriages shall be double, or of two thicknesses of metal. The transverse and diagonal ties are constructed with bars bent so as to hold the ends and sides together. The framing of the sides and ends of carriages are constructed with diagonal bracings, or struts, cut flush with the other timbers of the framing. The external covering of the sides and ends of the bodies are placed against or upon the framing, the several parts of which are made flush with each other, for the purpose of securing them in position. The improvements in railway wheels are thirteen in number, all based on constructions previously patented.—Eighty railway bills have been lodged in the Private Bill Office, having thus surmounted the first two stages of parliamentary initiation. "The enterprise of the country," says the *Railway Times*, "can in no way be considered as having succeeded from railway extension or improvement. The list of bills shows that a greater degree of caution than was wont is settling itself down upon railway management, and that is as good a symptom as we could desire to see."

NOTES IN THE PROVINCES.

A new school has been built at Milton Ernest, and was opened on the 2nd inst.—Some improvements are being made in High-cross-street, Leicester, by the pulling down of old houses, and the erection of new shops with plate glass fronts, &c.—It was proposed to erect a bridge over the Cam, near Fort St. George, but some obstacles have been thrown in the way of such an application of the money intended to be devoted to the purpose.—The Northampton Mechanics' Institute has now a library of 10,000 volumes, and an income of upwards of 200*l.* a year.—On 1st inst. a new Baptist Chapel was opened at Ryde. The building is capable of seating comfortably about 250 persons, and has been reared at the cost of about 400*l.* of which 200*l.* have been collected.—The design for providing church accommodation for the Haventree district at Ryde, has long been contemplated. A gentleman has, within the last few days, made to the Rev. W. S. Phillips an offer of one hundred pounds towards the building, with an intimation of a probable contribution in aid of the endowment. It is proposed to erect a small church capable of holding a hundred persons—all the sittings to be free. A site for church and burial-ground has been promised by Mr. T. W. Fleming. The work will be commenced early in the spring, if a reasonable prospect of completion be afforded.—A meeting was held at the Independent Chapel, Parchment-street, Winchester, on Thursday week, to commence a subscription for a new chapel. The Rev. W. Thorn announced subscriptions from the Rev. E. T. Prust, of Northampton, of 1,000*l.*, and from himself one of 500*l.* Several other subscriptions, varying from 50*l.* to 5*l.*, were promised, and a committee was formed to collect subscriptions. The total expense of a new chapel, and a British School adjoining, it is supposed, will reach 3,000*l.*—It is understood that the Dean of Salisbury has liberally undertaken to complete the works at the cathedral at his own expense.—The new National School-rooms, at Wittenhall, Worcestershire, the site for which was given by Lord Ward, and the building of which cost more than 500*l.*, raised by voluntary contribution, were opened on Wednesday week. They at present accommodate one hundred and twenty-three children.—A mural tablet, bearing military emblems and inscription, has recently been erected in the chancel of the parish church of Prees,

in the county of Worcester, to the memory of Major-General Clement Hill, who died at the Falls of Guersoppa in 1845.—On Tuesday in last week, the ceremonial of consecrating the newly-erected church of Allington, near Amesbury, Wilts, was performed by the Bishop of Salisbury. The new edifice is, we understand, an exact copy of the original structure, which had fallen into decay. It is erected of flint, with stone dressings, and consists of a single aisle and chancel, with a battlemented tower on the south-west side, which is surmounted by a gilt cross, and contains a peal of three bells. The interior of the church is of the most simple character. The aisle or nave is lighted by two windows, containing merely a single mullion dividing the lights, which are cusp-headed. The roof is of open woodwork, stained to imitate oak. The chancel (which is paved with Minton's encaustic tiles), is separated from the nave by a low arch and a small wooden screen, and contains several windows,—those on either side being of the Early English character, while the east window is in the Middle-pointed or Decorated style.—A Plymouth tradesman has succeeded in making cast-iron horseshoe magnets, to lift 150 lbs., at a cost of 30*s.* each.—At the Radnorshire Epiphany Sessions, it was resolved "to consult some eminent engineer as to the desirability of adopting wood or iron columns" before proceeding to repair the Radnorshire half of Glasbury bridge, which has fallen into a state of decay. At same sessions the chairman remarked that some unfounded reports had got abroad respecting the safety of the new chain bridge which had recently been erected at Diserth. Mr. Davies, Moorcourt, was passing over it a short time since, in his carriage, when one of the chains broke. Mr. Ladmore was bound by his contract to keep the bridge in proper repair for seven years.—Mr. Davies said he had examined the piece of chain which had been broken, and it showed a most defective state of the iron. It was just that sort of defect which had shaken his confidence as to the rest of the fabric.—The County Surveyor said he had thoroughly examined the bridge, both before and after its erection, and was unable to detect any flaw in the iron. Now, that the bridge was painted, it would be almost impossible to perceive any flaw, even if it existed. He believed the bridge now to be perfectly safe.—A grant of works of art, including a large collection of engravings, casts of sculptured ornaments, &c., has been made by the Board of Trade for the use of the drawing-classes in the Mechanics' Institution at Liverpool.—The first stone of St. Augustine's Church, in the parish of Edgbaston, Birmingham, was to be laid on the 16th inst.—The Staffordshire Potteries are overdone with orders, and a considerable advance has taken place in the prices. The foreign orders are more extensive than they have been for some years, and the general business is excellent.—In the Sheffield Council last week a committee was appointed to inquire as to erecting a municipal hall, which, besides accommodation for the council, should contain a large room for public meetings, &c.; the committee to have power to advertise for sites and consult with architects. The mover of the resolution said that the rent they paid there was 190*l.* per annum. That represented the interest on a considerable sum of money at a low rate of interest. It had long been felt that a public hall capable of containing 3,000 or 4,000 people was much wanted. It did not appear that private enterprise would suffice, for a meeting was held some time ago at the King's Head, and a majority of those present appeared to have been architects and solicitors. The mode of obtaining the funds would not be by any special rate, but by drawing money from the overseers out of the poor rate as the building proceeded, or the raising of the funds might be spread over a greater number of years.—Morton Church, which has been rebuilt by general subscription, and the whole work completed in five months, was re-opened on the morning of New Year's day.—The committee appointed at Bradford on 26th November last, respecting the enlargement or re-building of the parish church, have engaged the services of Mr. P. C. Hardwick, and his report of the present state of the fabric and the measures required for its restoration and for increasing the accommodation of the

church, has been presented.—Keeping pace in the sanitary movement, the proprietors of the Oley Waterworks have recently had their storage reservoir reconstructed. It is now sufficiently large to hold 200,000 gallons. Mr. Wm. Maston, of Oley, was the contractor, and Mr. Johnson, of Wakefield, the engineer.—Two large reservoirs, capable of holding 18,000,000 gallons, have just been completed on Rombles Moor, for Mr. T. Horstfall, of Burley Hall, for the purpose of supplying water-power to several woollen and corn-mills at Woodhead and Binley. A correspondent says, notwithstanding the unfavourable nature of the ground, and the necessarily heavy and substantial character of the embankments, &c., the works have been executed at a low cost, each cubic yard of storage room costing under 13d. The works have been executed by Messrs. Parkinson and Roberts, contractors, Wakefield, under Mr. J. McLandborough, of Oley.—The foundation stone of a new church, in the newly-formed district of South Ossett, parish of Dewsbury, was laid on 1st inst. The church, which is of cruciform design and of decorated style, is to be built by subscription, aided by grants from the Ripon Diocesan and Incorporated Church Building Societies. The estimated cost is about 2,000l. The church is to contain 600 sittings, more than two-thirds free. Messrs. Mallinson and Healey, of Bradford, are the architects. The site (an acre of land) was given by Mr. Joseph Thorns.—In the village of Carlton, near Selby, Lord Beaumont has built a school, to accommodate 120 children, where that number are taught history, cyphering, writing, and geography, for 1d. per week each, including books and stationery. His lordship also rents another room for an infants' school, containing sixty children, taught upon the same terms. By far the greater number of children in his lordship's schools are Protestants.—At the North Yorkshire sessions, lately, the chairman said, four years ago an application was made by the inhabitants of Stockton for assistance in widening the bridge. The North Riding then voted 200l., and the county of Durham 200l., provided the inhabitants of Stockton and the district would also contribute 200l. By Act of Parliament, the Riding was not bound to widen the bridge, but the magistrates were willing in this case to render their assistance. The money was not raised, and nothing had been done. The Court, however, still express a willingness to abide by the original offer.—The town of Bedford has been thrown into a state of excitement by the service of writs on two of its aldermen for penalties of 100l. each, incurred, under the Bedford Improvement Act, for acting as commissioners, being interested parties, as shareholders of the Gas Company, and thereby contractors with themselves for lighting the town with gas.—The unusual mildness of the season has enabled the contractors for the new "People's Hall," at Colchester, to make rapid progress in the erection of this building. It was found necessary to excavate to a considerable depth for the foundation on the east side, at the north and south ends. At one part, a Roman tassellated pavement was found, 13 feet from the surface: it was covered with bones, human and animal, Roman tiles, burnt earth, and a few antiquities, none of any great value. It is anticipated that the building will be completed in less time than the terms of the contract allows.—For the acceptance of the gift of a museum offered to the Winchester Town Council by the trustees of the County Museum, 361 burgesses voted, and against it only 13. The next question will be the selection of a proper site. The vote of the burgesses was in fact one for the adoption of "the Public Libraries and Museums Act," so that we hope soon to see a good free library as well as museum erected, not only in Winchester but in other and rival towns in that quarter of the country.—The interior of St. Mary's Church, Andover, has, through the munificence of Miss Gale, been improved, by the removal of the plain glass from two windows facing the northern and southern aisles, and the substitution of two richly stained memorial windows. Each window is divided by a jamb into two lights, with circles over, containing the arms of Miss Gale, and also those of the late Dr. Goddard, for many years vicar of this parish.—The new chancel of the parish

church of Steeple Barton, just rebuilt at the expense of Viscount Clifden, improprator, was opened on Sunday last week. The eastern window is of three lights, in the decorated style; the two south and the one north windows are square-headed; the door is of oak; the floor of the chancel is composed of lozenge-shaped tiles (red and black), from the Staffordshire potteries. Preparations are making for pulling down and rebuilding the body of the church.—The Tipton factory iron-works, which have been idle for the last eight or nine months, are likely to be again put into full operation, by Messrs. Barrows and Hall, of Bloomfield. Many of the men who worked at these works have been out of regular employment ever since.—"A Lady of Birmingham" complains, in the local *Journal*, that the want of good flagged parapets and stone (not pebble) crossings is so palpably and disagreeably apparent during bad weather in Birmingham, that comment is needless. In some large towns, footways before all property must be flagged before it can be let; consequently such towns always present a neat and cleanly appearance. "In the name, then, of the ladies of Birmingham," adds the complainant, "I appeal to 'the powers that be,' to go for an act to abate the abominations I have alluded to."

GLASSY TILES, BRICKS, PIPES, AND PAVEMENTS.

THE idea of glass tiles and bricks, or even pipes and pavements, is not quite so new, perhaps, as the "ferro-vitreous" order of construction, but the following attempt is at present being made to reduce that idea to a more widely practicable and cheaper form than it may have hitherto assumed. A specification of the patent has been lodged during the week before last, and is thus reported on by the *Mechanics' Magazine*:—"J. Connop, Hyde-park, gentleman: For improvements in melting, moulding, and casting sand, 'earth, and argillaceous substances,' for paving, building, and various other purposes. Mr. Connop observes that he has discovered that part of his invention which was to have been included under the words 'earth and argillaceous substances' does not possess sufficient utility (*query*, novelty?) to warrant his claiming its exclusive use; and that it is his intention to apply for leave to enter a disclaimer thereof. He then goes on to state that, although the melting of sand with various fluxes is a well-known operation in the manufacture of glass, still the application of this process to the formation of bricks, slabs, steps, mantle-pieces, pipes, tubes, invert, and such like articles adapted for paving and building purposes, and for the conveyance of liquids under streets and through land, is new, and constitutes, in fact, the invention claimed by him. The methods of, and apparatus employed in, such melting, casting, and moulding together the materials used (which are of the cheapest and commonest description), are in every respect identical with those practised and applied in the manufacture of coarse bottle-glass; but as, in this case, transparency is by no means an object, the operation of 're-fusing' is dispensed with. While in a heated state, the articles (moulded into the desired forms) are placed in annealing ovens of the ordinary circular construction, with sand or cementing matter between them, to prevent them coming in contact. The temperature of the oven is then raised to a white heat, after which it is gradually reduced.

Mr. Elliott, of Blisworth, has obtained a patent for making vitrified bricks, tiles, &c., of limestone, chalk, clay, old furnace cinders, and other plastic materials, which will melt into a liquid similar to iron, and will bear to be carried in a ladle to a sand or cast-iron mould, and in about two minutes, when set, may be taken out of the mould, and stacked one brick upon another while hot, so that they will retain the heat a sufficient time to anneal and become strong and hard. The cast-iron mould must be made to take apart. The cost of melting (by hot air blast) and moulding, reckoning coke at 30s. per ton, and coals at 15s. per ton (using two-thirds of coke to one of coals) will be about 5s. per ton. Building bricks, 17s. 6d. per thousand; paving ditto, 10s. per thousand; tiles and pipes, 6s. per thousand. The raw

material requires no further preparation, previous to melting, than drying, which may be accomplished by the aid of the waste heat from the furnace. The cost of the material will vary according to situation. The stones may be broken by the engine. The material, when fused and broken, will be worth at least 4s. per ton for road-making, as it will be equal to the hardest stone, easily broken, and impervious to moisture. In establishing a new manufactory this system is decidedly the least expensive, particularly if a steam-engine, water-mill, or other power to generate blast be already on the spot, as very little building or ground is required, a large stock in hand not being necessary, as any article can be made to order at any season of the year. The cost of the raw material and fuel will of course vary considerably in different localities; but as it will in most situations require carting, the furnace may be erected contiguous to a canal, railway, water-mill, or other convenient situation. The cost of a steam-engine and blowing machinery will be about 130l.; hot air oven and furnace, about 60l. A trial may be easily made at any iron-foundry, as the material may be put into the furnace with the iron, and will be ready for moulding as soon as the iron is run off, which is sure to be at the bottom, being the heaviest. The greater the quantity the more fluid it will run, and the better the sample will be. Gradual cooling or annealing is absolutely necessary.

IPSWICH GRAMMAR SCHOOL COMPETITION.

I beg you will give me the opportunity of saying a few words on the above subject, as I am personally named in your last number as the unlucky premiated competitor—painful pre-eminence!

In my desire to act in good faith, I was careful that no member of the committee should see my drawings before they were sent in, and I have used no personal solicitation whatever: to the truth of this I pledge my word and honour.

Aware of the importance of executing a work of this kind, I spent much time and study in preparing my design, and I cannot understand that the fact of my being a resident of Ipswich should deprive me of the chance of success. My calculations of the cost are based upon considerable experience of such work in this locality; upon this I have staked my reputation, and am prepared to abide the consequences should I be called upon to get a contract for the execution of the work.

I trust the affair altogether may be another inducement for the more influential to discountenance architectural competition entirely.

The fact of fifty-two architects having entered the list, to scramble for twenty-five guineas (a prize so inadequate to the requisite labour), and the subsequent discussions, can have added little to the public respect for the profession. FREDERICK BARNES.

Ipswich, Jan. 22, 1851.

SIR JOHN BARROW'S MONUMENT, ULVERSTONE.

THE following description of the tower is extracted from the present number of the *Nautical Magazine*:—

The plan of the tower is circular, with a spreading base, the general form being similar to the Eddystone: the lantern, however, in this case is of the same material as the general structure, and forms a consistent architectural feature.

The structure is based on the solid limestone rock, of which the Hoad Hill is composed, and which was found immediately under the turf at the summit.

The ring immediately above the surface is 150 feet in circuit, being in wrought stone, and forming a set-off or base, two feet in width, from which the surrounding panorama, one of the most beautiful in England, may be contemplated in all directions.

The thickness of the wall at the surface is twelve feet six inches, intersected with a dry chamber five feet at the base. The wall diminishes in thickness from twelve feet six inches to two feet at the cornice, which is formed of massive wrought limestone.

The whole of the lantern and dome is formed

of the same material, being wrought within and without.

The steps, the door, and window-jambs, the several rings or set-offs, are all in the durable wrought limestone of the neighbourhood. The general walling is in the same stone, and hammered to a sufficiently correct form. The lime of the mortar is from the same material, and set so hard that, as the whole is compactly built (every stone being completely bedded in the mortar, and every joint completely flushed or filled), in a short time the walls will form one thickness, of a most strong and lasting character.

Probably no stone and mortar with which we are acquainted is better calculated to resist all influences of weather than that of Furness, and this monument bids fair to stand as lastingly to record an event of the age as any in the island.

The interior is approached from due south by a wide flight of steps, and over the entrance door is cut in bold relief the words:—

In honour of Sir John Barrow, Bart.
Erected A.D. 1850.

The saloon or principal floor is elevated about 7 feet from the summit of the hill, thus furnishing a basement beneath.

This apartment is 18 feet 9 inches in diameter, having deeply recessed windows to the cardinal points, the view from each of which can be scarcely equalled either for sublimity or variety of beauty. A stove and range are formed in the recess of the west window, and a circular pedestal, with circular shelf-table, will mark the centre.

The several floors and lantern are gained by a solid flight of stone stairs, protected by an ornamental iron balustrade, cast on the spot from the valuable ore procured from the base of Hoar. The pattern is of the 15th century, and each exhibits the initials J. B.

Iron girders form the skeletons of the several floors (the whole being fireproof), and the visitor, while winding the surface of the interior of the cone, is cheered by an occasional peep from the several windows with which the sides are pierced, and reminded of the reward of the beautiful prospect that awaits him at the summit.

The interior of the lantern is 9 feet 4 inches in diameter, and perforated with eight circular openings: the same number of pilasters support the entablature and dome: around the interior are graven the words *Soli Deo Gloria*.

A flag-staff of due proportions will be securely fixed to the base and cornice of the lantern, from which the flag of the nation—a line-of-battle ship's union jack, which, together with the flag-staff, was presented by the Lords of the Admiralty as a mark of their respect to the memory of Sir John Barrow—wafted by his native mountain breezes, will announce to generations yet unborn, that the day of the birth of true greatness excites a nation's joy, while that of his death is felt with a nation's regret; and the tower beneath will stand as a monument of the events of a life passed in the service of his country, and extending over every hemisphere, honoured and appreciated by all classes of his fellows.

HALTING PLACES, &c.

It appears to me that before giving a new license to public-houses (already too numerous), or before granting a renewal of any license already granted, the magistrates should make the maintenance of a fit and proper convenience a condition of the license. In many cases publicans have thought fit to abolish these conveniences altogether: they are as necessary to decency and to health as their absence is productive of nuisances being committed and health impaired. The paving boards, again, of the different parishes can be at no loss to find suitable places for their erections: they can be altogether screened from view. Look at the present population of London—the accession of foreigners that may be expected this spring: one of two things must occur, *i. e.* either decency outraged or these proper and necessary appendages put up. As regards foreigners, I believe that the establishment of *cafés*, or a superior description of coffee-shops for the sale of the beverage “that cheers but not inebriates,” would be a good speculation.

A DISTRICT SURVEYOR.

“Quondam” should write to the Metropolitan Commissioners of Sewers about “halting-places,” instead of to the Commissioners of Woods and Forests. The Sewer Commissioners have the legal authority to provide such places, as appears by your reports of their proceedings. If they were to take the matter up with a little vigour now, they would confer a great boon on the metropolis. Those who know the habits of some of our continental neighbours may be assured, that if they do not find “halting-places” prepared for them, they will scruple little to “halt” wherever it may be convenient to them to do so; and if our police interfere with them, they may reasonably enough answer,

NECESSITAS NON HABET LEGES.

On this subject, the places called “Mews” offer frequent and easy opportunities for the accommodation sought. If at the entrance a space were composed, and a hand pointing inward were painted on it, the public would quickly comprehend the meaning. In Glasgow, and perhaps elsewhere, the dissight of houses opposite to these “Mews” is effected by a wall screen: the inside face of these screens, where existing, might always be made available for the object sought. S. L.

LANDLORD AND TENANT.

LIABILITY OF TENANT FOR INJURY BY FIRE.

In the Court of Chancery on the 18th January, a petition was presented, *Ex parte Skingley*, under the following circumstances. It appeared that the testator had left a house to his son, who had become a lunatic, subject to its being kept in good tenable repair. The house having been accidentally burned, a question was raised as to who was the party bound to rebuild the house. On the one hand, it was contended for the party entitled to the estate in remainder, after the death of the lunatic, that the proceeds of his life estate should go towards the rebuilding the house; and, on the other hand, it was argued for the next of kin of the lunatic, that the expense ought to fall on the person entitled to the estate in remainder.

The Lord Chancellor, in giving judgment, said there was no doubt that in a case of a covenant in a deed, to keep a house in tenable repair, the party entering into the covenant would be liable to rebuild a house which had been accidentally burnt down. The statute of Anne, which had been referred to, was merely passed to put an end to the custom which then existed, obliging a man in whose house a fire originated to make good the loss; but the statute had no relation to contracts, or agreements between parties. In the present case the will gave the lunatic an estate for life in the house upon condition that it should be kept in tenable repair. Under that clause his lordship said he was of opinion that the tenant for life was bound to rebuild the house. If, however, the next of kin desired it, he would direct the question to be tried at law, although he had no doubt himself upon the point.

HARBOUR OF REFUGE AT REDCAR.—A project is on foot for forming a harbour of refuge and docks at Redcar. Application is to be made to Parliament in the ensuing session for an Act to enable its projectors to carry their plans into effect. Two ledges of rock, called the “Salt Scar” and the “East Scar,” enclose between them an immense bay, and run quite out into the deep water. According to the plans of the new harbour, it is proposed to erect the piers on these rocks, and enclose within the sea walls a capacious low-water harbour of not less than 510 acres in extent. The depth within the harbour, and at its entrance at low water, will be 30 feet; and if completed, it will be, without exception, the most capacious harbour in Great Britain—far surpassing that at Kingston. In consequence of the rocky foundation being provided by nature, the expense of forming the harbour will be comparatively small. The extreme mates, including docks of about 10 or 12 acres in extent, do not amount, it appears, to more than 350,000*l.* It is estimated that the foundation afforded by the Scar Rock will be equal to a saving of about a million of money.

BOOKS.

Sanitary Reform: Model Town Dwellings for the Industrious Classes. By W. WIGGINTON, Architect. London, Weale; Edinburgh, Blackwood. 1850.

“HOMES are the manufactures of men, and influence a growing nation: the importance of improving these homes, then, is at once seen. Perfect men come not forth from ill-arranged, ill-ordered dwellings.” Mr. Wigginton takes this paragraph, written by us some time ago (a paragraph that we have seen with pleasure printed and repeated in many quarters), as the text of his discourse, and, moreover, makes so many acknowledgments of the endeavours of THE BUILDER to promote sanitary reform, that it would be almost ungrateful if we omitted giving his book a good word in return. He has, however, a safer claim upon us. It shows much earnestness and right feeling, and cannot fail to be useful. It treats of a matter wherein there is much to be done, and we cordially recommend it.

“By rendering the working man's dwelling really his home,” says Mr. Wigginton, “by giving him comforts which he cannot find elsewhere—we rescue him from the contamination of the pest-house, and plant in his breast the purer and better affections of our nature. This is almost out of the power of education to do solely: it requires the soil to be in a manner prepared to receive the seeds of knowledge—and this can only be done by giving them sanctuaries in their own dwellings. We should not hesitate to throw down any obstacles that may obstruct our progress—we should overcome every thing which may tend to check these mighty improvements. If the counties could be induced to act concurrently in this and other matters of social improvement, a vast impetus would be given to measures of social regeneration, now contemplated by the Legislature.

It is one of the best signs of the times to see the working men—many of them—struggling to improve their social condition. These efforts are some of the most gratifying results of the diffusion of useful knowledge. The wants of the poor have been hitherto entirely overlooked. This was a great social evil, and had a strong tendency to aggravate all the mischiefs resulting from the absence of proper sanitary measures. It is another gratifying sign to see them striving to obtain property—to see them aspiring to a higher station, and to see them striving to fit themselves for that advancement, by that which alone gives one man superiority over another—*intellectual wealth*—the wealth of the brain—the product of that one talent which is given to all, to be used by all, to the glory of Him that gave it. This is the most gratifying, inasmuch as it is the forerunner of improvements in their eternal as well as temporal welfare.”

The plan for town dwellings which he gives, has several good points in it, and is set forth in drawings to a quarter scale.

Useful Hints on Ventilation. By W. WALKER, Engineer. Manchester, Parkes; London, Simpkin and Marshall, 1850.

THE title of this work (a small book of 128 pages) is not a misnomer. It contains many useful hints. With respect to ranges of cottages in the vicinity of mills and factories, the author says their contiguity to the steam-engine furnishes a ready means of supplying them, at small expense, with abundant quantities of fresh, warmed air. “Below the ground level of a row of cottages, a horizontal trunk or shaft for fresh air should be constructed; made impervious to wet, either by drainage or by water-tight cement, and its ends protected from the intrusion of small animals and vermin by wire-gauze or perforated zinc. At that end of this shaft which is nearest to the engine, a chamber should be formed, filled with pipes or other heating-surfaces, with cocks to regulate their temperature; through which chamber air should be propelled by a fan, screw, air-pump, or other forcing instrument, worked by the engine. From the top of this horizontal trunk or shaft, vertical shafts should be carried straight up, one through each cottage, divided horizontally at the ceiling of the lower rooms into two parts—the lower part communicating with the spaces between the joists by means of openings left in its sides between the ceilings

and floors. By using these spaces as horizontal air-flues, air may be easily conveyed under the floors to that side of the room which is opposite to the fire-place, where it may be allowed to enter the room through an opening made either in the floor or skirting (the latter is preferable), at which a sliding plate should be fixed, to regulate its quantity. The upper part of the shaft should have openings in its sides communicating with all the rooms, for vitiated air to escape at the side of the room opposite to that by which it enters. By these means a complete system of warmth and ventilation would be established through a long row of cottages; and if the plans were laid before commencing building, it could be executed at very small expense. The shafts and air-flues should be arranged by a judicious and experienced ventilator in such a way as to require scarcely any more materials than are required by existing plans of construction,—the main horizontal air-trunk and hot-chamber being the only additional items of builder's work. The power requisite for driving the air would be so little as scarcely to be felt by a large engine; and the heat in cold weather is obtainable, without cost, from the waste steam, by arrangements which have already been most successfully carried out."

"The method of ventilation by power is, unquestionably, the best that can be adopted, wherever there exists an engine for other purposes, or where the amount of ventilating duty to be performed is sufficient to justify the employment of a small one for that express purpose. Its effects are sure and infallible; any amount of air may be driven by it with certainty in any desired direction, and warmed, when the weather requires it, to any degree requisite for human comfort. The moderate cost at which steam-engines can now be supplied, is a material consideration in favour of ventilating by power. In some recent cases, a very simple form of direct acting engine has been applied to this special object with success and advantage."

A suggestion is offered whether better provision might not be made for carrying off smoke and vitiated air than has been usually attempted, d, and without great increase of cost. He suggests a square, round, or oblong chimney, large enough for all the smoke of a house to be carried up through its centre, where the walls intersect each other; or, in small tenements, in the centre of one side. "Let it be wholly or partially surrounded with ventilating flues of egress from the various rooms, and carried up, say eight or ten feet above the ridge. Let all the grates be of the register kind (or of the ordinary kind, furnished with a tightly-closing Wilson's chimney-valve), opened only when in use; and let their chimneys be carried up straight to within a foot of the cornices of their respective rooms, at which point let them each turn off, at an angle of 45°, upwards into the main chimney. Close under the cornice over the grate, fix an Arnott's valve or sliding regulator, leading into one of the egress ventilating flues: a door should be left at the bottom of the central main chimney, for cleaning. By this plan, which assimilates the chimney to that of a factory on a small scale, the ventilating flues will be rarefied by the waste heat of the fires; and if we suppose the kitchen to be in one of the lower rooms, this rarefaction will be constant. The divisions may be of stout sheet-iron, or of slate. The height given to the chimney and egress flues will, it is intended (the latter being rarefied on one side by the former, and assisted by proper ingress flues), ensure the draught of them all and that of the fires; and in buildings of superior class, that portion of the stack appearing above the roof, might be made a prominent ornamental feature, susceptible of the highest degree of architectural embellishment. In buildings of a lower class, it might be left comparatively plain, in which case it would still have a more respectable appearance than those heterogeneous assemblages of pipes, elbows, and chimney-pots, various in shape, upright, oblique, zig-zag, and askew, which now present a ridiculous contrast with noble architectural façades, and disgrace some of the best situations in the metropolis. The additional materials required would be small, and compensated by the beneficial results of freedom from smoke and improved ventilation."

The writer suggests that earthenware tubes

might be used so as to give to each room a chimney and egress air-channel without occupying more space than at present. "The double tubes might be formed into easy curves while in the plastic stage of manufacture, so as to allow them to pass each other on the different floors. In a dwelling three stories high, for instance, consisting of six rooms, or two dwellings of three rooms each, the whole of the six chimney-tubes and ventilating flues may be carried up in one tubular stack: the tubes, as they proceeded upwards, would be firmly tied together and secured by the floors, and at the top, outside the building, might be held together by an iron hoop, concealed by an ornamental moulding. In the two lower stories, the egress-openings would not be in the centres of their respective chimney-breasts; but as they would each require a valve or sliding-plate with a frame of iron or brass, another and similar frame might be fixed at an equal distance on the other side of the centre line. The hollow spaces that would be left under the elbows should be filled in with brick-work, and the front and sides of the whole mass plastered, which completes the chimney-breast all the way up."

With respect to the "air-syphon" Mr. Walker states that his experiments wholly disprove the opinions entertained by Dr. Chowne.

A Practical Treatise on Benefit Building Societies, &c. By WILLIAM STONE, Attorney-at-Law. Maxwell, Lincoln's-inn. 1851. This treatise embraces the whole subject of building societies,—their origin, constitution, and change of character, and the superiority of permanent over terminating societies; also the principles and practice of Tontine building companies, freehold land societies, &c., and the law relating to all these, together with the statutes and cases to the present time, and also rules, forms, and precedents of freehold, copyhold, and leasehold securities, with practical notes. On a subject of such deep importance to the working classes, therefore, this cannot but be a useful little work, more especially since it appears to have been written under an impression of the defective nature of terminating societies, so many of which have been based on fallacious principles, and have led to mischief and ruin in place of benefit. Our opinion on this subject, and also on the superiority of permanent associations discreetly established and conducted has been already repeatedly given, and need not be here further entered into. We shall only add, that Mr. Stone's book, as a mere compendium, is well worthy of attentive perusal by all who are interested in such institutions. To professional men, too, as an embodiment of the law and statutes relating to them, with rules, forms, and precedents of securities, as settled by counsel, it must be very useful. We are glad to see that the value of Mr. Scratchley's work, already reviewed (vol. viii., p. 92), in which he exposes the complicated errors such societies have laboured under, is prominently acknowledged by the author.

THE MELANCHOLY MEMOIR OF TOM TEE-SQUARE.

Tom Tee-square was an office fag,
Who sigh'd d while great things *planning*,—
White-faced, and seely, and, alack!
Much giv'n to false hopes fanning.
His gov'nor, a *designing* man,
Cross-grain'd was, and close-fisted;
Who, had Tom sto'l'n an idea from,
Would certainly have miss'd it.
Tom was not of those happy wights
Who Italy are sent to,
To sketch, get finish'd, and return
To talk 'bout *chinky-chento*.
But oft when measuring back slums,
And making rueful faces,
He'd cause to exclaim, "*Alas, my lines*
Fall not in pleasant places."
Nor was he of your shabby sort,
Who seek to dine or lounge out;
And yet, tho' blaming such, was he
Right often known to *sponge out*.
And oft would he himself confess,
Lugubriously gally,
That, let him do his very best,
Still all he did was *scaly*.
(Tho' Tom he had a *dog-leg'd* stare,
And 's knees were *joggle-jointed*,
And 's nose was quite fore-shorten'd, yet
His jokes were ever pointed.)

Poor Tom was hardly half full size,
So lank his *stretching frame* was:
Hard fare you would have thought his *board*,
And lean, as Pecky's fame was.

No wonder his sad hopeless heart,
The bigger got, and fuller;
For Pecky proved himself each day,
A most *unparalleld ruler*.

Tho' once, when in his native vale,
Plump as a mill-fed rat,
Soon he a competition won,
As a study *from the flat*.

So lathy he became at length
His friends did him amoint,
As the projecting shadow, who
Was near his vanishing point.

Yet would Tom crack his joke at times,
'Mong happy chums with spouses;
And style himself high dramatist,
Since he could *draw great houses*.

He had some notions of his own,
Which might want overhauling;
As to the height of cater-pillars,
And strength of cater-walking.

At last Tom's elevation came:
Who can Old Forky's knock shun!
Nor need we e'en begrudge his claim
T' subtract Tom's dismal fraction.

TETE DE LION.

Miscellaneous.

LIVERPOOL ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—At the meeting of this society on the 8th instant (Mr. Picton, president, in the chair), Mr. Deacon, of St. Helen's, who was to have contributed a paper on the subject of glass-blowing, being unavoidably absent, the society devoted the evening to the discussion of various subjects. Mr. Charles Reed produced the plans and designs of a hotel, to be called the Britannia Hotel, which he has been deputed to construct in the immediate vicinity of the Menai Straits. Mr. Reed intimated that the hotel would contain 500 beds. Some notion of its extent may be judged of from the fact, that the front alone will be no less than 521 feet long. Mr. Reed, in order to gather hints for his designs, had visited the various large hotels on the continent, but habits and customs abroad were so entirely different from those in England, that his journey produced less valuable results than would at first appear. One feature in the design is its connection with the railway, to be accomplished by means of a glass avenue, *à la* Hyde-park Palace. A paper, supposed to have been written by Mr. Kickman, which had been forwarded by Mr. W. Mason, on the subject of Chester Cathedral, was read. Mr. Picton offered some remarks on the architectural remains, &c., of the Winchester, Canterbury, and Salisbury Cathedrals and of churches in the county of Kent.

THE CAPITOL AT WASHINGTON.—A reader, with reference to our note that the Capitol at Washington is about to be increased, asks what sort of building it is. The following paragraph, from the New York Family Christian Almanac, will serve for an answer. "The Capitol at Washington is a large and showy building, of the Corinthian order of architecture, of freestone, and painted white. It is situated in the centre of a square, on an eminence 78 feet above tide-water, and consists of a central edifice and two wings, the entire length being 352 feet, and the depth of the wings 121 feet. On the east front, there is a splendid portico of twenty-two columns, 38 feet high; and on the west front, a portico to ten columns. The height of the building, of the top of the dome, is 120 feet; and under the dome is the rotunda, 95 feet in diameter, and of the same height, adorned with sculpture and paintings of a national character. On the east front, in niches, are colossal figures, in marble, of Peace and War, and a fine marble statue of Columbus at the entrance. The colossal statue of Washington, by Greenough, stands in the east park, in a neat temple erected for the purpose. Within the building are the hall of the House of Representatives, the Senate Chamber, the library of Congress, the court-room of the Supreme Court, and some seventy rooms for the accommodation of committees, &c. &c. Around the Capitol are 22 acres of park, highly ornamented with trees, shrubbery, fountains, &c."

A BLIND ENGINEER.—The history of John Metcalf is a singular and interesting one. In a sketch of his life, lately given in an article on "The Curiosities of Eccentric Biography," in *Bentley's Miscellany*, we find the following particulars, which we think worth condensing.—He was born in 1717, at Knaresborough. At the age of six years he was seized with small-pox, which deprived him of sight. In about three years he could find his way alone to any part of Knaresborough. He became very expert in swimming, and saved the lives of some companions. As he grew older he could find his way well over the country, and carried persons through "short cuts" and fords in the river with no difficulty. Travellers, whose guide he became, were led quite safely by him, through the night, in most dangerous roads, to the point of their destination, totally unconscious of his want of vision. His most remarkable occupation was road-making. Among the numerous roads which Metcalf contracted to make was part of the Manchester road from Blackmoor to Standish-foot. The surveyor took it over deep marshes. To dig till they came to a solid bottom appeared to Metcalf extremely tedious and expensive, and liable to other disadvantages. He therefore argued the point privately with the surveyor, and ultimately got the job of its construction. Having engaged to complete nine miles in ten months, he began in six different parts, having nearly four hundred men employed. Pule and Standish Common, a deep bog, was thought impracticable. The water he carried off by drains, but found the greatest difficulty in conveying stones to the spot. Having levelled the piece to the end, he ordered his men to collect heather or ling, and bind it in round bundles. These were placed close together, and another row laid over them, upon which they were well pressed down, and covered with stone and gravel. This piece, being about half a mile in length, when completed was so remarkably good, that any person might have gone over it in winter unshod without being wet; and though other parts of the road soon wanted repairs, this needed none for twelve years.* To his road-making he added bridge-building, and constructed that at Boroughbridge with credit to himself. He continued his business of making roads and building and repairing bridges in Yorkshire, Lancashire, Derbyshire, and Cheshire, with great success, until the year 1789, when he returned to Yorkshire. He died in 1802, in his eighty-fifth year.

NEW PATENTS.—The following, amongst others, have been recently granted: To H. Grissell, of Regent's-canal Iron Works, Middlesex, engineer, and T. Redwood, of Montague-street, in same county, professor of chemistry, for improvements in coating metals with other metals.—To T. Allan, of Glasgow, ironfounder, for certain improvements in paving or covering roads, streets, and other surfaces of a similar nature.—To G. Anstey, of Brighton, gentleman, for certain improvements in consuming smoke, and in regulating the draught of chimneys.—To C. Barlow, of Chancery-lane, for improvements in machinery for the manufacture of railway chairs.—and to R. Cogan, Leicester-square, glass-merchant, for improvements in the application of plain or ornamental glass alone, or in combination with other suitable materials, to new and useful purposes of construction or manufacture.

CONTRACTS FOR STONE.—In the Sheffield County Court, on the 1st inst. (before W. Walker, Esq., Judge), an action was brought by Mr. Peter Spooner, of Hallamgate, against Messrs. Pickard and Ogden, of Bradford, the contractors of the new barracks, to recover 27l. 15s. 9d., as compensation for a quantity of stone got out of the quarry belonging to the plaintiff, and for the cost of erecting a fence round the quarry. It appeared that the defendants had agreed to purchase 600 yards of stone from Mr. Spooner, at 2s. 3d. per yard surface measurement, one-fourth of the money to be paid down, and the remaining three-

quarters as the stone became exhausted. A regular contract to this effect was drawn up by Mr. Wake, solicitor; but the contractors having in the mean time proceeded to get stone, and finding it to be not so good in quality as they had expected, refused to sign the contract. They continued to work the quarry until they had bared nearly 250 yards. The action was brought by Mr. Spooner to recover for the number of yards of stone according to the original purchase. Mr. Fretson, who appeared for the contractors, objected that the contract was within the Statute of Frauds, and therefore could not be enforced. Mr. Dixon, for the plaintiff, urged that the case was taken out of the statute, the contractors having taken away stone. The Judge decided that the case was so taken out of the statute, but conceived that all Mr. Spooner would be able to recover would be for only so much of the stone as had been obtained by the defendants. Evidence was then gone into, and ultimately the Judge decided that the contractors should pay to the plaintiff the sum of 13l. 13s. for the stone, and costs of the action.

DISPUTED CONTRACT FOR TILES.—At the Birmingham County Court lately, a case (*Blakesley v. Glenn*) came on for trial, a second time, as to some tiles intended for the new workhouse at Birmingham-heath. The action was brought to recover the sum of 47l. 0s. 11d. for 33,000 brinded tiles, at the price of 2s. 3d. per 1,000, supplied by Mr. Blakesley, to Mr. Fryar, Mr. Glenn's manager. Mr. Blakesley and Mr. Glenn had entered into a written contract, by which the former agreed to supply the latter with 30,000 blue tiles, at a given price, according to sample. The plaintiff was an agent, and dealt with a Mr. Warner, tile-manufacturer, Trent Vale Works, Newcastle-under-Lyme. Mr. Blakesley admitted that one condition of this contract was, "that the tiles must be to the satisfaction of the clerk of the works." Three weeks afterwards, according to plaintiff's testimony, he saw Mr. Fryar, defendant's manager, and as the blue tiles could not be delivered so soon as they were required, a new contract was entered into between himself and Fryar (for defendant), for which brinded tiles, at 2s. 3d. per 1,000, were to be substituted, or to be furnished forthwith in lieu (for the present) of the blue tiles. It was not denied that Fryar had power to make contracts. Mr. Blakesley went on to say, that he then gave Mr. Fryar a sample of the brinded tiles, keeping a similar one himself, and that within a short time these latter articles came to the works in two boats. The evidence led as to what then took place was flatly contradictory. For plaintiff, a boatman swore that Mr. Fryar not only gave permission for landing, but said, "I'll have them: they might have been bluer; but they'll do for the back of the buildings." For the defendant it was deposed that Fryar said, "The tiles are not according to order: they will not do, nor shall they come upon the ground at all." Other witnesses, including Mr. Glenn himself, Mr. Harrison, attorney for plaintiff, and Mr. Husband, clerk of works, also gave contradictory evidence. Mr. Davis, a slater for twenty-five years, deposed on behalf of plaintiff that the tiles in dispute were equal to what were being actually used at the works, and "that there was not a blue tile on the whole building." This statement both Mr. Glenn and Mr. Husband denied. Samples of the different tiles were then shown to the jury, and the judge, in summing up, said the questions were—was there a substituted contract by Fryar in place of that made with Mr. Glenn? then, if so, were the brinded tiles sent in accordance with such substituted contract? After three-quarters of an hour's consultation, the jury came into court with a verdict for the defendant.

GAS.—A correspondent at Baldock says,—"your journal is doing much towards the enlightenment of our houses and streets: may it continue doing so. The Royston Gas Company up to last Christmas charged 10s. per 1,000 feet. They have now reduced it to 7s. with a reduction of 25 per cent. on the street lamps. Their coke sold at 38s. per ton: it now sells for 16s. A branch of the Great Northern Railway runs into the town, and supplies them with the Yorkshire coals at a reduction of about 8s. per ton on the price they usually gave."—The corporate town

of Ruthin, in Wales," says a contemporary, "has followed the example of Southport in adopting Mr. White's gas. Mr. White has contracted to light forthwith the beautiful and romantic town of Dunkeld, Perthshire, including, we believe, the Duke of Athol's palace, contiguous to it. The extensive mills of Messrs. Geo. Clarke and Sons, Pollard-street, Manchester, having 1,600 lights (many hundreds of which are burning all day), are supplied by one set of apparatus, consisting of two resin and two water retorts, placed in one small furnace, only 4 feet 3 inches of inside width, and this easily and amply supplies the whole, equal to the consumption of many a town. We have made some inquiries as to the cost of this gas, where 200 or 300 lights are required, and are informed that from one cwt. of resin, costing in Liverpool 3s. to 3s. 3d., 1,800 to 2,000 feet of gas are obtained, besides three gallons of residual oil, for which a wholesale house in Manchester will give 7d. per gallon, or 1s. 9d. for every cwt. of resin used, and pay the carriage. The price of the gas is, therefore, an easy calculation. The commissioners at Southport refuse to take 7d. per gallon, saying they can make more of it."

PUBLIC LIBRARIES AND MUSEUMS.—Although we have occasionally noted the various provisions and particulars of the Act for the Establishment of Public Libraries and Museums by Town Councils, we think the present a very fitting time to follow the example of a contemporary, the *Gateshead Observer*, in reannouncing its principal points. The statute is that of 13 & 14 Vict. cap. 65, and received the Royal assent on 14th August, 1850. It applies to all boroughs having a population exceeding ten thousand persons. As a condition precedent to its adoption, the town council must have the sanction of a majority of two-thirds of the burgesses. The votes are to be taken in the manner of a municipal election; and if the decision be adverse, the question cannot be re-opened for two years. If favourable, the town council may purchase or hire lands or buildings, and erect, extend, or alter them, for the purpose of forming libraries or museums of art and science. The requisite moneys are to be raised by a rate, but the rate must not exceed one halfpenny in the pound for each year. Money may also, with the sanction of the Treasury, be raised on mortgage of the rate. The sums raised may be applied in providing rooms, fixtures, furniture, fuel, lighting, officers, &c. The library and museum must come from other sources. The public to be admitted without charge. It is calculated, we may add, that wherever a proper building is thus provided for, there will be no difficulty in very shortly collecting, even by gifts, bequests, &c., alone, a very creditable library as well as museum.

THE SMITHFIELD NUISANCE AND ITS EXTENSION.—A special vestry was held last week in the parish of St. James, Westminster, to consider the propriety of petitioning Parliament against the Bill promoted by the corporation of London for continuing on or near the present site the cattle-market of Smithfield, Mr. Geesin, chairman. Mr. Nelson moved that a committee be appointed to prepare a petition. It might be asked, he said, what the parishioners of St. James's had to do with the question of Smithfield. They were not on the high road for cattle to the market, but when they were in the city they were liable, like others, to be inconvenienced: they were also likely to be seriously affected by a Bill, the effect of which would be to raise the present tolls 300 per cent. He contrasted the description of Smithfield in 1614, when it was a place of public amusement, with the account of it given in Mr. Cunningham's hand-book at the present time. The corporation having been, as it were, convicted of keeping a disorderly house, and ordered to suppress it, had complied with the sentence by removing next door. The contemplated lairs were for 1,000 cattle and 5,000 sheep. These, packed as closely as possible, would require two acres of space at least; whereas the extent of lairage provided for in the new plan was barely half an acre. The proposal for shutting the market when the ordinary traffic of the streets would be disturbed by it, was impracticable. The estimated expense of the new plan was 500,000l., and it included the removal of 541 houses, four

* This method, and a similar one with branches of trees, or other timber, we had repeated occasion to recommend while the great railway works were in progress throughout the country, and often, after repeated failures with heavier materials, it had at length to be resorted to, and always successfully. Peat-bog, we may here also remark, is a singular preservative of timber, trees, or other vegetable matters, and doubtless this peculiar property of bogs insures the permanency of such light networks thrown across them.

THE BUILDER.

schools, the parish churchyard, and the West London Union Workhouse. It also involved the displacement of a population of 10,000 people. Yet the corporation were preparing to incur an outlay of 30,000*l.* an acre, when two miles off they might get the space required at a cost of 500*l.* an acre. They could look for nothing from the city, and they must only hope that Government would at once appoint a commission to decide on the best site, or sites, for a new cattle-market. He hoped that the unanimous vote of the vestry would be given to assist in getting rid of one of the greatest nuisances that ever disgraced a civilized society. Mr. Watkins seconded the motion, which was supported by Mr. Jackson, the Hon. F. Byng, Lord de Mauley, and Mr. Garratt; and being carried unanimously, a committee was immediately nominated in compliance with the terms of it.

REPORT OF METROPOLITAN SEWERS COMMISSION.—A public meeting has been held in Marylebone, to consider the report of the committee for preparing the heads of a Bill to be submitted to Government, and urged on their consideration through the medium of a deputation: Mr. Nicholas occupied the chair. Lord D. Stuart, M.P., Mr. Hertslet, Mr. Toulmin Smith, &c., were present; and the parishes represented were—St. Martin's-in-the-Fields; St. James's, Westminster; St. Mary's, Islington; St. Luke's, Middlesex; St. Leonard's, Shore-ditch; St. Giles's-in-the-Fields; St. Anne's, Soho; Clerkenwell; Hornsey; Camberwell; &c. Mr. Smith detailed what the committee had done, and the short points approved in committee, which related to the making of districts by a representative body, elected by the inhabitants of parishes, and pointed out the essentials of such districts, and their combination into one general council, composed of two representatives, elected by each district council. Lord D. Stuart then addressed the meeting, and Mr. Saunders, of St. Martin's, moved, "That the statement included in the paper laid before this meeting by the committee be accepted, as embodying the only principles on which a measure relating to the sewage of the metropolis could be received." Mr. L. C. Hertslet seconded the resolution, which was supported by Messrs. Fowler, Horne, Healey, Hall, Garrett, and others, on the part of the different parishes, and was carried unanimously. A committee was then appointed to communicate with all the metropolitan members, and take steps for arranging for an interview with the Home Secretary.*

ST. PAUL'S CHURCHYARD.—At a meeting of the City Commissioners of sewers, on the 21st, Mr. Barber brought forward a correspondence between the Cathedral authorities and the Police Commissioners, from which it appears that there is still an obstacle in the way of throwing open the gates of the enclosure; namely, who is to pay for the constables who are deemed necessary to prevent any abuse of the privilege. It is to be hoped that a trifling difficulty such as this between two such bodies will speedily be obviated.

BELGIAN PATENT-LAW REFORM.—The law of patents in Belgium is to be altered. One of the chief principles laid down in the draft of the law, as quoted by the *Mining Journal*, appears to have been suggested by the Report of our own Society of Arts' Committee, namely, that patents of inventions ought to be assimilated to all other kinds of property, enjoy the same rights, and support the same charges, &c. The tax on patents is fixed at 10 francs, paid down, for the first year; 20 francs for the second, and so on increasing 10 francs each year, until the surrender of the patent. Every assignee and licensee must pay the same tax as the patentee, and either will surrender their rights by not doing so. The Government has power to remit all, or part, of the tax in certain cases. The invention must be put into work within two years, and must not be

suspended for three years together. Piracy and infringement are to be submitted to the Council of Prudhommes, who will, if the infringer appear to be actuated by good faith, endeavour to amicably arrange between the parties; and if this cannot be effected, will cause sufficient reparation to be made; but if the infringer appear not to be so actuated, damages will be awarded, and the confiscation of all the piratical articles, &c.; and this judgment is to be publicly notified. Patents of improvement upon a patent will be granted on the usual terms. Patents of importation will remain in force 25 years.

MICE POWER.—A gentleman in Kirkaldy has trained a couple of mice, and invented machinery, enabling them to spin cotton yarn. The work is so constructed, that the common house mouse is enabled to make atonement to society for past offences, by twisting twine and reeling from 100 to 120 threads per day. To complete this, the little pedestrian has to run 10½ miles. A halfpenny worth of oatmeal, at 1s. 3d. per peck, serves one of these treadwheel culprits for the long period of five weeks. In that time it makes 110 threads per day. At this rate a mouse earns 7s. 6d. per annum. Take off 5d. for board and 1s. for machinery, there will arise 6s. clear for every mouse annually. The mouse employer was going to make an application for the lease of an old empty house, which will hold 10,000 mouse mills, sufficient room being left for keepers, and some hundreds of spectators.

PRUSSIAN FLOOR POLISHERS.—The mania for forming privileged guilds and trades, says the Berlin correspondent of the *Times*, has seized the floor-polishers, the *industriels* who operate with bees-wax and brushes on the stairs and floors of the better sort of houses, and give them that smooth and shining surface which is the triumph of housewifery. The class begins to show alarm at the increasing taste for carpets, and specially demand protection against housemaids. It has applied to the police for permission to form a guild, with power to grant licenses to practise, preceded, as in all other trades, by a formal examination of the fitness of the candidate to exercise the art and mystery. The police has refused the application, on the ground that floor scrubbing does not demand that "previous technical instruction" which constitutes a trade or craft, nor the degrees and grades of apprenticeship, journeyman, and master.

AN IRON CHURCH.—At this time, when the construction of the Great Exhibition Building, and of iron structures in general, is occupying all minds, it may not be deemed improper to draw attention to a successful effort in the same direction made ten years ago: we allude to the Bowling Church, near Bradford, built in 1840, at the sole expense of the eminent firm of the Bowling Ironworks, for the use of their numerous workmen and of the surrounding population. It is composed entirely of stone and iron, excepting the rafters, &c. of the roof, which are, consequently, the only combustible portion. There is a spire 136 feet high; and, from the lofty site of the building, it forms altogether an object of considerable interest. The Lancet Gothic capitals are of very elaborate iron casting, and there is an immense quantity of ironwork introduced into various parts of the fabric: ten years' experience has proved that the building is most substantial; and on a recent visit by the architect he found all to be exactly as it was when the contractors left it.—*Wolverhampton Chronicle*.

THE RUSSELL INSTITUTION, RUSSELL-SQUARE.—The committee of this institution are varying their proceedings by giving *soirées* in lieu of some of the ordinary lecture nights. At the first, on the 15th, Mr. C. R. Weld gave an account of the Arctic Expeditions, more particularly with reference to the search for Sir John Franklin. The interest felt in this subject was shown by the crowd who were unable to get into the theatre. Photography, Egyptian Architecture, and Water Supply will be treated of at ensuing meetings.

ROYAL ACADEMY STUDENTS.—The following gentlemen were admitted as architectural students on the 11th inst., namely, Messrs. Rowley, Irvine, Newson, Theakston, Boyket, and James. The subject given was for a college theatre and lecture rooms.

BLACKFRIARS BRIDGE.—The settlement of the foundations of the fourth arch is reported to have now entirely ceased, as well as the consequent sinking of the piers. Models have been prepared of an iron segment, to strengthen and support the arch. The thoroughfare, it is said, will not be closed while the necessary repairs are being effected.

MONSTER LUMP OF ZINC ORE FOR THE EXHIBITION.—A New York paper says:—"An enormous mass of zinc ore, from the mines of the New Jersey Exploring and Mining Company, Sussex County, passed through the city yesterday to the Navy-yard, Brooklyn, to be sent to the great London Exhibition. It is the pure red oxide of zinc, which is found nowhere else in the world but in Sussex County, New Jersey. The dimensions are—five feet long, and between three and four feet broad and deep, the weight being 16,400 lb., or nearly eight tons.

THE ARCHITECTURAL ASSOCIATION.—On Friday, the 17th inst., a paper was read before this Association, at Lyon's Inn Hall, by Mr. H. T. Braithwaite, on "The Study and Application of Art," which we shall print in full. On Friday, the 31st, Mr. R. W. Billings will deliver a lecture on "Gothic Tracery," with illustrations.

PATENT LAW REFORM.—A body of patentees, and proprietors of patent property, has been formed into a company, under the title of the "Association of Patentees and Proprietors of Patents for the Protection and Regulation of Patent Property." The objects of this association are to promote, by the diffusion of information, by legislative measures and otherwise, the reform of the patent laws.

IMPROVEMENT OF THE WORKING CLASSES.—Mr. William Rathbone, of Liverpool, has offered three guineas for the best essay on the following subject:—"How may the working-classes, now that work is more abundant, and food and clothing at the lowest prices, best improve their circumstances, so as to raise the social, physical, and moral condition of themselves and of their families?"

POLYGLOT GUIDE TO LONDON.—In the last number of the *Home Circle* a concise Guide to London is given in English, French, and German.

THE SLATE QUARRIES OF WALES.*
It has truly been said, as we all must deplore,
That Grenville and Pitt made peers by the score;
But now 'tis asserted, unless I have blundered,
There's a man who makes peeresses here by the hundred.
He regards neither Grenville, nor Portland, nor Pitt,
But creates them at once without patent or writ:
By the stroke of the hammer, without the king's aid,
A lady, a countess, a duchess is made.
Yet high is the station from which they are sent,
And all their great titles are got by descent;
And when they are seen in a palace or shop,
Their rank they preserve and are still at the top.
Yet no merit they claim from their birth or connection,
And derive their chief worth from their native complexion,
And all the best judges prefer, it is said,
A countess in blue to a duchess in red.
This countess, or lady, though crowds may be present,
Submits to be dressed by the hands of a peasant!
And you'll see, when her grace is but once in his clutches,
With how little respect he will handle a duchess.
Close united they seem, and yet all who have tried
Soon discover how easy it is to divide them.
No spirit have they, they are thin as a lath,
The countess wants life, and the duchess is flat.
No passion or warmth to the countess is known,
And her grace is as cold and as hard as a stone.
Yet I fear you will find, if you watch them a little,
That the countess is frail, and the duchess is brittle.

CARRARA MARBLE.
"Ages had roll'd, or e'er the hand of man
Boldly the great career of Art began:
Unvalued and unpenetrated, then,
Rose the rude mountains in Carrara's glen:
No fragment, from Lavenza's lonely shore,
Had bade the world fall prostrate, and adore;
But in the rugged cliffs, unseen, untrod,
Cold in the lifeless marble slept the God;
Till Genius started from his sleep, and spoke,
And the long night of countless ages broke;
Bade the rough precipice its stores unlock,
Sent forth to fame the animated rock,
And made the wonder-stricken nations own
Unperishable life, in lifeless stone."

* By the late Judge Laycester, of the North Wales Circuit: where the lines were originally published we do not know.

* Mr. Harris, of Islington, moved, and Mr. Saunders, of St. Martin's, seconded the following:—"That the Secretary of State for the Home Department be requested to instruct the Government Auditor carefully to see that the rates and other moneys levied, received, and recovered by the Metropolitan Commissioners of Sewers have been properly applied (so as not to extend the liability of any person in respect of any rate or payment), and that he distinguish in his report the times and purposes when and for which moneys were received and paid, and the respective districts or places in and for which moneys have been collected and expended." At the request of Mr. Toulmin Smith, however, it was ultimately agreed that this motion should be given as a notice for the next meeting.

The Builder.

No. CCCCVII.

SATURDAY, FEBRUARY 1, 1851.

WE have sought from time to time to make our readers acquainted with some of the buildings going on in AMERICA, and the works published there for the diffusion of architectural knowledge, a desire for which appears to be increasing. We hope soon to be able to do this to a greater extent, and at the same time to aid, more largely than we may yet have done, in disseminating in that important country knowledge of those matters whereof we specially treat. American architects have great advantages: they may use marble and granite under circumstances where we should be forced to put up with bricks; and in laying out new towns, can avail themselves of all the dear-bought experience of the old world, unfettered by previous exertions, arrangements, and prejudices.

We have before us one of the most recent contributions to American architectural literature, entitled "The Architecture of Country Houses," including Designs for Cottages, Farm-houses, and Villas (on the model of Loudon's Encyclopædia of Cottage Architecture), by Mr. A. J. Downing, of Newburgh, on the Hudson, which is a very creditable attempt to develop the growing taste of the people, and will doubtless have a good effect.* Mr. Downing has a full sense of the value of the individual home—the importance of a good house—as a means of civilization.

"A nation, whose rural population is content to live in mean huts and miserable hovels, is certain to be behind its neighbours in education, the arts, and all that makes up the external signs of progress. With the perception of proportion, symmetry, order, and beauty, awakens the desire for possession, and with them comes that refinement of manners which distinguishes a civilised from a coarse and brutal people. So long as men are forced to dwell in log huts and follow a hunter's life, we must not be surprised at lynch law and the use of the bowie knife. But, when smiling lawns and tasteful cottages begin to embellish a country, we know that order and culture are established. And, as the first incentive towards this change is awakened in the minds of most men by the perception of beauty and superiority in external objects, it must follow that the interest manifested in the rural architecture of a country like this, has much to do with the progress of its civilisation."

Much of that feverish unrest and want of balance between the desire and fulfilment of life, is calmed and adjusted by the pursuit of tastes which result in making a little world of the family home, where truthfulness, beauty, and order, have the largest dominion.

"When one reflects," says M. Lance, in a report recently made to the French Société Centrale des Architectes on the "Improvement of Unhealthy Habitations,"—"as to the influence which the dwelling may have on the physical and moral life of the individual; when one considers that our house be-

comes the mould of our inner life and domestic habits,—that it is the place of our repose after the labour of each day, and the centre of our dearest affections,—it appears truly surprising that philosophers, moralists, and all those who put themselves forward as teachers of the people, have not perceived that the reform of the poor man's dwelling should precede those other reforms for which they call so loudly."†

Mr. Downing's book, however, does not relate to dwellings for the poor; but the argument is in sequence. "Whether another planet shall be discovered," says he, "beyond Le Verrier's, may or may not affect the happiness of a whole country; but whether a young and progressive people shall develop ideas of beauty, harmony, and moral significance in their daily lives; whether the arts shall be so understood and cultivated as to elevate and dignify the character; whether the country homes of a whole people shall embody such ideas of beauty and truth as shall elevate and purify its feelings: these are questions of no mean or trifling importance."

In his first chapter he points out the necessity of attending to convenience, strength, and comfort in designing structures, and urges that it is a proof of weakness rather than strength to treat with the slightest neglect the utilitarian side of the question. "To the majority of mankind the useful is the largest satisfaction derived from architecture, and while an able architect will always treat the materials placed in his hands for a new design, so as to give something of the expression of beauty even to the simplest forms, he must never imagine that in his art he can largely neglect the useful for the beautiful. As, in the Apollo, every muscle must be found which enters into the body of the hardest day labourer, so, in all perfect architecture, no principle of utility will be found sacrificed to beauty, but only elevated and ennobled by it."

The love of the Beautiful is a worship by the heart, of a higher perfection manifested in material forms. To desire to surround ourselves by matter ennobled by beauty rather than be content with mere utility, is to acknowledge the existence of a sentiment which, next to the religious one, is the purest and noblest part of our nature. The contemplation of the beautiful is most useful; and when the gratification of this is the only utility sought, as in monumental adornments, beauty has only to be considered. In domestic architecture the primary condition is that it be useful; the second, that the utility be beautifully provided.

Our author is earnest in his claims for truth,—the general truth that the building is intended for a dwelling-house; the local truth, that it is intended for a town or country house; the specific truth, that it is intended for a certain kind of country-house,—as a cottage, farm-house, or villa. His views regarding truthfulness of materials he shall give in his own words:—

"The principle," he says, "which the reason would lay down for the government of the architect, under this head, is the simple and obvious one that the material should appear to be what it is. To build a house of wood so exactly in imitation of stone as to lead the spectator to suppose it stone, is a paltry artifice, at variance with all truthfulness."

When we employ stone as a building material, let it be clearly expressed; when we employ wood, there should be no less frankness in avowing the material. There is more merit in so using wood as to give to it the utmost expression of which the substance is capable, than in endeavouring to make it look like some other material.*

There are certain architectural fictions with regard to apparent truthfulness of material, which are so well understood as not to deceive, and are not, therefore, reprehensible ones—such as painting the surface of wooden, and cementing or stuccoing the exteriors of brick and stone houses. Protection from the weather demands this, and no one fails to recognise wood or solid walls though entirely hidden from the eye. And in the case of stuccoed walls, the expression of strength and solidity is very properly conveyed to the eye by marking it off in courses, to denote the bonds and courses of the solid wall beneath, and to take away the mere lath-and-plaster look of a plain stuccoed wall. To mark off in courses a house actually built of lath and stucco, as we have sometimes seen done, is, on the other hand, a downright violation of architectural truth. For the same reason we would prefer to see the stuccoed exterior of a brick wall marked faintly in small courses, so as to denote that brick is the material of the wall, rather than boldly in large courses, to signify stone. There is no reason why the stucco which only stands for stucco, should not have an agreeable colour, wholly different from those of the brick and stone put beneath it (because it is only when stone or brick is not altogether satisfactory to the eye that we cover it with stucco); but the principle of truth should lead us to point out, by the lines on the stucco, whether it cover a stone or brick wall.†

He properly urges his brother architects, in planning country houses in all parts of the country, to let the habits, and wants, and mode of life (assuming them to be good and truthful ones) stamp themselves on the main features of the house. It is thus that domestic architecture would always be growing better, more truthful, more individual, and therefore more rational and sincere, rather than more foreign and affected. He says, as to this,— "Foreign architects are finding their way to this country very plentifully. Some among them, who follow rules and not principles, do us great harm by building expensive and unmeaning copies of foreign houses—as, for instance, English villas, with narrow passages, disconnected rooms, and no verandahs for the warm climate of the middle states. Others do us service, by studying the peculiarities of climate and mode of life, and adapting their designs to meet the peculiarities."

There being no law of primogeniture in America, a citizen's money is usually divided, when he dies, amongst all his children. There is no inducement to the wise to spend large sums in the erection of country seats, which would be beyond the means of any individual member of the family after the first life. Our author says on this point:—

* "Perhaps an exception may be allowed in the case of wooden verandahs, and such large additions to buildings of solid materials as we often see added in this country, in districts where the stone is so hard as to be very costly when wrought into small parts, so that wood is often used, but is so painted and sandced as to harmonize with the stone. In this case, we say, the apparent untruthfulness is permissible, for the sake of a principle almost equally important—unity of effect; for nothing is more offensive to the eye than an awkward union of wood and stone in the same building. But, of course, this is a sacrifice to expediency; and the more truthful treatment, viz., making all portions of one material, is the only entirely satisfactory one."

† "Marking off stucco to indicate a stone wall, is the common and prevalent mode in this country; though we have never seen brick expressed as we have suggested. This might be most easily and effectually done by pressing a mould, marked with lines, upon the face of the stucco, as soon as it is put on the wall. Patterns of various kinds were thus stamped upon the walls in Moorish architecture, with beautiful effect. The lines would always express that the wall beneath was of brick; but they should be only faintly impressed, and not deeply stamped, and without the mortar lines whitened so as to imitate brick."

* The Architecture of Country Houses, including Designs for Cottages, Farm-houses, and Villas, with Remarks on Interiors, Furniture, and the best Modes of Warming and Ventilating. With 320 illustrations. By A. J. Downing, author of "Designs for Cottage Residences," &c. Hints to Persons about Building," &c. New York: D. D. Appleton and Co., 200, Broadway; Philadelphia: G. George S. Appleton, 164, Chestnut-street, 1850.

† Rapport sur la Proposition de M. Harou Romain, relative à l'Assainissement des Habitations Insalubres. Par une Commission composée de MM. Bourgeois, Danjoy, H. Romain, Adolphe Lance, Lepotier, et Rohault de Fleury.

"There is something beautiful and touching in the associations that grow up in a home held sacred in the same family for generations. A wealth of affection is kept alive in those old manor-houses and country halls of England, where, age after age, the descendants of one family have lived, and loved, and suffered, and died,—perhaps nobly and bravely too, sheltered by the same trees and guarded by the same walls. It is quite natural that we, largely descended from this Anglo-Saxon stock, when we have fortunes to spend, should fondly delude ourselves with the idea of realising this old and pleasing idyl of beautiful country life. But it is only an idyl, or only a delusion to us. It belongs to the past, so far as we are concerned. It is no more to be reanimated in the republic of the new world than the simple faith in the Virgin, which built the mighty cathedrals of the Middle Ages. It could only be reanimated at the sacrifice of the happiness of millions of free citizens."

He gives a very useful chapter on ventilation, and says, in conclusion, "that, fond as our people are of improvement, the greatest possible improvement in a dwelling-house—ventilation, is as yet a thing almost unknown in this country; though we predict, that in a few years, the man who warms his room by a close stove, with no ventilator, will be looked upon as little better than him who should more openly undertake to poison his family and friends with a brazier of charcoal."

There is much good sense and ability manifested in Mr. Downing's book, and we stretch our arm across the "big water" to tender to our Yankee confidant an English shake and a friendly recognition.

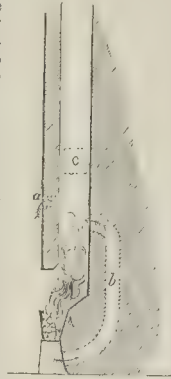
CAUSE AND CURE OF SMOKY CHIMNEYS.

HAVING, in the foregoing papers,* taken some trouble to explain the philosophical principles involved in the action of chimneys, in order to demonstrate clearly the fact that the primary cause of their action is the rarefaction of air; and having seen how this primary cause operates, we may consider ourselves sufficiently prepared to enter upon the consideration of the causes which produce imperfect action, or what is familiarly called the "Smoky Chimney." We will proceed to do so by arranging these causes into five distinct classes, viz.:—Firstly, deficient rarefaction; secondly, deficient supply of air; thirdly, the action of winds; fourthly, deficient capacity of flues; fifthly, the influence of adjacent chimneys. We will examine these five classes in all their bearings seriatim.

First, then, as to deficient rarefaction. We have seen that rarefaction in chimneys is produced by heat, and it follows, therefore, that anything which operates to cool the air in a chimney tends to impair rarefaction. Now, this may result from either of two distinct causes: first, the admission of cold air into the chimney; and, secondly, the radiation of heat through the material of which the chimney is constructed. The first of these, the admission of cold air, may be brought into operation in a variety of ways, of which the following may be considered the principal, because of most common occurrence; viz., large openings at the fire-place, that admit air into the chimney without its having been sufficiently within the influence of the fire, to produce the required degree of rarefaction; dust flues leading from the ash-hole behind the fire-grate into the chimney above the opening; flues entering from other fire-places, which, when not in use, supply cold and therefore unrarefied air from the rooms in which they are situated; ventilators in the chimney breast for the purpose of carrying off the impure air of rooms, which is always at a much lower temperature than that in the chimney, and therefore the rarefaction of the latter is impaired; lateral openings of any description which admit air of a lower temperature than

that in the chimney at the point at which it enters; imperfect joints, or holes, in the partitions of adjoining chimneys, which have the effect of admitting cold air from these chimneys when not in use.

The result of the admission of cold air being the same in all the above, and, in fact, in all cases whatever; one illustration will serve for all. For this purpose, then, let us suppose the diagram, fig. 9, to represent the section of a chimney where A is an ordinary stove grate, B the opening of the fireplace, and the dotted lines at a, b, and c, respectively, a ventilator, a dust-flue, and a flue entering from an adjacent fireplace. We will take the temperature of the air in the chimney to be 120° Fahrenheit, that of surrounding atmosphere being 60°; and the velocity of the current or "draught" 10 cubic feet per second. Now, if we suppose the gas, or smoke to be evolved from the burning coal at the rate of 10 cubic feet per second,



the velocity of the current in the chimney being also 10 cubic feet per second, it is obvious that all the smoke from the fire would be carried off. But if we introduce into the same chimney either a ventilator a, a dust-flue b, or a flue from an unused fireplace c; the external air, by reason of its superior gravity, will flow through such openings; and, mixing with the heated air in the chimney, will reduce its temperature, and, consequently, increase its specific gravity or weight. We have already seen (page 278) that the velocity with which one fluid rises through another is proportionate to the difference of their specific gravities; and, therefore, by increasing the specific gravity of the air in the chimney, we diminish the velocity with which it rises. Suppose, then, that a sufficient quantity of cold air has been admitted to reduce the velocity of the current to 9 cubic feet per second, the volume of gas or smoke being still the same, i.e. 10 cubic feet per second; it follows that there is evolved 1 cubic foot of smoke per second more than can pass off by the chimney: it therefore backs into the room in which the fire is situated; or, in other words, the "chimney smokes."

It may not be out of place to observe here, that during the whole time that the process of combustion is maintained in a fire grate, various gases continue to be evolved from the burning coal, of which carburetted hydrogen and carbonic acid constitute the chief portion. These two gases are given off in an inverse ratio, i.e. when there is most carburetted hydrogen there is least carbonic acid, and vice versa. For example, when fresh coals are put on a fire, a dense yellow smoke rises, which is chiefly carburetted hydrogen, highly charged with carbonaceous matter. As the coal burns to a cinder, carbonic acid gas begins to be more freely evolved; and when the coal is completely incinerated, carbonic acid forms the chief portion of the gas generated: it is perfectly transparent, and being combined with sulphuretted hydrogen, it possesses a strong sulphureous smell, and produces a stifling sensation when breathed.

The second cause of deficient rarefaction above alluded to, i.e. the radiation of heat through the material of which the chimney is constructed, operates differently, inasmuch as the heat, or caloric, is abstracted from the air: in the former case it is merely diluted by the admission of cold air.

All material substances possess the property of absorbing or conducting heat, but there is great difference in their conducting power: or instance, we say that copper is a good conductor of heat, and wood a very inferior one.

All substances contain heat, or caloric, in a greater or less degree, and such is its nature that it is continually passing from one body to another, endeavouring to produce an equilibrium or balance of temperature; or, in other words, tending to produce one uniform temperature throughout all nature. For example, if we take a vessel of water heated to the temperature of 100° Fahrenheit, and place within it a block of iron at 50° Fahrenheit; in the course of a few seconds the temperature of the water falls considerably, and we will then find that the heat lost from the water has passed into the iron and raised its temperature correspondingly. Now if the vessel be of iron, the heat will enter readily into it until it become as hot as the water contained by it: and being a conductor, in common with all other matter, the heat will pass off from the outer surface as fast as it enters the inner surface of the vessel, and it will be absorbed by whatever substance chances to be in contact with the outer surface. If this substance be atmospheric air, then the heat will continue to pass through the sides of the iron vessel, until the water be reduced to the same temperature, when the absorbent power of the atmosphere ceases.

In the case of a chimney, a certain amount of heat is constantly passing through the material of which it is constructed into the atmosphere; which, being at a much lower temperature, greedily receives it. As this abstraction of heat goes in, the rarefaction is impaired; the air in the chimney becomes heavier, and therefore offers a greater resistance to the impelling column of cold air at the opening to the fire place; the current or "draught" of the chimney is impaired, as already described, and the chimney "smokes."

Chimneys are also subject to a more powerful abstractor of heat than the atmosphere, i.e. rain. In rainy weather there is a constant evaporation kept up at the outer surface of the chimney by the rain which falls upon it, which abstracts the heat rapidly from the air inside; and here lies the cause of imperfect action in those chimneys which "never smoke except in wet weather."

The conducting powers of those materials of which chimneys are generally, either partially or wholly, constructed, rank in the following order:—1st, iron; 2nd, zinc; 3rd, stone; and 4th, brick,—iron being the best conductor, and therefore the least fitted for the construction of chimneys. TBA.

ON THE STUDY AND APPLICATION OF ART.*

THE subject which I have chosen for consideration is one which, from the thoughts it gives rise to, may lead us occasionally into a grave mood; so, for its profitable entertainment, may it exert a more than usual claim upon attention. Among so many capable of entering into the practical niceties of your profession, I do not fear disapprobation for selecting subjects of a general character and application, and which mainly affect architecture, not exclusively in itself, but as a branch of art universal—a branch which must, however, draw its nourishment, like all the other branches, from the one parent tree, and be trained in a like manner with them. It is, then, of that mode of training I propose to speak, being free to confess my opinion, that by many followers of individual arts, not only are the principles of general art, but the modes of improving any art, too often forgotten, and consequently a want of particular success attends that oblivion, which a more liberal grasp of mind—a greater care—would tend to obviate; that is, to return to a former figure, some expect their favourite branch to flourish by other means of culture than that adopted for the rest, and then wonder that, so far as they are concerned, it withers. If I should appear, in the course of this paper, to speak at times with some degree of freedom, attribute it rather to zeal than to assumption—a zeal, indeed, in one sense more selfish than not,—that by the free expression of my own opinion and experience, I may find them the better

* See pp. 529 and 578, vol. VII.; and p. 3, vol. IX.

* Read by Mr. H. T. Brathwaite at the Architectural Association, as mentioned last week.

corroborated or amended by an equally free return. First, then, reserving at present the artistic, to treat of the general necessities of the study of art. I speak of the study of art, because we know that, however contrary to common supposition, it must come prior to the knowledge of art. If, then, we establish anything advantageous to the one, it will necessarily extend a good influence to the other, either by hastening its arrival or by increasing and improving it in the main. The first necessity, then, that suggests itself, is desire to learn, an ambition to know, which seems to be one of the most natural we possess, while, if any one appear not to have it naturally, a conviction of ignorance, a feeling of emulation, will probably suffice for its acquisition at an early period of life. It may be said, the conviction of personal ignorance is rather the result of great knowledge than of little; but, however true that may be, we cannot imagine that any man in his senses can really have arrived at the conviction that there is nothing more for him to learn, or that, perceiving the power and influence of the learned, he can despise the position they hold. Many are indolent, we know; but no man who depends upon his head and its work, can be so, without flagrant violation of common duty, and a vast deal of practical unhappiness. In the professions, then, the necessity of work is apparent, the desire to know must arise from outward pressure, if from nothing else. But here, where our very meeting in this place arises from the love of knowledge, there is no need, for the sake of arousing it, to descend on the immense advantages of study, or to say how in these educated times our very duty to the state and to each other,—aye, even to one immeasurably above both,—demands that we should study, and so qualify ourselves to the utmost for serving, improving, enlightening our fellows. In old time how diligently were the young trained in the use of the weapons of war, and shall we not now, how far more rightly! train ourselves to wield the instruments of peace? It is quite possible that one with the greatest desire to study might be at a loss how to do so to the best advantage—perplexed where to begin, how to proceed. Here, then, is the second necessity—to know how to study; and it will be principally in an endeavour to point this out that I shall employ the first part of our time, before proceeding to consider the application of that knowledge which I shall suppose we have then obtained. I know you love practical remarks; but as I cannot, from my position, offer you, for instance, a dissertation on the variation of mouldings, I shall endeavour to be practical as respects the treatment of our minds; and should I offer but one suggestion likely, if adopted, to improve that, it would not be speaking in vain. To begin, then, we must walk before we attempt to run; we must know how to be creditable tortoises before we may dub ourselves hares. But many would be hares at first, and consequently never attain the distinction of the deliberate tortoise. This is why so many of what are called promising geniuses never bloom into performance, because they are either hurried by others or hurry themselves; because it seems to be believed, that with fine minds you must begin to teach at the summit. Let any who entertain such an idea build me a church,—but upon this condition, that he begin with the weathercock, and end with the foundation. [Were that possible, such a building would contain just the same quantity of stone, just as much ornament; but look at the order of it! Or would it be a good exercise for the growing body to be always endeavouring to stand on its head? And so a man may appear to have learned much, may have spent much time over these books, and yet have no available knowledge; and all because he began to build at the vane, which none of us, who are architects, would possibly do. To study properly, then, we must begin with the broad solid foundations; we must give them time to settle: then stone by stone, pillar by pillar, with care, nicety, and order, pile up the tower of our knowledge. We are too apt to be fascinated with the grandeur of things at present beyond our reach,

and on that account, failing in the endeavour to attain them, become discontented and weary. It is here that the dislike of dryness comes in. It is here that, from a sort of despair, we get desultory. It is here that, being desultory, we have too many things to attend to, and finally attend to none. Therefore we observe the necessity (thirdly) of method, order, arrangement. Look at it in nature. Observe the extraordinary balance of all things,—the gradual and uniform succession of the seasons, the economic circle by which there is no loss—the exactitude of the course of production: look at the order there is in our own growth from infancy to manhood, our decline from manhood to old age. Why then should we seem to believe there is no order with respect to our minds, by disregarding it in the education of them? Why should we study in a fitful manner, crowding together fragments of all diverse subjects into one ill-favoured whole, certainly wanting either in beginning, middle, or end, and, besides, leaving no room for reflection, the very security of all we may learn? As to books, it is quite possible to keep them sufficiently various to give relief to each other in a fixed succession, and sufficiently connected to increase the particular knowledge we seek. For everybody knows that the tributaries of a stream are not trees; but do not some act as if a congenious aid to the study of mathematics, for instance, were heraldry? Now it would be a mistake to fall suddenly from the study of one style of architecture to another at a distance—where the two had anything in common—without attending to intervening modifications; just as you would not learn the history of Rome from studying the reigns of Numa and Commodus. And how is the memory assisted by a consecutive order in study! How much better we remember any epoch in art from knowing what preceded, what led it; how itself, in turn, was the date of some further advance. In the study of all history—in the study of the history of art—there is a grand method that connects together causes, circumstances, and consequences: they reveal to you that which lies behind the ostensible, sometimes the pretended, facts of things; and in the one case provide you with reason, in the other with truth, which you can apply for your own progression. The observance of these you will find indispensably necessary to the permanence of what is acquired in the mind. Your knowledge will then be clear and durable as the glass that admits the light of heaven in the chamber; but, otherwise, like the winter frost on the pane, florid indeed, but confused and evanescent. The next necessity (stily) is a regard of time. We need not dwell upon indolence, which is obviously injurious to all. The division of time is what I chiefly intend at present. Was it not Sir W. Jones who attained to the knowledge of about thirty-six languages—and how? Why, by dividing his time methodically, having a fixed hour for every subject, with such success as to be soon astonished at his own progress. There is, I think, a story of Alfred the Great studying by a candle of different colours, and measuring his occupations according to the periods it fixed: a space of blue for one work, of red for another, and thus a method for all. Much may be gained by the saving of leisure moments, and many students have read whole works by always keeping some book to be read at such times; in fact, those who have not noticed it have no conception of the time wasted in scraps, or of the advantage of a time-book, such as here alluded to. Time is always hurrying away, and requires to be seized upon and continually held; for nothing would save even the brightest genius of youth from being dropped, if he would not hold on, into the despondency of a foolish age, the more unhappy from the contrast. I might here, in passing, speak of that far more important loss of time which the Emperor Titus complained of when, having passed a day without performing any good action, he said, "I have lost a day." Consider how much time is necessary to a thorough understanding and practice of architecture, because you have need of a degree of manual as well as of capital skill. You

must know how to draw with mechanical instruments; how to sketch, and must understand perspective; you must also have some knowledge of colour and effect; and it is an advantage to understand lithography, and some of the like arts, especially for any who are much dependent on themselves. Again, you should know the principles of art derivable from study of nature, and as they have been interpreted in the greatest works of man. Then, with respect to your own art in particular, you should be informed of its history and of its styles—of their characteristics and appropriate uses. You must understand construction as the very life of your work—that on which depends its stability—that by which alone you are enabled rightly to connect parts in one fitting whole; for see how many designs, seemingly excellent on paper, become absurd in stone, for want of right construction! You must study design, as that which shall give you a facility of original expression—that which shall enable you, not merely to reproduce what people built at Athens, but, entering into the spirit of a style, to produce something independent in its expression, though, from necessity, dependent in its origin. There may be a general resemblance between an old style and its modern subordinates, but they need not of necessity be exactly alike: either may possess some advantage or deformity foreign to the other, though both be intersimilar in the main; by which, I would say, we are not bound to imitate the defects of a style, nor ought we to turn its beauties into blemishes. It is a matter of surprise that we should often see architects pitting one necessity of their art against another—one exclaiming, "Nothing is of use but construction;" another, "nothing but design;" this one, "Glory to Gothic!" and that "Classic for ever!" which is all highly injurious, the true object being to advance architecture as a whole, and not to be setting its members to buffet each other. Now, why I have enumerated what we ought generally to know and to do, under the head of the necessity of regard to time, is this, to show by the extent of it how little time we have to spare if we want to excel, and to impress what has already been urged concerning method. We now come to a necessity (stily), under which are included two things closely connected—self-denial and industry. It is not the place here to urge the former in its grand moral bearing as I might, but it is to impress it in another as affecting art. If we love our art, we shall give ourselves up to it. Men of art, some say, are moved by two affections—the love of art and the love of money. But let us protest against any imputation that artists are avaricious: they act from a better principle than avarice, and although that may have been found in a few masters, it cannot be the less held up to contempt. We act—some from pure love of art, some from desire of fame,—but I will say many from a determination to do good, to improve the common mind, to render art subservient to higher purposes. Here is the true ambition of the artist, and it shall make him great in fact, whether in appearance or not. I say, then, the self-denial in the cause of art that arises from this ambition, is good and pure in itself, and I know several instances among ourselves where it does so arise—a great and glorious sign of the future! Having established the necessity of self-denial, of sacrificing pleasure, and frivolity, and the like, as Michaelangelo did, on the altar of our art, we proceed to that of industry, greatly dependent on the other. Work, said Goethe, is the soul of man. Let us see men follow the precedent of the ancients in work at least. Let us take Demosthenes as an example. By work and immense perseverance he overcame a natural impediment of speech: by work he attained to an order and method in speaking no one has ever surpassed; by work, by endurance, after two rejections by the people, he at length gained their enthusiastic admiration,—and the man who had ill health, a neglected education, and a stammer, came to be one who spoke in thunder and lightning—who so excelled all others that, as Philip the king said, he did not, like Isocrates, one of the most eminent, push with a foil, but fought with a

sword in argument; whose orations against that monarch were as so many armies. By work Cicero attained to that eminence—that authority, which makes us in these days read his account of Demosthenes. Work, slave to the lamp of genius, produced the printing-press, which created an era in the world, and a revolution in the human mind. Work, subservient to skill, fashioned the steam-engine, and has so, in respect of consumption of time in travelling, increased the duration of our life sevenfold. Work, tolling under science, has given us the electric telegraph, and, as to time lost in distant intercommunication, has rendered life comparatively infinite. It is enough thus to exemplify work. It was still work that made Shakspeare, Milton, Bacon, Newton, Wykeham, Wren, Harvey, Reynolds, and a thousand more; that made our greatest divines, lawyers, generals, statesmen, and Peel, the illustrious patron of the arts, now, alas! gone; and it is work only that will immortalise this association by means of the future fame and honour of its members.

Having attained self-denial and industry, we come to the necessity (6thly) of patience and care. I mean by patience, the faculty of not being discouraged by those disappointments which must attend our course—of not being disgusted by a want or supposed want of appreciation of our early efforts, ever remembering that the fault may be on our own side—of not only not being discouraged nor disgusted, but of continuing, enduring, persevering: that is what I call patience in the study of art. How many of us have entered into competitions, and been once, twice, thrice disappointed? How many of us have yet again tried, and may have—I hope some of us, at least,—succeeded? But if we have not succeeded yet, can we ever hope to, by leaving off at the point where we failed? By saying, as we have heard some do, "It is no use trying?" These are desperate words. If a man wished to climb a mountain—if it were actually necessary for him to do so—if halfway up he encountered an obstacle, and he endeavoured once, twice, thrice to pass it, ought he, with the light still shining on the peak, and the darkness gathering behind him, ought he to turn back, or to make a fourth, a fifth effort? Yet, if he could not proceed, it were still something to maintain the same position: despair not only prevents our progress, but renders useless our previous march; and there is a certain invisible hand that assists the persevering, that helps the fallen to rise again, if he will. Are we not liable to be misled by our own youthful fire? and is it not, therefore, possible that it may want at times controlling, even partly quenching by transient disappointment? Disappointment should be the discipline, not the death of the spirit. Disappointment should arm, not despoil. Disappointment should leave us real power by stripping us of what is assumed. How it should do all this, is simply by re-arranging our industry, like a giant refreshed with wine, and making us determined by energy to succeed. By care I mean the faculty of criticising our own works—of correcting them—of using the file of labour before it is assumed by others. We shall not then have to reproach ourselves with indulging conceit or negligence: we shall not, so far as our power could prevent it, send them naked, or blind, or lame, into the harsh world of criticism, to be buffeted, to stumble, or to limp. And this care is absolutely indispensable to greatness: we owe it as a duty to ourselves and to the world—as a necessity to our usefulness. It is delightful to see how our great men have exercised the virtues we speak of; to mark how Newton, the same man who, without passion, sat down at once to begin afresh the cherished work his dog had destroyed; how Newton fought his way against an opposition, as bigoted of its kind, as was that offered at an earlier period to Galileo; to observe, in the poems of Pope, that wonderful polish—in the designs of Wren and Scott, that maturity of finish which can alone result from careful self-criticism and close attention. In a word, this care is the presence of mind in the artist as respects his art, and

without it the highest genius is likely to become erratic. We know that to correct a favourite work, a work anointed with the midnight oil, accounted a chief work, a king of works in our estimation, is most deeply irksome; but it *must* be done, and the more in proportion to our own esteem of it.

The next necessity to the right study of art is (7thly) the possession of purpose and principle. Some might wonder what these could possibly have to do with it; but on what ground? What is the use of a man without a purpose, of a work that has no leading idea, of a life without an aim? Why, they are not only useless, but absolutely injurious. A man may very naturally say that his purpose is to get a living, which is, so far, a very necessary and a very good one. But is there nothing beyond, nothing unselfish, nothing of advantage to others? The purpose of that true artist whom we have said to love, to devote himself to his art, will be to elevate that art as much as possible, to give it a dignity and majesty, to render it of active and permanent influence in the world. He would say to his art, "Thou art mine, and I am thine." "I will serve thee truly, and thou shalt enrich my mind; I will make thee queen, and thou shalt ennoble me." But supposing such a man to have still higher views,—supposing him to be conscious of the effect of his art, and of his own power in its exercise,—his purpose would be to use it as a mode of lifting, purifying, and adorning minds less gifted than his own; he would find himself in the position of a teacher of his race; he would now say to his art, "Thou shalt be a queen, not to ennoble me, but to bless others, and my reward shall be the sense of a fulfilled duty;" and thus, feeling the requirements of his position, he would work in a double strength. Thus, too, we see that the entertainment of a right purpose immensely assists the development of art, while its exercise becomes not only a mere means of self-existence, but an actual benefit to the mental, aye, and perhaps moral life of others. Need we adduce Milton as an example of a man with a purpose in his art? We know what that was, as he expresses it, "to justify the ways of God to man," and we know how wonderfully for a man he succeeded. Now, cannot an architect have a purpose and express it? Is his art, an art capable of material sublimity and beauty, alone to be shut out from the place of an instructress? We know it is not. Who has not felt more civilised by the contemplation of some beautiful public building? Who ever entered one of our cathedrals without feeling exceedingly small, not to say insignificant—a mere nonentity—as regards himself, and more than usually elevated to the contemplation of his Creator? It is here that architects have the power to teach. It is in this manner, by the use of the sublimity and awfulness of your art, that you can execute the very loftiest and best purpose: it is by making matter the expression of your own pure and devoted mind, that you can render it a power over minds that are impure and undevoted: it is the love you may throw into your labour, the holy thought that you may impress upon it, the spiritual life that you may breathe on it, that shall be for love, and thought, and life to the minds of others; that shall raise them and exalt you; that shall exalt them and lift you up for ever as servants of the truth:—yes, it is by your work that beauty and grandeur may be sent as ambassadors to the untaught mind, and say, "We are what we are in the name and for the glory of God; we stand before you as witnesses of His truth!"

Principle is to the artist what purity is to his work. It is certainly not impossible for an unprincipled mind to produce a great thing; but still we cannot but feel that the prevalence of anything base, mean, or unworthy in the mind, will, unless we must consider art purely mechanical (which it is not), extend an unhappy influence to a man's work. We know that this is so in literature, where the most definite expression exists: we know of works wonderful enough in their power, which are the curse of thousands, and befall half those who read them. And though in architecture this bad expression is

almost impossible, because while, by a strange anomaly, men were allowed to write indecencies, they would never be permitted to embody them in stone; although it is impossible, yet the absence of principle leads often to a coldness and carelessness—it induces the sort of fraud, by which a man builds his work improperly to save his own gold, and in this way injures the art, and brings contempt upon it. Therefore, if these things arise from the lack of principle, am I not right in insisting on its presence in the true artist? On a matter like this it is not well to dogmatise, but we may assert, as a general rule, that a pure morality is of immense advantage by itself—of unbounded power when associated with genius. For if we grant that a man may without it attain the summit of excellence in art,—though one can see many obstacles likely to arise from vice, many drawbacks from dissipation and waste of time,—if we grant that, it is nevertheless obvious that such a man, being unprincipled, would use his power not for life, but for destruction—the destruction of himself and others. He would be as the giant who could impiously hurl a rock against the heavens higher than could any other being; and like the same giant, he would be slain by the fall of that rock, the swifter, the deadlier, from the greater elevation it had attained.

From this we are led to the consideration of another necessity (8thly), that of honour and a sense of responsibility. There is no principle we all more cherish than our honour; and it is evident you must agree with me in the influence of it, both in the study and practice of art. For whatever tends to banish jealousy and detraction from among the followers of art, and thus to unite them, must necessarily be to its benefit, because it is the cause of strength. There can be no doubt that an honourable feeling towards each other—a liberality which allows of mutual assistance—a generosity that can not only bear another's advancement, but also aid to bring it about—these are things of the greatest importance. If space sufficed I might dilate on the noble rivalry of Cicero and Hortensius, and of a thousand other mighty antagonists, to prove what is here asserted. But as it cannot be well disputed, and there remains no need to argue, let us consider the practical worldly advantage of honour to the architectural art. It appears to me to be, or that it ought to be, a main security against professional theft. In the literary profession, a man who should plagiarise even the work of the dead, is sure to encounter reproof. Though we should be glad to give others the benefit of our ideas, it is not right that they merely repeat them, because that is an injury to art. In architecture you seem to have, independent of honour, no security against the grossest imitation: so that it follows, if a man's honour prevent him stealing the ideas of others, that he must work for himself, invent for himself; and thus, honour prevents indolence, increases labour, enlarges independence of thought, and lends an increased action to the whole profession. There is also an honour a man owes to himself. Some, having raised a building at their outset, build six more exactly like it—copy themselves; which is often the case in ecclesiastical architecture. Here, then, is a decrease of art in the individual: let us extend this practice, and we shall have a decrease of art in general. Only imagine a man publishing the same book seven times over, with but an alteration of the title! And yet we sometimes find built by the same man the castle of indolence, the tower of sloth, the palace of idleness, the temple of dreams, the house of slumber, the abode of laziness, and the fortress of sleep—all of them singularly expressive of their titles—six of them superfluous, and raised in direct opposition to public right and private honour. We now come to the necessity of a sense of responsibility—the keystone in our arch of necessities. In what has been previously urged this was so plainly suggested, that there remains little to express. We have said that care in our works was owed as a duty to the public—that with respect to purpose, a right regard of our powers of public instruction was owing to the source whence

they are derived. We may add, that all the rest are owing to ourselves. As I doubt not you agree in these three remarks, I will at once say, there is then established a triple responsibility, and it shows that a regard of duty is as necessary in the study of art as in anything human else. There is a discipline for the host of peace as well as of war. Let not the soldier neglect to polish his arms—let him not sleep on his post, save he would die; let not the man of art—the soldier of peace—forget to brighten and keep bright the weapons of his mind: let him not waste his time, save he would virtually die—become civilly extinct—exist as a cipher. There is then a duty for both. A sense of this duty is the crown to all our attainments, and let me deliberately say that without it they are worthless—they are as the powers of the fallen Son of the Morning—consummate, but for ruin!*

"NATURE ALL DECEPTION."

SIR,—In case it should escape the notice of better men, or be deemed beneath their notice, I cannot let pass, without some effort to expose its fallacy, the blasphemous comparison (for I know not what milder term to use), by which, in a paper on "Decoration," which you lately reported, it was attempted to justify the so-called "decoration" that consists in making cheap materials counterfeit costly ones. The argument (if any be meant) is this:—

1. The heavens, which pretend to be a dome, are only a sham dome.
2. The rainbow pretends to be an arch, but is only a sham arch.
3. Ergo, "all nature is deception."
4. And hence, it is proper, in human architecture, sometimes (whenever we cannot afford as rich materials as our neighbours, or as rich as we wish to be thought), to use counterfeits (observe the superiority of art which only sometimes deceives, to nature which always does so).

Now, without examining the logic of these inferences (which I fear would not satisfy Mill), I presume that if the two premises be disproved, the whole fabric founded on them may be left to its fate.

"The concavity of heaven, the rainbow itself, was a deception." A deception (according to Johnson) is a deceiving, and to deceive is "to beguile, delude, mislead, or lead into error." Now, then, grant that a child or a savage, viewing the heavens, is misled, and led into the error that he sees a clumsy, meaningless blue *cul de four*. What misleads him? The sky, or his own poor gross and grovelling mind, that cannot travel beyond its little circle of homely commonplaces? Again, grant that Ptolemy, with a mind enlarged by the stored experience of ages, and the arts of a civilised empire, is still misled, though less misled; that he sees in the same spectacle an apparatus of "crystalline spheres," dome enclosing dome, with all manner of eccentric motions, and driven by the most simple and refined machinery the then state of human art and science could image. What deceives him? The celestial appearances, or his own narrow, clumsy, clockmaker's-shop ideas of motion? And so with every successive step towards seeing the appearance aright. Copernicus, with a mighty enlargement, reduces our all-important earth from spectator and mistress, to a subordinate actor and appendage: Newton sweeps away the cumbrous human mechanism of domes and wheels: a further stretch of mind realises that this whole system is but a speck, one star: another reduces Newton's universe and its million systems to a handful of the dust of the galaxy: Herschel sees this galaxy to be one of a thousand: the universe of yesterday becomes a mote in that of to-day, and the universe of to-day a mote in that of to-morrow: the appearance (i. e. the notion man's littleness can obtain) approaching continually nearer the truth, that must ever transcend infinitely his puny grasp, and therefore be ever (according to Mr. Ballantine) "a deception." As well might an infant call anything he cannot understand in his elders, or a savage, anything he

cannot understand in civilised life, "a deception." Nature's appearances deceive us not: it is we who deceive ourselves.

There is no such thing as a deception or false appearance in all nature—every natural appearance is true, for it follows invariable laws (known to be more general than any others are known to be, even those of gravitation itself), and without such laws vision would be useless, not able to convey or telegraph to us external truths. The appearances, I say, are all true; and the simple proof is, that they do eventually reveal to us the truest notions of each thing that our minds are capable of receiving. The truth is always discovered by the appearances, not in spite of them. I will go further and assert that, either no other appearances could give us notions so true, or no others could do it so soon or so easily to us. Whoever denies this, the *onus* lies with him to show how the laws of optics could be improved, and what appearances anything (the heavens, for instance) could wear, that should give to any class of minds a truer idea of the reality, or as true an idea with less trouble. Till this has been shown, no appearance in nature can be called false or deceptive: it is solely the spectator's ignorant, hasty, and false theory which is deceptive; for the mere optical appearance of the sky, or any other natural object, conveys no idea, true or false: the idea is formed by memory and comparison, and other mental processes. What the thing shall seem to be depends not on itself, but on the spectator's mind; and whatever he takes it for, that is not its appearance, but his theory of it. It is not the object that looks falsely, but I that see it falsely.

I can only now think of one parallel to this in architecture. It is that which Mr. Ruskin calls "a difficult case of conscience," viz. whether the Gothic vault-ribs be right, in leaving uncorrected that idea of *flexure* and *elasticity* which the ignorant falsely receive from them (and which was the foundation of Warburton's once famous theory). This is plainly no fault of theirs, but of a rash and partial generalization by which the spectator deceives himself. It disappears as he forms truer notions of the Gothic system, and is therefore no more a deception than the mistakes we make in viewing nature.

But what analogy have these to the deceptions that Mr. Ballantine admires? If I mistake a rainbow for a tangible object, the fault is in my poverty and grossness of mind, not the rainbow's want of clumsiness and grossness; but if I mistake a painted fir door for one of rosewood, or a starred ceiling by night for the sky (not very comfortable) where's the falsehood now? In my want of sharpness, or the owner's want of honesty and his miserable substitutes for invention?

There is another slight difference between the "deceptions" of nature, and those which, in Snobland, are considered art. Everything in nature is better and richer than it appears (or rather than we see it). The heavens indeed, are not the savage's dome of sapphire; but what then? are they less? No; infinitely vaster, grander, richer, and more elaborate. The rainbow is neither the solid arch that the child sees it, nor the coloured vapour that the savage sees it, nor the phantasmagorical image on a screen of cloud that civilised men still see it; but more fine, artificial, superficial, delicate, and wonderful than even the most cultured philosopher sees it. And this is to warrant the making things appear something more than they are!!!

The school to which Mr. Ballantine belongs, is, I am aware, so flourishing in this island, and so much more so here than anywhere else, that it has the best right to the name of "British School." Its fundamental doctrine is, that everything should appear at first more and richer than it is. But everything in true art is more and richer than it at first appears; and everything in nature, more and richer than it ever appears. These I will maintain to be general differences distinguishing the three things,—false art, true art, nature.

As for the other reasons (if such they can be called) put forth in the same paper to support the same fallacy, they are so very pitiful,

that they must surely be its last legs, or nearly the last. If an art is to be esteemed because it has "almost arrived at perfection in this country," pocket-picking has especial claims to our notice. All people too (except architects) now know that if the usage of "250 years" is to sanction any thing, there is neither right nor wrong in the world. The calling in such aids as these, therefore, to any cause, only betrays its weakness. But this is specially the case with the present. Mr. Ballantine can trace back the history of these paltry substitutes for art, for 250 years, to the "time of James VI." Very well. Now every artist knows that from 300 to 250 years ago, exactly, a great and most important change was passing over our national tastes, and was completed on the accession of that same James; a change which (though inevitable, and even the best that could be devised at the time) is now, by all parties, without exception, deplored, either by itself, or as a step in a continued downward progress. This was the change from an effete, but still real style of art, to a sham one—from a degree of truth just above zero, to one just below it. To assert, therefore, of any artistic practice, that it has been used in this country just 250 years and no more, is at present, to all parties, one of the best arguments against it that could be found.

But for Mr. Ballantine's "250 years ago," I will, out of sheer pity, give him 2,000; and grant him that his graining and marbling was practised all that time ago in Egypt, and 1,500 years ago in Rome; and probably, in some place or other, at every period since. The question is, "were they ever used except in a declining state of civilisation—a retrogressive, materialising, animalising state of humanity, or of some branch thereof?" The test I will propose is this—were they ever used in a society where the gods were honoured with more art than the public, and the public with more than individuals?

The only remaining argument is, that there was "something gained, he held, in making a common fir door resemble some rare and beautiful wood so closely as not to be discovered without minute inspection, as a homely material, destitute of all beauty, had, at little cost, been converted into an object of admiration." The material is "destitute of all beauty," so is that of the finest statue, picture, or cathedral. What is not done with the material of these cannot be needed with the material of the door. It is for the artist to beautify objects, not materials; and if the door be "destitute of all beauty," its designer is no artist. But, by beautifying the material instead of the door, you say that he (or rather the grainer for him) makes it "an object of admiration." Admiration! By whom? Who ever admired the graining of Lord Snobkin's door? Or if any body did, where would he be thought to have come from, but out of a painter's shop? The crowning absurdity of these things (as of a thousand other of our so-called "refinements" and "luxuries" and civilised "wants") is, that they are never admired by any one—are never thought of after being once done and paid for,—never (as Mr. Ruskin says) fix an eye except faintly. They have no more connexion with beauty or ornament than the stamps on a "German silver" spoon. They are merely examples of that ineffably paltry wealth-mimicry peculiar to Snobland, that makes her the world's laughing-stock (or will do so this summer)—that "ornamentation" which, if gold were of the colour of rust, and this colour imitable, and iron the colour of gold, would gild it as much as ever. This so-called "art," which is as natural to us as the air we breathe, is peculiar to the "nation of shopkeepers"—to the great corruptress of the world's taste, and the lands within the immediate circle of her baneful influence. Turks, Chinamen, savages—all would laugh it to scorn. I have had no opportunity of asking any friend who has been in the East, but nevertheless will venture to assert (and I hope any of your readers will correct me if wrong) that Mussulman architecture and decoration, the poor, degenerate descendants of the fairy arts of Granada, effete and dotard

* To be continued.

though they be (like ours in the reign of the last Tudor), still ignore these pious subterfuges,—that the Turks are too civilised for them.

I do not mean to defend all the "Lamps;" I cannot but look on three of them ("Sacrifice," "Life," and "Obedience") as great smoke diffusers, and consider none of the others (except one, perhaps) free from that noxious product; but the "Lamp of Truth," I will insist, cannot be trimmed too much, or allowed to shine too far. Some Demetrius, no doubt, will say, it was not very benevolent for Mr. Ruskin to attack "things on which (in his own words) whole trades depend." I have read of a pious bishop, who, when measured by a tailor, in a time of preposterous buttoning, not wishing to be taken for a dandy, asked to have only the buttons necessary for use. "Then, what is to become of the button-makers, my lord?" "Very true," said his lordship; "then button me all over." Now, who was right, the bishop or Mr. Ruskin? I am persuaded that the latter is. All trades, crafts, or professions, founded on (or partly supported by) fictions or fallacies, must (in as far as they are so supported) share, sooner or later, the fate of Diana's shrine-makers, the West-Indian slave-owners, and the "protected" of every kind. Nature defies all the fashions in Paris, and all the protective laws in the world, to prevent this; and she says to every set of men who are worked in order to be paid, or make themselves work to be paid; "will you 10,000 be sacrificed, or your 15,000 successors?" Is it not, then, a Christian and benevolent act to hasten a decision for the former? If a bough must be pruned for the good of the tree, shall it be first left to grow larger?

Among the miserable fictions called refinements in language, is one that requires the expression, "*to find employment*," to be substituted for the honest Saxon, "*to find pay*;" and this seems, at length, by help from below, to have led us to the monstrous doctrine of making work in order to pay for it (as if there were in England too little to do, instead of too little to eat)—a fallacy which Heaven grant may not destroy us, but I fear it is sapping our very foundations. "*It gives employment*" is now the general excuse for every absurdity that sucks human blood for nothing and that we are too lazy to shake off. A thousand things, useless to mind or body, are to be "kept up" for the sake of those they pay, as if anything were paid for except by the sweat of some labourer! Miserable delusion! The rich have actually come to be told it is their duty to patronise follies for the sake of the folly-fed (as if the payers were not poorer than the paid)—thus reducing the rich man's office to an identity with that of the incendiary, whose devilry this devil's doctrine justifies. For what is the difference, whether I set fire to a rick, to give men the employment of producing another; or wear 100 useless buttons to give men the employment of making them? I render profitless to the world that labour which would otherwise be profitable.

In some ancient states, every one was obliged to be taught some craft or art,—some means of profiting the bodies or the minds of men; and some complain because a few among us are taught no such thing; but no one mentions the very many, the myriads, that are taught, instead of this, only some means of getting pay for doing things profitless to mankind. These are the drones really fattening on heaven's poor,—these, the busy industrious drones, that swarm a hundredfold beyond the few malignant idlers in prisons and manions. They have not the mouths to suck enough to hurt, if they would. They only err in becoming the distributors, like the well-meaning button-covered bishops. But we all take part in this man-destroying work. We are all more or less guilty as distributors, mostly as suckers too; and these it is in the power of every one of us, silently and harmlessly, to help to weed out of the world.

As all true art is of the good things descended from above; so is all false art, of these blood-sucking fallacies, ascended from below. Hence the practice of the former and avoidance

of the latter, is by no means a mere matter of good taste. I will insist that it is a matter of political economy, of morality, and of religion.

There is a vast deal of this busy dronehood in our art of architecture and all connected with it, which those who keep their eyes open will see must be sacrificed sooner or later, and therefore the sooner the better. There is a vast deal, I say, but not enough (at least not if we now begin weeding it out) to have needed the remarks lately made at the Institute of Architects. Instead of craving the indulgence of laughers, I defy them to "laugh architecture and architects away." Laugh on, by all means, and get a Cervantes, or as many as you can find, to laugh with you; but you will find our art is not yet, like "Spain's chivalry," to be "laughed away." As for the "new art" of engineering, that base and cowardly surrender of greatness to littleness, of mind to matter, that striking of the colours that man, as long as he pretends to be more than an animal, is bound to keep hoisted against all imperfections, immaterial as well as material, I tell you that, in spite of it all, man does not yet live on bread alone. I tell you that the art, which has borne the brunt of three thousand winters, laughs at this thing of yesterday, and will outlive it. I tell you that the child, and once sacred servant of God-worship, effete and degraded though she be, will yet see the end of that monstrous offspring of mammon-worship. I dare you to laugh your worst: laugh away all you can of architecture; that is just what she wants,—a thorough riddance of all that can be laughed away, and you will find that at the bottom which is not afraid of a laugh.

As a first step towards such riddance, I would suggest that, as a question of fundamental importance is now laid bare, by Mr. Ruskin's distinct statement of one side, and Mr. Ballantine's on the other,—as we have (to me a legal phrase) *joined issue*,—as the point is one on which every artist must hold one side or the other, there being no possibility of a compromise, no middle course between some deception and no deception;—that every artist should forthwith give in his adherence to one side or the other,—to England's doctrine, that art is to deceive, and the more perfect the deception the more perfect the art,—or the world's doctrine, that in perfect art there is no deception, and in perfect deception no art. This done, I propose that the minority should secede, renounce even their former name, or adopt a distinctive one, and thus enable the public to follow their own choice (just as they now do between architects, builders, or engineers), and trouble them no more with discussions.

CALOTECT.

THE NEW BUILDING OF THE LIBRARY, SAINT GENEVIEVE, PLACE DU PANTHEON, PARIS.

It was in the year 1843 that the French Chamber voted a credit of 1,775,000 francs for the reconstruction of the oldest library in Paris, which was entrusted to M. Labrousse, architect. It was stated at that time, that a mere restoration of the ancient building would have been preferable; and it is even now matter of regret that the galleries of the old library have been abandoned, as they were favourable both to the service of the establishment, and conjointly favoured contemplation and meditation—qualities whose want France seems to have reason to regret. But as M. Labrousse has now executed his task to general satisfaction, and not only has not exceeded, but has even saved something of the original estimates, former doubts justly have been completely silenced. M. Labrousse is known as having gained the great architectural prize at Rome, for his controversy with M. Quatremère de Quincy, and from having arranged the funeral ceremonies when Napoleon's remains were transferred to Paris.

The new library of St. Genevieve has the form of a rectangular parallelipedon, where the principal façade occupies one of the longer sides. In the middle of the opposite façade another much smaller square building is erected, and in this the principal staircase is placed.

The edifice is only one story high, under which is a ground floor. The southern front is pierced by thirty-seven arched windows, and contains the principal entrance. In the construction of this building a large quantity of cast-iron has been introduced. Even from the outside, the presence of iron manifests itself in the form of large *pateræ*, resembling scrolls. The iron *pateræ* of the ground floor alternate with the stone *pateræ* above, and rich festoons of flowers and fruits are suspended to them and extend around the whole edifice. On the principal façade, and on both the lateral ones the intervals between the windows are occupied by tables, on which are inscribed, in sunk characters, the names of 810 authors, belonging to all nations, and arranged in chronological order. Beres opens the array, and Moszelius concludes it. The building is surmounted by a range of stone shields—a sort of ornament also to be met with in the interior, which, in conjunction with other details, prove that it was the Doric order from which M. Labrousse deduced the idea of his work.

On both sides of the space into which the principal entrance leads, are the relievers of two candelabra, in commemoration of the proposition of M. Salvandy, made in 1833, to open the library during the evening. The door is of bronze, cast by Messrs. Simonet & Son. The decoration is very original. In the upper part two lilies, nearly full bloomed, are to be seen projecting over a festoon, which tallies with the other ornaments of the four angles. A *pateræ* of iron placed over the arch of the door bears the inscription "1848." Three steps lead to the vestibule, which is supported in its length by two rows of fluted columns, which, with some alteration, result also from the Doric order. Here some painted ornaments, whose tone resembles that of Etruscan vases, follow up that system which the exterior has already indicated, and thus the decorative plan of the able builder is gradually developed. The columns of the vestibule change now into the form of pilasters, as they become engaged in the lateral walls. On each of the two walls alternate Doric pilasters and niches, where busts executed in stone are placed on pedestals. The twenty busts represent the notabilities of French literature and savans, as St. Bernard, Montaigne, J. J. Rousseau, Laplace, Cuvier, &c. They have been sculptured in the ateliers of Messrs. Elschœt, Merlieux, and Mallet. The *plafond* is painted with a pale azure, and in the part of the wall left blank, M. Desgoffes, *paysagiste de style*, has been commissioned to paint the culminating branches of trees and plants, either remarkable for their symbolic meaning, or the sweetness of their fruits. It was a happy idea to crown thus the heads of the illustrious of their country, transforming, as it were, the vestibule of the new library into a pleasing walk, leading to agreeable study and fruitful meditation.

The vestibule is lighted by two windows, one of the arch which is over the door, and by the light which falls from the top of the chief staircase. Four side doors, two on the right, and two on the left, open in the vestibule; those of the right leading to the department of the manuscripts and drawings; those of the left to that of the printed books. These two compartments of the ground floor are again subdivided into two galleries, running in the axis of the longer façade, in a transversal gallery and a vestibule. Of the three galleries destined for the MSS., the transversal one is reserved for the readers. It is lighted by eight windows, and supported by two columns of iron. Ascending the eight steps, which lead to the first landing-place, the following inscription is placed on the wall—*Bibliothèque Sainte Genevieve, fondée par les Génoméens en 1626, devenue propriété nationale en 1790; transférée de l'ancienne Abbaye dans cet édifice en 1850.* Four steps more lead us to the second landing-place. A staircase, divided into two flights, unites at the door of the great reading-room. The ceiling of the staircase is also painted azure, intermixed with stars. The balustrade is here of iron, and one of stone is in the last landing-place, over which stand four candelabra of

terra cotta. The wall which is opposite both entrances of the first floor is to receive three copies after Raffaele, one "The School of Athens," painted by M. Paul Blazé.

The large reading-room is composed of two galleries, extending in the direction of the axis of the principal façade. It is of striking appearance and extent, being not less than the famous Salle des Pas Perdus in the Palais de Justice. Seventeen arches of iron, supported by sixteen columns of the same metal, and of the composite order, separate the galleries. Other transversal arches of iron are connected with the listel of the capitals of the central columns. All the pedestals are on two of their sides ornamented with roses. The decoration of the other sides is of a varied character. The two galleries communicate with each other by the two extreme arches, and by the three of the middle, the opening of the former being twice as large as that of the other fifteen. At a height of 1 mètre 35 c. the remaining twelve arches are occupied by the cases of the library, and by twenty-four heat conductors, having the appearance of elegant chimneys. The other repositories of the books running along the four internal façades, are surrounded by a railing. They cover the lower portion of the walls to a height of about 4 mètres. There are six tables in each of the two longitudinal galleries, and one in each of the others. Every one has room for thirty-four readers. The floors of the two reading-rooms, those of the MSS. and prints, are of inlaid wood, and pipes of gas (issuing from the midst of the tables will light the place during the evening hours, and the whole library is capable of accommodating one thousand readers. The rooms of the ground floors are 7 mètres high; the hall of the first room is nearly 10 mètres high; and the floor extends to a length of 78 m. 10 c. Each gallery has a width of 5 m. 59 c. The extreme arches have an opening of 8 m. 72 c.; the remainder only one-half. Taking all the above into due consideration, we cannot but congratulate our neighbours on the completion of this original and well-conceived structure.

NOTES IN THE PROVINCES.

THE Chelmsford Board of Health have resolved to "procure such a survey of the town to be made as will be in accordance with the instructions of the General Board of Health, by the Ordnance office."—Mr. Ranger has presented his report on the question of supplying Southampton with water. The report, according to a Hampshire paper, enters fully into the whole subject, giving a comparative estimate of the expense, &c., of the various plans proposed—results of analyses of different waters—costs of conveying same—and also report on the well on the Common. Mr. Ranger recommends, as the result, that water be obtained from the Mansbridge lock, on the Itchen, above Swathing. The report is to be printed.—A motion is about to be decided on by the Southampton Council for advertising an offer of a premium of 50*l.* for the best plan, &c., for converting the public lands into places of amusement and recreation: another motion on the same paper relates to the establishment of a cattle market; and another is for petitioning Parliament for the repeal of the window tax.—Stedham Church, near Midhurst, built under the superintendence of Mr. J. Butler, of Chichester, architect, was consecrated on Sunday in last week. The former church, being much too small for the population of the parish, and otherwise inconvenient, was taken down, and the present structure, which furnishes accommodation for 300 persons, was erected chiefly by the liberality of the Misses Payne, of Rother-hill. It is built in the earlier style of pointed architecture, and has a nave, chancel, tower, and south aisle.—A subscription fund for erecting a new church in Fisherton-Anger (Salisbury) is progressing favourably; and an eligible site will probably be obtained, and the building commenced, during the present year.—Fear of danger from powder magazines appears to be very prevalent just now. "Public attention," says the *Times*, "has been aroused to

the extremely unguarded and dangerous condition of the powder magazine at Laudore, near Swansea. This magazine, which contains a store of gunpowder amounting to nearly six tons, is situated in dangerous proximity to the South Wales Railway, from which it is distant only a few yards, and it is nightly passed by numerous workmen bearing lighted torches, and often carrying dangerous combustibles. The danger, however, is greatly increased at the present time from the fact that there is in the roof a hole nearly half a yard square,"—which we should think it not at all unlikely that a spark from a locomotive in passing might considerably enlarge.—At a recent meeting of the Liverpool Health Committee the Inspector of Nuisances reported the cleansing of 955 cesspools during the past week, and the reference of 1,316 middens and ashpits to the Building Surveyor for examination and repair, and the issue of 641 notes to persons whose middens were to be removed. He also reported that 81 nuisances complained of by the inhabitants had been inspected and reported on, that 100 nuisance notices had been served, and the reference of 46 others to the Borough Engineer for remedy by drainage, and 39 to the Building Surveyor for examination and repair. During the past year 1,054 cellars were examined, 153 of which were claimed as built or altered under the late Health Act, 650 were unoccupied, 187 were occupied, but without beds, in evasion of the law, and 59 with beds in them, in violation of it, and which will be again cleared.—With reference to the site of Islington-market, near St. George's-hall, at Liverpool, the *Local Times* says, "We have heard many artists and other people of taste express astonishment at the wonderful effect produced by the removal of the Old Islington-market, and utter fervent hopes that the land will not again be built upon. Certainly, injustice will be done to St. George's-hall if any buildings be thrown up on this angular piece of ground. The removal has produced precisely the effect that was required, for now there is an open space and an abundant play of light on every side. The site would be an admirable one for a statue to Sir Robert Peel, for an obelisk, or any similar object; but any larger erection would give the place a close, huddled up, and disagreeable appearance. The buildings of Islington-terrace might under the supervision of a skilful architect, be easily altered, so as to present a very handsome front, and to harmonise with the fine architectural specimens everywhere rising up in the vicinity. The squalid buildings at the top of Shaw's-brook could be replaced by some lofty erection which would effectually shut out the old windmill and other objects behind, and thus an air of completeness would be given to the whole place in this direction, and at comparatively little expense."—The new Baptist chapel, just erected in Great George's-street, Leeds, has been opened for Divine service. It is designed in the early decorated style of Gothic architecture, cruciform in plan, with north and south aisle, and fitted up with open seats or benches to accommodate 600 persons. The length of the chapel, from east to west, is 102 feet; width of nave and aisles 38 feet; transepts 60 feet from north to south; height of apex of roof, 56 feet: the walls are of stone: the cost of building and furniture is 1,700*l.*; that of the land, 1,100*l.* Mr. Thomas Shaw is the architect.—Plans have been prepared by the same architect for a new church which will probably be built at Thornton, on the site of the present church.—It is in contemplation to form a company for lighting the town of Olney with gas. The plan proposed is to raise 2,000*l.* in shares of 10*l.* each.—At a recent meeting of the Bath and Wells Diocesan Church Building Association, a grant of 100*l.* was ordered to be paid towards a re-arrangement of sittings in Wellington Church, by which accommodation has been obtained for 878 persons, the increase being for 288. The sum of 100*l.* the remainder of the grant of 200*l.* towards a re-arrangement of the pewing in Bridgewater Church, was also ordered to be paid. This church formerly afforded accommodation for 827: by the present arrange-

ment there are 774 free sittings for adults, 151 for children, and 507 for other persons; making together 1,832. Grants were also made to Salford and Milverton churches.—There is a probability of the little town of Usk being now lit with gas. A committee has been appointed to ascertain the expense of erecting the works: 2,970 yards of main pipe would be required.—Eight hundred of the inhabitants of Manchester have addressed a memorial to the Council, complaining of the filthy and unsatisfactory state of the streets of the town, and urging the necessity of more effectual cleansing, especially with the scavenging machines, already brought into successful operation.—A sculptured monument has been recently executed to the memory of the Rev. Dr. Stonard, late rector of Aldingham, Lancashire, by Mr. J. B. Robinson, sculptor, of Belper. The style adopted is the Perpendicular Gothic, with carved centre canopy, pinnacles, finials, &c. The stone is from the Mansfield quarries, used in the erection of the new Houses of Parliament, where Mr. Robinson was employed during six years.—A stained window, by Wailes, has been placed in the tower light of Elland Church, Halifax, as a monument to the Rev. Christopher and Wm. Atkinson, father and son, 47 years successively incumbents of Elland. The window consists of three lights, the tracery being in the perpendicular style. The first on the left is a representation of our Saviour's presentation to the Temple: on the right stands the high-priest with his hands extended to receive the infant, who is presented by his virgin mother, and behind her the figure of Joseph carrying a basket containing two turtle doves is just visible. Beneath the group is an angel holding a scroll, with the text, "His name was called Jesus." In the centre compartment is portrayed the baptism in the Jordan, while on the left is St. John the Baptist, pouring the water on our Saviour's head from a shell. All the groups are thrown out by a doration of ultramarine.—The subscriptions for the rebuilding of Cockermouth Church now amount to about 3,700*l.* The Monarch Insurance Company having paid the whole amount of insurance, viz. 2,000*l.*, without any deduction for salvage, 300*l.* only is required to make up the necessary amount, 6,000*l.*—The Fawcett Schools at Carlisle were opened on Tuesday in week before last. The building is in the Tudor style of architecture—of red freestone below, and of red brick with white stone dressings above. There is not much expended on ornament. The schools are all on one floor; above the level of the West Walls, on which the building stands. They consist, first, of a boys' school and girls' school, each 45 feet by 36 feet, separated from each other by sliding doors, and 24 feet high to the ridge of the open roof; and, secondly, of an infant school, 38 feet by 22 feet 6 inches, at the north end of the building. This is lighted by a large four-light window at each end. The boys' and girls' schools are calculated to accommodate (at the rate of nine square feet to each child) 175 boys, and the like number of girls; the infants' school is calculated for 150 infants; altogether, 500 children. Mr. James Stewart was the architect. The contractors were, Mr. Thomas Robson, mason and bricklayer; Messrs. Cameron and Briggs, joiners; Mr. J. Choaks, slater; Mr. D. Blain, plumber; Mr. D. Clarke, ironfounder for the columns and beams of the roof; Mr. J. Blaylock, for the cast-iron windows; Mr. Henry Tweddle, painter, &c. &c.—Gutta percha pipes are now in use in St. Matthew's Church, Glasgow, for behoof of the deaf.—It is stated, in Moody's National Property List, that a house in Charlotte-street, Glasgow, has been sold by private bargain, at 1,590*l.*, for the erection of a Roman Catholic institution, or nunnery.—The various dissenting bodies in Newcastle, says the local *Journal*, seem disposed to locate themselves as near as possible to the Great Central Railway Station. A new Independent meeting-house is being erected in Clayton-street West, in place of the old one in Zion-court: the Baptist congregation, which meet in Tu'hill-stairs, have purchased a site in the vicinity, at the rate of 27s. 6*d.* per square yard, and they will shortly

commence building: one or two other congregations have been looking out, it is said, for accommodation in the same neighbourhood.—A bridge has recently been erected at Haddington, by Messrs. J. and A. More, Gimmersmills, for the purpose of connecting these grain-mills with the town. The bridge is of wood-work, and rests on three stone piers. The cost is said to have been between 800*l.* and 1,000*l.*—It is proposed to erect, at Haddington, a covered market, about 6,000 feet square, or nearly two-thirds the area of the Edinburgh Corn-Exchange. The structure is meant to be plain, but substantial.—A meeting was lately held, at Arbroath, in the north of Scotland, in order to consider the propriety of erecting a model lodging-house for factory girls, when three of the inhabitants forthwith subscribed 10*l.* each, three of them 25*l.* each, and four of them 50*l.* each. Smaller sums were also subscribed, and a committee was appointed to increase the subscription.—An English company, it is said, is about to light the town of Newry with gas made from water, at the rate of 1*s.* per thousand cubic feet!

THE NATIONAL WASHINGTON MONUMENT, NEW YORK.

At a meeting of the New York Historical Society, on the 5th November (reported in the *New York Literary World*), Mr. J. B. Varnum read a paper upon the National Washington Monument and other kindred subjects, from which we obtain the following particulars:—

Since the laying of the corner stone, about two years since, the work has regularly progressed. The foundation is at the bottom 81 feet square. It is built of a species of blue rock, a material which is continued up 17 feet above ground. Here the marble work for the obelisk commences. This obelisk is to be 500 feet high, 55 feet square at the base, and 33 feet square at the top. The walls are 15 feet thick at the commencement, leaving a space inside 25 feet square, which will be of the same dimensions all the way up. The obelisk is now 76 feet high, and it is anticipated that at least 50 feet will be added during another season.

The outside is constructed of what is known as Symington's large crystal marble, procured from the vicinity of Baltimore. The main body of the wall is of blue gneiss, and with this the interior is lined, except where blocks presented by states or associations have been inserted. The quality of the material and its capacity to sustain pressure and resist frost were most satisfactorily tested in some experiments made at two different times, under the direction of the department of the Interior.

Thirty states and one territory have determined to present blocks of stone to be inserted on the inside, of which five are already in the wall, and nine are on the ground. About fifty associations have requested permission to make similar donations, and a number have been received. Some of them are of elaborate workmanship and beautiful material, almost every prominent kind of stone or marble in the Union being there in one or more specimens.

There have been expended on the work up to this time 120,000 dollars. The estimated cost of the whole shaft will be 500,000 dollars.

A large additional subscription was received on the spot from visitors, within a week or two after the passing of the compromise bills, which seemed to indicate that zeal in the cause increased in proportion as the prospects of preserving the Union were brightened.

In the city of New York, a gentleman distinguished for his liberality, the purchaser of Washington's farewell address, headed the subscription with 500 dollars; but the agent only succeeded in collecting altogether about 1,500 dollars in sums of 50 dollars, 20 dollars, and 10 dollars.

The monthly receipts from all parts of the country now average about 2,800 dollars, and if they continue to come in to that extent, very fair progress will be made on the work, as the sum already expended was much of it laid out on the foundation, in providing a steam-engine, and securing a stock of materials.

In reply to objections urged against the

monument, Mr. Varnum said, if you take the mass of mankind you find but a small number, comparatively, who study books of any kind, especially history, and of those who do read, comparatively few preserve a distinct recollection of prominent characters and leading events. Upon such persons objects presented to the senses make the greatest impression, and a monument or a painting leads to inquiry, and keeps the subject constantly before the mind. But it is a mistake to suppose that the chief object of a monument to an individual is to preserve his memory. Is it not rather a memento of the value set upon the deceased by those who reared the obelisk, a testimonial of the appreciation of him by those who survived? The best evidence of patriotism is a disposition to make some sacrifices for the cause we believe to be just; and so the best evidence of gratitude is some voluntary offering from our treasures, something more than the mere empty thanks which cost us no individual effort to bestow. Hence the monuments which are by far the most interesting in their associations, are those which have been erected by voluntary contributions,—not by an appropriation from the public treasury, which, though all are taxed for it, no one feels,—but by some little personal sacrifice. A mere pile of rude stones, each of which is brought by a different individual, speaks much more forcibly for the respect entertained for the dead than a gorgeous monument built by the decree of a parliament or the will of a ruler.

Every city in Europe is filled with monuments; but very few of them are the work of popular enthusiasm, or commemorate anything more than a royal visit, or an exalted rank,—monuments erected by town councils or the owners of property around particular parks, as acts of civility, sometimes of servility.

There are in London some thirteen statues of sovereigns—four of the brothers of sovereigns, four generals, and one philanthropist.

Many monuments in Europe were reared by the individuals they were intended to honour. Napoleon was not at all modest in this respect; but his monuments commemorate others besides himself—great events—great generals, brave legions. He knew well how to minister to the pride of the soldier, and excite a thirst for glory. His noblest monuments are the splendid bridges and elegant edifices he built in various parts of his empire. But the effect his triumphal arches have had on the soldiery is sufficient evidence that monuments exercise no small influence. History is full of such evidence. Were there no monuments but those erected by voluntary contribution, there would be very few indeed, and these few would commemorate real merit.

In America there has generally been a sentiment favourable to such erections. The monument at Bunker Hill, the Battle Monument at Baltimore, and the Naval Monument at Washington, have already been erected by voluntary contribution. An equestrian statue to General Jackson at Washington is now about being cast in bronze, and we have seen how, almost without observation or notice, a beginning has been made in the National Monument.

Besides these there is scarcely a large city in the country where something of the kind is not proposed; and the difficulty has generally been that the plan adopted was on so extravagant a scale as to render it doubtful whether any subscriber could ever see it completed.

SOUTH METROPOLITAN SCHOOLS COMPETITION.—For the information of your correspondent, "T. S. Edwards," I beg to state that I was the successful competitor for the above schools; and I am surprised that it is needful to ask the question, because every competitor is entitled to know the name of the architect whose design is selected in any competition whatever; and this information might have been obtained if asked for, though I think it should be supplied without the asking. The idea of building is not abandoned, but is only in abeyance, in consequence of some legal impediments as to site, funds, &c. I quite agree with Mr. Edwards's sentiments in respect to competitions.—EDWIN NASH.

COMMON SENSE IN ARCHITECTURE.

It is probable that the members of our profession generally will not think it necessary to make any reply to the communication of Mr. Fergusson in *THE BUILDER* of last week, as it carries its own refutation with it: nevertheless, for fear the public, both British and foreign, should consider that we all acquiesce in the observations it contains, I venture to trouble you with a few remarks thereon.

The principal, nay, for aught I can see, the only reason why Mr. Fergusson lauds Mr. Paxton for the design of the Exhibition Building in the Park is for disarding all precedent and avoiding the sin of copyism. Now, has Mr. Paxton done this, and has he struck out anything new? I do not hesitate to say no.

Either, as Mr. Fergusson observes, "he was profoundly ignorant of or profoundly despised Vitruvius and his disciples," probably the former, as I am unwilling to think so badly of Mr. Paxton as to imagine that he would despise talent in another; and therefore, knowing little of architecture as a fine art, he fell back on the only precedent at his command, and gave us a copy, on a gigantic scale, of a greenhouse, without any claim to beauty either in its general mass or its details, with the exception only of the great transept, and that, as Mr. Fergusson allows, was the suggestion of Mr. Barry; and he further admits that "had Mr. Barry's idea been adopted of carrying the same roof down the whole length of the central aisle" the building would then have had some pretensions to architectural beauty,* and yet in the very next sentence Mr. Fergusson proceeds to say that Mr. Barry could not have made a satisfactory building of it, and that for the marvellous reason that he was an architect!

I do not write to find fault with Mr. Paxton's building, the real merits of which, those of being weather proof and suitable for the purpose of the Exhibition, will be sufficiently put to the test ere long; but simply to assert that no new principle has thereby been evolved, and to express an earnest wish, that if common sense is to lead some of us to the wilful destruction, without remorse, of such buildings as the Parthenon and Cologne Cathedral, merely to retain and admire our modern works, the remainder of us may be endowed with sufficient good sense and love for the noble buildings that have been left us by former generations to defend them against all such barbarous attacks.†

RAPHAEL BRANDON.

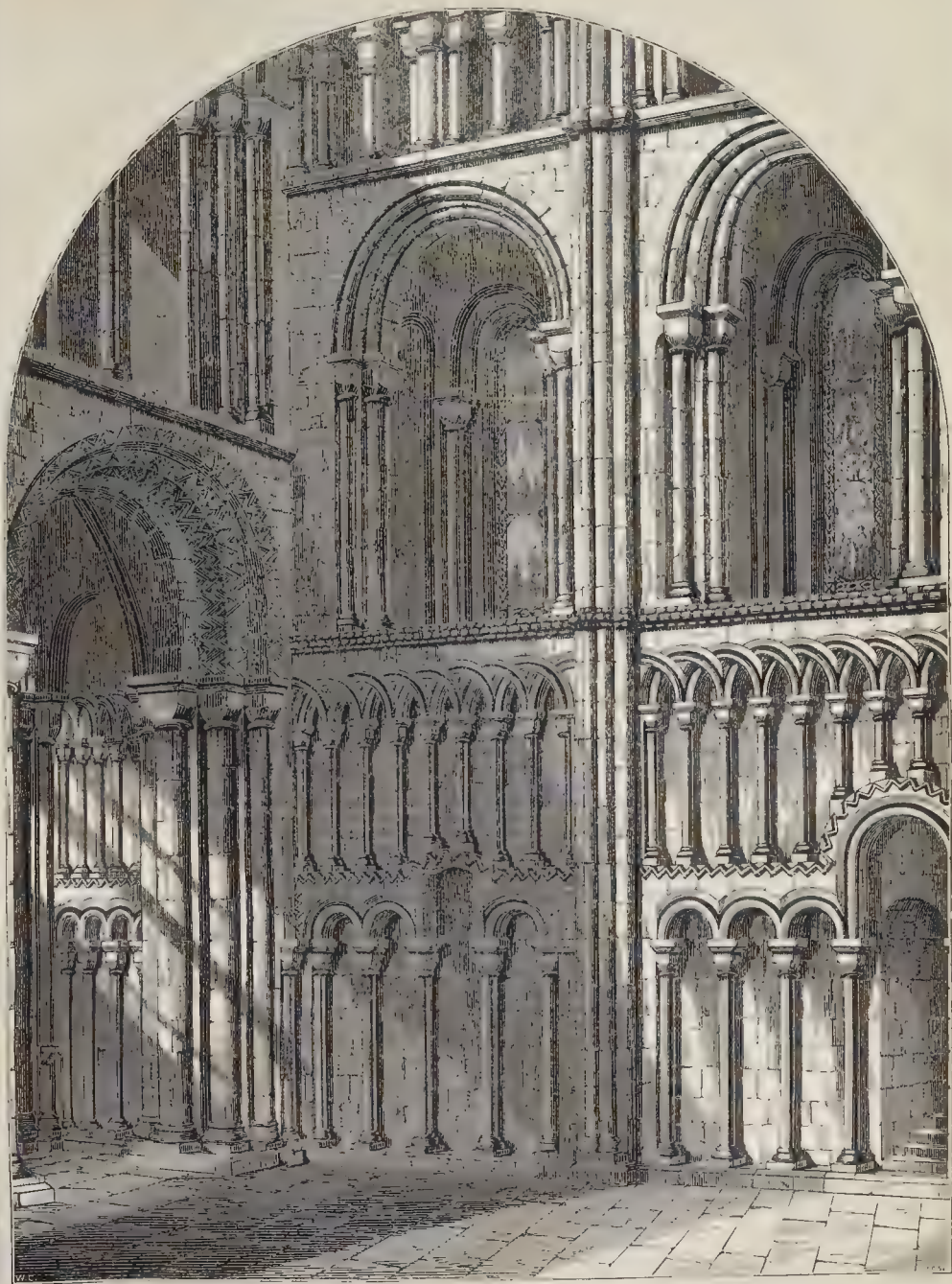
SOUTH-WEST TRANSEPT, ELY CATHEDRAL.

We have from time to time noticed the progress made in the important restorations going on at Ely Cathedral, and have also occasionally given illustrations of some of the most interesting portions. Annexed we give a drawing of the interior of the south-west transept. We doubt if a more striking specimen of its particular period (Norman) can be met with in any of our English cathedrals; and yet, until within the last few years, this portion of the building was totally neglected, and, we believe, divided from the nave by a high wall: this has been removed, the whole of the stone-work cleaned and restored, the windows filled with painted glass, and every effort made to restate the transept in something of its original beauty. At the time of our visit the small chapel on the east side was undergoing a careful and substantial restoration. A flat ceiling divided into panels has been placed over the transept, and several experiments as to colour

* This form of greenhouse would have reminded any one who had seen it very forcibly of the beautiful one lately erected by Mr. Decimus Burton in the gardens at Kew.

† Three other letters on this subject reached us too late for consideration. It is surely unnecessary for us to say, that we are not to be understood as concurring in all the communications we publish.

ELY CATHEDRAL — THE SOUTH-WEST TRANSEPT.



have been made in these panels. These experiments are all more or less failures; and it will behove the dean and chapter to give this part of the work their most attentive consideration before they come to a decision. The paving of the transept and chapel are still in a bad condition, and detract much from the general effect.

Our readers will remember it was during an examination of this part of the cathedral that the late Mr. Basevi met his death: an enamelled brass of exquisite workmanship has lately been placed in the south aisle of the choir as a memorial of this gentleman.

There is hardly anything which conduces more to the comfort of either architect or

artist in visiting a building of this description than the presence of a *well-informed* and obliging vergier. At Ely, it seems to be the principal aim of the person holding that office to give every information and assistance in his power. Having often had occasion to avail ourselves of his good offices, we think it right to bear this small tribute to his merits.

DOINGS IN IRELAND.

THE Queen's University at Belfast (a view of which has recently appeared in *THE BUILDER*), is one of the three colleges lately erected in Ireland, and comprehends the following arrangements. On the ground-floor, central on west elevation, is an entrance-tower, 17 feet by 17 feet (with porter's room adjoining, 16 feet by 12 feet), which leads to an entrance-hall, 64 feet by 26 feet, with which a grand staircase, and lobby to examination-hall, 34 feet by 12 feet, communicate: to the left of the hall, is a hat and clothes room, 48 feet by 12 feet, with a door leading to cloisters, off which the lecture-rooms, four in number, 37 feet long by 27 feet wide, with professors' retiring-rooms, 25 feet by 10 feet, are situate. The cloisters terminate at the northern wing, which contains the following apartments:—Philosophical apparatus-room, 20 feet by 20 feet; laboratory, 33 feet by 18 feet, and a students' entrance-hall, 31 feet by 12 feet, with staircase leading to upper lecture-rooms. At one extremity of this wing is a yard, 38 feet by 35 feet; a coal store, 28 feet by 12 feet; urinals, water-closets, &c. To the right of the entrance-hall, is the examination-hall, 80 feet by 38 feet, and 41 feet high, lighted by six windows, the lower ones having three openings, with arched heads, and label mouldings; and those above, which are also divided into the same number of compartments, are of a more decorative character. At the termination of the cloisters, and situate in the south wing, are the residences of the president and vice president, containing entrance-porches, hall, dining and drawing-rooms, libraries, closets, &c., with sleeping apartments over, and kitchen offices in the basement story. The second floor contains a committee-room in entrance-tower, museum and library, situate in centre building over lecture-rooms, registrar's room, 16 feet by 12 feet, apparatus, and "chemical" apparatus rooms, lecture-rooms, &c. The height, to wall plate of centre building, is 41 feet, to ridge of roof, 53 feet; height of lower lecture-rooms, 17 feet; upper ditto, 21 feet. The cloisters extend 250 feet, and are 10 feet wide. Mr. Charles Lanyon, of Belfast, is the architect. The cost of erecting the building was 26,000*l.* Mr. Cranston Gregg, contractor.

The foundation stone of St. John's Church, Limerick, was laid on the 15th ult. The building, which is in the Norman style of architecture, will consist of a nave, about 70 feet in length, surmounted by clerestory windows, and having two side aisles. The chancel projects, and the central roof will be supported on arches and pillars of cut stone: there will also be a tower and spire about 90 feet in height. The interior of the roofs will be of open woodwork, stained and varnished, resting on cut stone corbels. The building has been designed by, and is erecting under the superintendence of, Mr. J. Welland, architect.

The Midland Great Western Railway Company have just completed an extensive storehouse at the North Wall, Dublin: it is 140 feet long by 22 feet wide. The plans were furnished by Mr. Tarrant, engineer. Cost of construction about 800*l.* Messrs. Cockburn and Son, builders.

The Chetwynd Metal Viaduct, on the Cork and Bandon Railway, is progressing rapidly, and will be within 10 feet of the height of the Britannia Tubular Bridge of the Menai Straits.

The Poor Law Commissioners have decided upon erecting additions to the workhouse of the Granard Union, and the board of guardians are prepared to receive tenders for the execution of the works according to the drawings prepared by Mr. Wilkinson, architect.

A spacious building in Whitefriar-street, Dublin, has been converted into a training-school for the children of the poor: the building is divided into several distinct compartments. The lower section comprises a suite of spacious and well-ventilated school-rooms, fitted with all necessary accommodation, and finished in a tasteful manner. These rooms are fitted up with gas burners (for night schools), supplying abundant light, and which can be kept at a proper temperature by patent

stores. The upper story is occupied entirely by one large room, wherein the various industrial pursuits of the pupils will be carried on. The entire of this establishment will be devoted exclusively to the education and industrial training of the female children.

The board of guardians of the New Ross Union purpose erecting sundry buildings in connection with the workhouse; and have advertised for tenders for the execution of the works according to the drawings of the Poor Law Commissioners' architect.

The works on the Londonderry and Coleraine Railway are to be resumed immediately, and the opening of the line to Newtownlimavady may be looked forward to.

It is contemplated to construct a tower and belfry at the Roman Catholic Cathedral, Letterkenny, which has been lately erected; and also to purchase an organ for same: three galleries have recently been added, and a costly marble altar also. A sum of 3,000*l.* has been expended on the internal decorations, and subscriptions are now being raised for the completion of the works.

Dublin Mechanics' Institute.—The report of this body for the past year states that the number of members for the past year is 2,862, being an increase of 162 upon the previous year; that the issues of books for the past year amounted to 93,600 sets. The entire number of volumes now possessed by the institution amounts to 5,746. The contracts for improvements, alterations, gas fittings, &c., in the lecture-hall, are stated to be satisfactory, and the work is progressing under the direction of Messrs. Louch, architects.

NEXT TO FORM, COLOUR.

SIR,—Although my husband lives at Clapham, and exacts of me the closest attention to his cherished garden and conservatory, rarely allowing me to see the marvels of London, yet I stole away yesterday, when he was fairly off to his country-house, and paid a visit to the great glass building.

On entering the wide expanse, my eyes wandered over its details, and I could not help wishing that it was transferred to our common, and planted on our delightful paddock, which it would wholly cover in. Dear Mr. Bottomry's hobby at home (that is, our conservatory) is 40 feet long by 26 feet wide: it is attached to the south-east side of our house, which it covers in to the eaves; but I am quite out of conceit with it now; yet, Sir, I think that if the Painting Committee were to take a look at the style of its finish, it might aid them in choosing their colour, the last and the most effective of their operations.

My lady friends always apply to me for advice in the choice of their colours in bonnets, dresses, window-curtains, carpets, and even in the tint of their house decorations; and, to do Mr. Bottomry justice, he did admit my claims to discrimination, even in that of his pet conservatory. I had it done in a *verdâtre white*, and all agree in lauding the agreeable repose which this tint confers, together with its lightness and accordance with all the floral and arboric contents.

Ladies are admitted to be the best judges of effect in laying on paint; therefore, observing a party, of whom one was known to me, discoursing on the experiments now in progress in the national conservatory, we at once held a conference on the subject—a true committee of taste on the palace itself—on which there was no dissent: all condemned the tawdry, gaudy, and meretricious mixture of *red, yellow, blue*, and a little white, now rapidly extending over the interior of the grand arch, and especially the yellow on the frames and styles of the top light, which gave a sickly hue to day: the sun, though bright, looked jaundiced through, and the whole appeared like wares of a Dutch toyshop or a China joss-house.

I will admit that the blue with white lines looked light, clear, and elegant, but the top lights of (nearly sage) green are more refreshing and less obtrusive than any other colour; the blue and white on the traverse beams or girders are certainly the lightest, as the outer styles of white deprive these castings of much

of their ponderous appearance; but the red yellow, and blue mixture, is only fit for the favours of a St. Alban's candidate or a Moorish Alhambra. If the building be to stand, and to be a conservatory, or winter-garden, then these *flagrant primitives* should be abandoned, and the light green adopted as the most consistent, and, at the same time, the neatest.

Now, Sir, as to the trees, which the skilful contractor has capped over, allow me to ask of what use it is to let them stand, seeing that by June next the leaves, if they come out at all, will have completely withered. These veterans are too old to endure so violent a change of habit: they must perish from lack of moisture—no dew nor shower for the bud, the bark, or the root! Possibly they are left to record Mr. Paxton's triumph, possibly that of the popular voice, and they stand as trees of liberty: they are, however, monstrously in the way, and can be of no value to either Exhibition or Winter Garden, since they never will (take my word for it) produce other than the crop they now bear—a crop of shavings!

The nurserymen and florists whom dear Bottomry largely patronises, all consult me on the laying out of pleasure-gardens for a scope of five miles round Clapham, and although not a judge of architecture nor of the *best mode of disguising a skeleton*, I claim my pre-eminence in *light and shadows*, and venture to communicate these remarks to *THE BUILDER*, as the best expositor for

EMMA BOTTOMRY.

P.S.—The learned disquisitions (lectures) on *primitive colours*, their accord for only "*one-third diameter of the bow!*" prismatic demonstrations and pragmatic deductions! have no concern with *taste*. Take a natural view of these things, but, above all, consult a lady. We were six in council at the Exhibition, and we all agreed in this.

FOREIGN INTELLIGENCE.

First official Prussian Report on their Exhibitors at London.—The head Exhibition Commission of Berlin have just published a report, of which we make the following extract. The number of candidates for the Exhibition amounts to 1872, of which 455 belong to the easterly, and 439 to the west part of Prussia. On ores and metals we find the following notices:—*Zinc*. Germany is still the country where this metal is most extensively produced. In Silesia there have been produced, in the year 1849, 452,546 cwt. of plates and bars of zinc, and 19,558 of rolled zinc. The royal mine of Königshütte will exhibit red and yellow brass ore (*galmei*) of different sorts. From Stolberg, also, in Westphalia, samples will be sent to London.—*Iron*. The Rhenish iron-works are the most important, whose productions amounted to 886,000 cwt. of cast iron, 797,000 cwt. of bar and rolled iron, and 117,000 cwt. of cast steel. The mining direction of Bonn will send in a series of iron ore, cast iron, and steel, and some collateral products. The extensive rail and puddling works at Hende and Sterkrade will exhibit many extensive samples. Silesia, which produces 894,000 cwt. of cast iron and 634,000 cwt. of rolled and slab iron, will send from Gleiwitz specimens of these famous works.—*Copper*. From Saxony, the Mansfeld mines will exhibit a series of the native copper schist, up to the worked copper.—*Lead* will be sent from the Rhenish works of Cornern: white lead and lead ochre will be exhibited from the Rhine.—*Cobalt*. Washed cobalt ore and oxide of cobalt are announced from Schwarzenfeld, &c.—Articles of bronze will chiefly be sent from Bavaria. Gold and silver wire will be sent from Nürnberg.

Ornamentation of the Cathedral of Cologne.—As this splendid building and its completion are still considered as one of the national boasts of Germany, the ladies of Cologne (*Frauen und Jungfrauen*) have woven some tapestry to adorn the cathedral with. The designs have been made by the conservator, M. Ramboux, the details of ornamentation by the painter, M. Welter. The archbishop, on receiving them from a deputation of the ladies, introduced in his speech the

passage from Exodus: "But there came from amongst the women and maidens those who were skilled in weaving and embroidery, and they brought carpets made by their hands," &c.

Libraries for Hospitals on the Rhine.—As it has occurred to the managers of several hospitals, that patients of active habits will recover sooner and in greater proportion than the apathetic and lazy, small libraries have been established at the Sta. Cecilia Hospital, Cologne, and elsewhere. It has been generally found, in all libraries destined for people of the humbler walks of life, that if a label be placed on the cover, earnestly but kindly requesting the clean and attentive preservation of such books, they will not become untimely soiled, which is one of the chief impediments of the general introduction of libraries for the people.

The Mass of Gold existing in Europe.—Professor Nöggerath, of Bonn, has recently calculated the bulk of gold at present in circulation. He states, that the whole amount of gold and silver coin throughout Europe is 320,000,000*l.* sterling. Assuming, as the professor does, that the half of this sum, 160,000,000*l.* is gold coin, this, if cast into a solid mass, would form a cube, whose sides would form lines of 26 feet, 9 inches, $8\frac{1}{2}$ lines, Rhenish measure. The produce of the Californian mines in 1850, amounting to 7,500,000*l.*, would make a cube of $9' 8'' \frac{1}{4}$. The produce of the Russian mines of the same year being 4,000,000*l.*, a cube of $7' 10'' \frac{1}{4}$. The Californian and Russian gold of 1850, in fine, cast in one mass, would form a cube of $11' 1'' \frac{1}{4}$.

Canalization of Rivers, and other Hydraulic Works in France.—After the example lately set to the French by England, they have even adopted the term *drainage*, and begun the utilization of their waste lands. On the other hand, the French Government have perceived, that unless they attend to the extension of their ways of communication, the agricultural produce would be of little avail. Thus, since the year 1835, the large sum of 192,000,000*l.* have been voted for the improvement of river navigation. Still, the French press truly states, that, according to the geographical position of France, the works for regulating the rivers and other water-courses would be amongst the most extensive and important in Europe. The following are a few of the principal works to which the above large sum has been applied:—The Sheldie (l'Escaut), from Cambrai to the frontier, 1,800,000*l.*; Moselle, from Frouard to the frontier, 1,000,000*l.*; the Ill, from the end of the canal from the Rhône to the Rhine, to the entrance in the Rhine, 1,400,000*l.*; the Seine, from Marseilly to Rouen, 7,000,000*l.*; between Nogent and Paris, 5,000,000*l.*; the Seine on its passing Paris, 5,000,000*l.*; between Pont du Grenelle and Rouen, 10,300,000*l.*; between Rouen and La Méilleraie, 1,500,000*l.*; between Villequier and Quillebeuf, 3,000,000*l.*

REMOVAL OF FOUL AIR FROM WELLS.

AMONGST the suggestions which have appeared in your paper, in regard to means for the removal of foul air in wells, that urging the use of a revolving fan is the best. This, as you know, is nothing more or less than the common "Blow George," which has been known to miners for perhaps fifty years, and was used at the mouths of all the shafts (about twenty) of the four tunnels recently constructed within a mile and a half of this place (St. Leonard-on-Sea). While the shafts were being sunk they did their duty tolerably well; but as soon as the "headings" were driven a few yards, then their incapacity became very apparent. One life was lost; and very many of the men were seriously ill in consequence of the prevalence of noxious gases and the scanty supply of pure air. To remedy this, the contractor, Mr. Newton, invented a machine at once simple, inexpensive, and which forced down shafts 150 feet deep, and along the heading, 150 feet more, such a volume of atmospheric air, that at a distance of five yards from the end of the pipe it would blow a candle out. This "air pump" is fully described and illustrated with

a diagram in the *Mechanics' Magazine*, dated July 14, 1849. I will describe it as clearly and briefly as I can.

It consists of two boxes about 3 feet square, one fitting into the other. The outer one is half-filled with water, which renders it air-tight, and assists in floating up the inner one. On the top of the inner one is fixed a "valve box," with the valve opening inwards, so as to admit the air, but not to allow any to escape. Through the bottom of the outer box, and rising above the water in it, is a pipe, also with a clack in it, which communicates with a zinc or gutta percha tube that runs down the shaft and along the heading to the point where the air is to be conveyed.

The operation of the machine is this:—when the inner box is raised it becomes charged with air: when it is pressed down, the air is forced through the only point of egress, viz., down the shaft (very like the common bellows): by a simple mechanical contrivance the windlass or jack roll of a well may be made to work it. In the case of the tunnel it was worked by a crank attached to the shaft of the "gin" pulley wheels, and was made double, so that a continuous flow of air was effected: for ordinary wells, however, this is not required, a single one answering as well. I may add that the cost of constructing it is only 3*l.*, and with a proper counterbalancing weight, but very little is added to the labour of the men at the windlass.

W. BUTT.

TESTIMONIAL PORTRAIT TO MR. THOMAS CUBITT.

THE portrait of Mr. Thomas Cubitt, painted by Mr. Pickersgill, R.A. for the Builders' Society, and to be presented by them to Mr. Cubitt, as a testimony of their respect and esteem, has been engraved by Mr. G. R. Ward in mezzotint, and each subscriber will receive an impression from the plate. The picture, already mentioned by us, is a full length, and represents Mr. Cubitt standing in an accustomed attitude, the right hand in the vest. Mr. Ward has executed his task very satisfactorily; but the likeness, although still very good, is not quite so striking as it seemed to us in the picture. The society are indebted to Mr. W. Herbert for the care with which, as treasurer, he has carried out their views. Mr. Cubitt has done so much for the improvement of London, he has ever shown so much solicitude for the welfare of the large body of operatives employed by him, and he is so estimable in every relation of life, that there are necessarily many who would gladly possess themselves of his portrait, if it were obtainable; and we therefore venture to suggest to the Builders' Society, that if they were to allow a certain number of impressions to be sold, they would gratify many persons, and raise a fund which might be applied to some useful purpose.

WOOD PAVEMENT.—The necessity of relaying and renewing this pavement might, to a very considerable extent, be obviated if proper precautions were taken in ballasting the foundations. The present mode is to bed the wood on a thick layer of concrete, say six inches thick, laid on the unformed and vegetable earth, than which nothing can be more absurd; with rolling weights it becomes a ruin at once. If the roadway were ballasted with two feet, at the least, of good concrete, and the wood properly laid in frames, I will venture to say that it would wear well, and the public generally would soon appreciate the advantage of absence of noise, jar, and vibration, and ease of traction, which are, or might be, the distinguishing characteristics of wood paving. If the roadway were formed with a proper degree of curvature, and kept properly clean, it would always be dry.—R. L. S.

A MONSTER SAW.—Sheffield is active in contributing articles of its industry for the Crystal Palace. Messrs. Spears and Jackson are having a circular saw made with segment joinings of 5 feet in diameter, to be the centre of well-finished smaller satellites of starry-edged teeth. This will, it is supposed, be the largest circular saw ever manufactured.

THE ORDNANCE AND CIVIL SURVEYORS.

SURVEY OF SWANSEA.

CAN any of your readers inform me who has been the successful competitor for the Survey and Mapping of Swansea, for drainage purposes, advertised in your columns a few weeks ago? As one of the parties who have tendered for it, I certainly expected an intimation ere this, as to the result, through some channel or other, but as yet am totally in the dark. Can it be possible another insult as well as injury has been offered to the civil surveyors of the country, by handing over this borough to the tender mercies of the Ordnance, leaving the former respectable class, who have paid heavy premiums for (as they imagined) a respectable and lucrative profession, either to remain in comparative idleness, or submit to a salary of 3*s.* or 4*s.* a day from the Ordnance, under the superintendence of some Corporal Casey, or some Colour-serjeant Smith. Really, sir, this is too bad, and should not be any longer submitted to. We have passed with patience some disheartening years, for want of employment, and no sooner does the prospect of improvement present itself, than some meddling colonel or some grasping captain, in connection with his corps, steps in, and instantly vanishes all future hope of a contract for the educated expectant civilian. If the Ordnance be so anxious for employment, in God's name let them proceed with the National Survey of England and Scotland, so long in embryo, and leave such towns as Swansea, Coventry, &c., to the men who not only have the best right to it, but are infinitely superior in point of accuracy, style, and every other necessary character and bearing of the work. Witness the numerous glaring, destructive, and mischievous errors in the Ordnance levels discovered by civilians in the Sewers-office, Greck-street, a few days ago, and hushed up by the Commissioners, on account of the Ordnance influence with that assembly. I wait to be enlightened as regards the fate of the Swansea tender; and should it be, as I anticipate, in the hands of the Ordnance, trust that you will, in connection with the entire profession, give your advice and assistance against such an unjust monopoly.

A CIVIL SURVEYOR.

*** We have received three other letters on this subject. One writer states he has received printed notice his tender was not accepted.

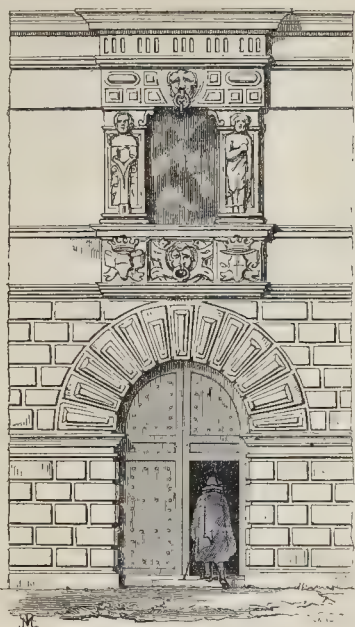
A VISION IN TRAFALGAR SQUARE.

I WOULD offer to your notice a suggestion for the improvement of Trafalgar-square. I would begin with the National Gallery, and if I could not turn all the horse traffic from the front and sides round by Charing-cross, I would simply bring out the front portico of the gallery with a splendid flight of granite steps down to the road, and would curve the road there as required around the steps: I would finish the sides and tear away all the spiked rails. I would then take in hand the sides and front wall of the enclosure, and throw all down to the level of the road above, and begin from that with easy steps again to the base; the whole steps to take the horse-shoe form. For the base I would clear away all the water apparatus and lay down a simple well-paved surface, sloping sufficiently towards the column; and the whole would give a splendid amphitheatre. Then should I be glad to hear an orator-worthy, from the pedestal of the column, deliver an oration on the genius of the hero whose effigy stands on its summit.—PENRHYN ASTON.

PORCELAIN COTTAGES FOR THE POOR.—Could not some ingenious brick or brownware makers adapt the plan of using long slips sliding in grooves to cheap cottage building for the rural poor, by employing lengths of coarse ware, fitting in grooves of timber or iron framing? I do not mean that the walls should be no thicker than a single plate of the ware; but to have an inside and an outside set of plates, with the interstice filled in with clay or any cheap stuff that would hold together.—

W. S. M.

SPANISH ARCHITECTURE.



DOORWAY, VALLADOLID.



CARVED ORNAMENT, TOLEDO.

ILLUSTRATIONS OF SPANISH ARCHITECTURE.

ANNEXED we give two illustrations of Spanish art. The first is the Entrance to a Palace in the town of Valladolid. There are many of these Roman-looking arched doorways in the northern towns of Spain, in Segovia especially. The arch stones are of great length.

The second is a portion of ornament from the interior of the church called "El Transito," Toledo, formerly a synagogue, built in a mixture of the Gothic, Moorish, and Hebrew styles, at the beginning of the fourteenth century.

THE ARCHITECTURAL EXHIBITION.—It is found difficult to obtain a gallery or room for exhibition, in consequence of the great demand for such places this year, in expectation of the coming men. It is to be hoped, however, that this difficulty will be removed. The non-members of the Architectural Association, who have agreed to act upon the committee are, Messrs. Allom, Ashpitel, Billings, Christian, Fergusson, Godwin, Lamb, and Scott.

LIVING IN FLATS.

HAVING had experience, while residing in France, of the comfort, convenience, and economy of living in apartments, or chambers, or a flat, I now take the liberty of addressing you, to inquire why we should not enjoy the same advantages here. What is it that sends the greater part of the London tradesmen through the Bankruptcy Court? The rent of their premises. A tradesman in Regent-street, for instance, is obliged, in taking a shop, to take a large house with it, of which, in case of a dull season, he cannot let the apartments: he, therefore, has a double loss, not only by doing less business, but by having all the unnecessary rent, rates, &c. to pay, from not being able to let that part of the house which abroad he would not have been obliged to take.

Now, had Regent-street been built with one line of handsome shops, with entresols for the tradesman's family if required, and been connected or not with the shop, the streets running parallel with Regent-street built of a class so as to have had the entrance to the upper part of the Regent-street houses in them, and

have had kitchens and all necessary offices on each floor, so that they might have been as distinct from the shops and from each story as separate houses,—both landlords and tenants would have benefited by it.

Now for the advantage of living on a flat. You only require one half the number of servants, there being no running up and down stairs to answer the street-door, the entrance-door being invariably against the kitchen-door, generally having the kitchen-door on one side, and the dining-room on the other, so that the servant can answer the door while not losing sight of her cooking. The economy in fires, an invalid being able also to go from his or her bed-room into the adjoining room, when, had they to go up or down stairs, they would not be able to do so, and a hundred other conveniences I have not time or space to mention.

Now, again, as to Model Lodging-houses, and also as to a suggestion to make a street of them in the new street from the end of Faringdon-street. I say, why not make a line of shops which would repay for the outlay, and over them build your model lodging-houses? Again, as to the improvements in the City, viz. Watling-street. Why not build, as in Paris, houses right through from street to street, the ground and first-floor warehouses, the second-floor apartments for the managing men, the third for superior clerks, fourth inferior ones, fifth for your porters and labourers, with apartments fitted up as in the model lodging-houses: you would then have much less complaint about the integrity of your men, as I am sure there is no greater incentive to vice than uncomfortable dwellings. Were the houses built more in the above style in the City, I am sure they would be much more valuable.

G. C.

* * * This subject has been treated of at some length, our readers will remember, in previous volumes of our journal, but as yet nothing practical has been done. At one time we had the names of more than twenty persons anxious to co-operate in obtaining such dwellings. As a matter of course these would require to be fire-proof.

THE STRENGTH OF THE EXHIBITION BUILDING.

INSTITUTION OF CIVIL ENGINEERS.

On the 21st Jan. this subject was discussed at the Institution of Engineers.

On the one side it was contended, that the present Building was not in accordance with the conditions published by the Royal Commissioners; that from its form the wind would have a most injurious effect on it, and therefore, that instead of testing each girder singly, as had been done, the whole roof should have been subjected to an ordeal. The snags for receiving the ends of the girders were considered as being too weak, and liable to fracture. The foundation of concrete under each column was considered insufficient, and not in accordance with the original design. The columns of such slender dimensions as eight inches diameter, and varying from one inch and an eighth down to half-an-inch in thickness, and each composed of seven parts, must be unstable when carried to such heights as sixty-four feet.

The girders of the galleries, when under the action of the multitudes of persons all in one direction, would acquire an undulating motion, which would fracture them. It had been stated by the Royal Commissioners that a building would be provided, free of rent and fire-proof: the latter condition was certainly not fulfilled, and if the building remained uninsured, each exhibitor would be under the necessity of providing for the safety of his own goods, and thus be subjected to a greater expense than the ordinary rent of a really fire-proof building.

On the other side it was contended, that an examination in detail of all the parts of the structure demonstrated the fallacy of the objections which had been made. Every part had been attentively considered, and had been subjected to careful and minute experiment. The concrete foundation had been tested to the extent of seven tons per square foot with-

out crushing, whilst the greatest weight that could be brought upon each square foot of foundation was only two-and-a-half tons: this was supposing the building to be crowded with visitors, and the roof covered with a depth of two feet of snow. The columns had also been submitted to similar experiments: their thickness varied from half-an-inch to one inch and an eighth, according to the duty they had to perform, and the position they occupied in the building. It had been calculated, that the greatest weight which could possibly be brought upon the strongest column was sixty tons, whilst its breaking weight exceeded 300 tons.

On the 28th the discussion was renewed, and was continued throughout the meeting.

Arguments, based on calculation, were adduced to show, that though the Building was amply sufficient for resisting any vertical pressure to which it might be subjected, it was not so well calculated to resist the horizontal force exerted by the wind, which might be taken as sometimes equalling 25lbs. per square foot. It was said that the Building in Hyde Park was the most extensive example in existence of the "pure rectangular construction," but as it did not possess the strong gable end walls of the Lancashire Cotton Mills, which were also rectangular structures, composed of columns and girders,—the stability of the glass structure must depend entirely on the simple rectangular form, which could only be maintained by the perfect attachment of the girders to the columns. It was contended that the snags by which this was effected were wanting in strength, and the columns not being attached to, or rooted into the ground, might be supposed to admit of lateral motion. The addition of further strong diagonal bracing was therefore recommended, as being necessary to insure that amount of stability requisite in a building intended for the circulation of such multitudes of persons as would attend the Exhibition.

SOCIETY OF MASTER CARPENTERS.

THE METROPOLITAN BUILDINGS BILL.

The usual meeting of the members of the Master Carpenters' Society took place at the Freemasons' Tavern, on Wednesday, the 29th ult., attended by Mr. Nesham, president, Messrs. Higgs, George Bird, Burstall, Norris, Outwaite, Lever, and others. After the preliminary business was concluded, the President informed the Society that, by direction of the members at the previous meeting, he had written to Lord Seymour, and received a reply, saying that his lordship intended to propose an alteration of the Metropolis Buildings Bill in the ensuing session of Parliament. Some of the members expressed their anxiety for a speedy alteration of the present Bill, that some relief may be obtained in the altered size of the rates for small buildings which is contemplated in the new Bill; but the majority were more anxious about the result of the inquiry which they were informed by THE BUILDER was taking place as to the defects in the constitution of the present Court of Registrar and Referees, and they hoped that the strongly expressed objections of the Society and the building interest to the position of the registrar and referees as proposed in the Bill of last session would receive further consideration.

REPEAL OF THE BRICK DUTY AND PREVIOUS CONTRACTS.

I should feel obliged if you will answer me the following question:—A contract having been made for the erection of a building prior to the repeal of the brick duty, and before the building was completed, the duty was taken off: would the person with whom the contract was made (the employer) be entitled to receive the duty which the contractor had been repaid, or any and what portion thereof? A. W.

. The Act will be found in full in our last volume (VIII.) p. 257, but for the information of more correspondents than one, we reprint the clause referring to the point in question:—"And whereas various contracts have been made before the passing of this Act for the sale and purchase or requiring the use of bricks, and such contracts have

been made on the assumption that the duties of excise on bricks payable by law at the time of making such contracts would continue: be it enacted, that the maker or seller of or person using any bricks by or under such contract shall, and he is hereby required, from and after the 26th day of March, 1850, to make an abatement from such contract, equivalent to the duty from which he will be relieved under or by virtue of this Act, in respect of all such bricks which he shall send out and deliver or use under or in pursuance of any such contract as aforesaid after the 27th day of March, 1850 (that is to say), for and in respect of all such bricks, if any, which at the period last aforesaid were in the field, yard, or premises where the same were made and charged with duty, a moiety of the said duty charged thereon, and for and in respect of all such bricks which shall be made at any time after the 27th day of March, a sum equal to the duty of excise which at the time of making such contract was payable on bricks of the like description."

BELFAST EXHIBITION OF MODERN WORKS OF ART.

THE following is a list of the pictures which have been sold, up to this time, at this Exhibition, the opening of which we mentioned a short time ago. "Rienzi in the Forum," Elmore, A.R.A., 150*l.*; "A Brook in Wales," H. J. Boddington, 15*l.* 15*s.*; "A Study," J. Sant, 36*l.* 15*s.*; "Waiting for the Ferry," C. Branwhite, 31*l.* 10*s.*; "Snowdon from the Vale of Dinas, near Bedgert," F. H. Henshaw, 31*l.* 10*s.*; "View of Brathay Bridge, Ambleside," W. J. Blacklock, 24*l.*; "Stormy Weather," H. Hewitt, 10*l.* 10*s.*; "The Entomologist," W. S. Watson, 20*l.*; "A mountain Pass at Abar, near Bangor," A. Vicars, 5*l.* 5*s.*; "Compton Wynealis, the ancient Seat of the Marquis of Northampton, Warwickshire," F. H. Henshaw, 8*l.* 8*s.*; "Scene in the Cloisters of St. Maclou," R. Brandard, 15*l.* 15*s.*; "The Sister's Grave," J. Sant, 52*l.* 10*s.*; "Sunset, near Lanwest," Alfred Vickers, 3*l.* 3*s.*; "St. Peter's," the late J. Atkins, 5*l.* 5*s.*

BATH CITY WATERWORKS.

CONTRACTORS' ACCOUNTS.

THE last number of THE BUILDER contains a statement under this head, to which, as it is calculated to injure me in the opinion of the public, I feel called upon to offer a reply. There are two modes by which false impressions may be given—*suggestio falsa* and *suppressio veri*. The statement in question, of the *ex parte* character of which I have a right to complain, belongs to the latter, containing matters which are not untrue in themselves, but concealing others calculated to give a very different aspect to the business. It states that the award made was 1,132*l.* being a deduction from my claim of 1,833*l.* 6*s.* 4*d.*, but wholly conceals, that the corporation, under the direction of its professional advisers, offered me only 22*l.*, and that the award was upwards of 1,100*l.* in excess of their tender. Does this not show the case was one in which it was difficult to arrive at a right conclusion? The truth is, in the progress of the works alterations in the drawings and specifications took place to such an extent that the completion occupied eighteen instead of six months, as agreed to under the contract. Foreseeing that disputes might arise respecting the value and measurements of works which would be concealed under ground, and that I should have great difficulty (if, indeed, it would be possible) afterwards to prove such; I repeatedly urged the architects to meet me and settle, from time to time, during their progress, the value of the alterations: this in all cases they failed to do, and hence the difficulty and injustice which have resulted to me. After receiving a certificate from the architects of the completion of the works, and finding no disposition on their parts to enter into my accounts, I furnished the corporation with a detailed statement of all works done in excess as well as in diminution of the contract, and I afterwards showed, upon oath, that my total claim was

387*l.* 13*s.* 6*d.* less than the net costs of the works, such loss to me being caused, not by the lowness of my contract (which was founded on good prices, as was admitted), but from the constant alterations made and the indecisive mode in which the works were carried out.

About ten months after my claim was sent in, I received the offer of twenty-two pounds as the balance due to me: a reference became inevitable, although I knew, when I proposed it, that, from the length of time that had elapsed, from the nature of the work done, and from other difficulties in my way, I should not be able to prove all the items (in number nearly 300), and that injustice to some extent must be done me. I have now been for ten years engaged in the prosecution of large works, and this is the first time I have ever had with any architect or engineer the semblance of a disputed account. I must, of course, submit to the pecuniary loss I have, as I conceive most unfairly, been subjected to by the Bath Corporation, but I cannot afford to have my reputation damaged. I trust, therefore, you will give insertion to this explanation.

WM. BAKER.

THE MARBLE ARCH AT CUMBERLAND GATE.

I AM happy to find my suggestion, made some months ago in the highest quarter, has resulted in placing the Arch at the Northern Entrance to Hyde Park, and I think it ought to receive, on completion, the appellation of "The Royal Victoria Arch." It only remains now to surmount it with an equestrian statue of Her Majesty, which would be a national and suitable memorial of our beloved Sovereign, and I hope, ere long, to see this carried into effect.

I hope, Mr. Editor, you will again call public attention to the unfinished state of the Wellington Statue, which requires a balustrade round the top of the pedestal, and which, with a staircase added, would give the great influx of strangers we expect this year an opportunity of inspecting the gigantic work of art, which they are unable now to do from its great altitude: a moderate payment to ascend would prove a source to supply funds in aid of the great Exhibition.

Hoping we shall go on improving until our public edifices show something like good taste,
I am, &c.,
JOHN LAURIE.

Hyde-park Place.

. We cannot participate in the satisfaction felt by our correspondent as to the resting-place of the Marble Arch. The site chosen is not a good one. It is a very bad one, as it seems to us. But resistance is useless: the public are to have no voice in such matters.

With respect to the gates given by Mr. Hope, we are informed that these, together with two new pairs of gates, will form side entrances; so that there will be five carriage approaches, forming an extended line, the Marble Arch being in the centre. An amusing arrangement truly!

THE PAVILION AT BRIGHTON.

THE town of Brighton, as our readers know, purchased the Pavilion from the Government for 53,000*l.* The contract was finally signed on the 9th of September, 1849. The town has, since then, put the building into order to fit it for public entertainments, and on Tuesday, the 21st ult., it was opened with a ball.

The original Marine Pavilion, as it was then called, was commenced about the year 1784, under the superintendence of the late Mr. Holland, architect. It consisted of a circular edifice, standing between two adjoining buildings; that to the south having been the house first hired for the occasional residence of the Prince of Wales, and that to the north a new erection, as well as the centre, which was surrounded by an Ionic colonnade and entablature, supporting statues, and crowned by a dome. After that period the Pavilion progressively underwent an entire change: the former structure gave way to the buildings

which now form the Pavilion, and which were erected at different periods from the designs of the late Mr. Nash, architect. With the exception of the minarets, nearly the whole of the edifice is of brick, stuccoed. Of the taste displayed in it, externally, the less that is said the better. Amongst the principal apartments is the *Chinese Gallery*. This is 162 feet long and 17 feet wide. The banquetting-room is 62 feet by 42 feet, and 45 feet high; the saloon is 55 feet by 30 feet; and the music-room 62 feet by 42 feet, and 41 feet high. The new decorations have been executed by Mr. Vick and Mr. Lambelet; some carved stone chimney-pieces by Mr. John Thomas; and the whole was superintended by Mr. Slight, the town surveyor. The local newspapers give a full description of the various apartments from Parry's "*Coast of Sussex*;" but, as we intend looking at them for ourselves on some early day, we shall not trouble our readers with any quotations. When we were last in Brighton we endeavoured to look in, but the policeman in charge, according to his own statement, "had no discretion," and we had not time then to apply to those in authority.

THE PEEL MONUMENT AT MANCHESTER.

ON Friday, the 24th ult., the committee met to determine on the design to be adopted. There were sixteen statues to choose from, and ultimately the one sent by Mr. W. Calder Marshall, A.R.A., was selected for execution. According to the local papers the committee had considerable difficulty in coming to a decision in consequence of the excellence of the models contributed. Each of the models, in compliance with a resolution of the committee, is surmounted by a statue of the lamented statesman, and most of them represent him in a speaking attitude, with a scroll in his hand. The successful design represents Sir Robert in a Roman robe, and in his right hand is a bill, upon which are inscribed the words, "Criminal law consolidation," in commemoration of the part the late Right Hon. Baronet took in carrying out that measure. At the base of the pedestal upon which the statue is placed are two figures, and various productions emblematic of the extension of commerce, machinery, manufactures, and the fine arts. The whole of the designs were exhibited to the public on the 28th.

RAISING WATER.

ONE of your correspondents, I see, inquires whether a seven or eight horse steam-engine will draw water from a pond about 800 yards distant. If the joints of the suction-pipe be well put together, there is no doubt that the engine will draw the water; but the best way of supplying the engine would be to lead the water from the pond to a small well or reservoir close to the engine, by a pipe laid in the ground below the level of the water in the pond, which, as your correspondent says the ground is nearly level, would be easily done. This would prevent the inconvenience that might probably arise if the engine were to cease working for some time, as in that case, from imperceptible leakage of air through the joints and clacks, the pipe might empty itself of water, and thereby cause loss of time and waste of power in having to be refilled when the engine recommenced working.

J. A. D.

A correspondent points out Carrett's steam-pump as particularly adapted to the case in question. He says:—There is one of these machines at work, which fetches its water a similar distance, and also from a depth varying from 20 feet to 26 feet. This water so fetched is forced into steam boilers at 50 lb. per square inch. It is impossible to fetch water these long distances by common means, without having a pump to work very slowly, to give the column of water in the suction-pipes time to stop and start at each successive stroke, or, on the other hand, have three lesser pumps in neutral connection, producing a constant current along the suction-pipe.

Books.

Tables for Calculating the Cost of Iron and other Substances sold by Weight. By W. L. SIMPSON. London: Simpkin and Marshall. 1851.

THESE Tables, made with special reference to engineering and mechanical works, give the price of each cwt. up to 30, and of each quarter and pound, at all prices per cwt. from 1s. to 5s. at intervals of sixpence. The author states that, to insure accuracy, without which they would of course be useless, the tables have been revised by three persons. They should not be used so much for direct calculation as to form a check on calculations, a great object, when (as engineers frequently are) a person is alone, and unable to procure the necessary assistance in having his calculations checked by others.

The Forty-Five. By Lord MAHON. With Letters of Prince Charles Stuart, from the Stuart Papers, copied by the Author from the original MSS. at Windsor. Murray, Albemarle-street. 1851.

HAVING had our own professional fatigues not a little lightened and allayed by the fresh interest infused by Lord Mahon into a period of our national history itself of no little interest, we think we cannot minister more kindly or effectually to the every-day bothers of our professional readers than by advising them to recruit their energies by a refreshing dip into this little book, which, itself, is ready cut out, to the hand of the busy, from the Author's "*History of England*," being, in fact, the narrative of the insurrection of 1745, extracted from that history, and pruned from all excrescences or historical matters not immediately comprehended in the current course of the narrative.

The Museum of Classical Antiquities. London: J. W. Parker. No. 1. 1851.

THE first part of this new quarterly journal of architecture and the sister branches of classic art, contains papers on the Advantage of the Study of Antiquities; on the Polychromy of Greek Architecture, by M. Hittorff; on one of the Gates of Paestum, by Mr. Donaldson; on the Paintings in the Lesche at Delphi, by Mr. Watkiss Lloyd; on the Application of Polychromy to the Exhibition Building, by Mr. Falkener, &c. &c.

Journal of the Chester Architectural and Archaeological Society.

THIS society have issued the first part of their journal, consisting of papers read at their meetings, and mentioned by us at the time. It is very fully illustrated, and makes an interesting book.

Miscellaneous.

ECCLESIOLOGICAL, LATE CAMBRIDGE CAMDEN SOCIETY.—Meetings of the committee of this society were held on December 16, 1850, and January 13, and were attended by the Rev. Dr. Mill, V.P., Mr. Chambers, Mr. France, Sir John Harington, Rev. T. Helmore, Rev. G. H. Hodson, Mr. A. J. B. Hope, M.P., Mr. Luard, Rev. W. Scott, and Rev. B. Webb. The publication of Part IV. of the new series of the *Instrumenta Ecclesiastica* was announced, and the contents of Part V. agreed upon. The committee was consulted as to the subjects of the embroidery, &c. intended to be prepared for the Great Exhibition, by Messrs. Newton, Jones, and Willis, of Birmingham, from the designs of Mr. Street. Designs for rebuilding Kingweston church, by Mr. Giles,—for a restored parsonage at St. Columb, and a new one at Ruan Lanihorne, both by Mr. White, were examined; and also tracings of some projected improvements at Kirkham. The Rev. E. D. Butts forwarded for inspection coloured sketches of some of the frescoes discovered in Netherbury church, Dorsetshire. They represented the Seven Corporal Works of Mercy, and the Seven Deadly Sins. In the drawing of "*Visiting the Sick*," a physician is shown in a long black robe,

with a hood, lined and edged with (apparently) ermine round his neck. "*Burying the Dead*" is very curious, showing a priest with an attendant, four other figures, and a gravedigger with pickaxe and shovel. "*The Seven Deadly Sins*" are less well designed. Sloth appears to be carrying a large pillow on his shoulder—a very clumsy representation. The costumes are curious and very plainly indicated.

THE OUTSIDE COLOURING OF THE BUILDING IN THE PARK.—We understand that the outside of the building is to be painted blue and white; the wood panelling of the ground story being stained with Ibbotson's oak stain, dark outside and light inside, and varnished.

WATER IN THE EXHIBITION BUILDING.—For the supply of water, the Chelsea Water Works Company are laying a 9-inch main, with a column of 70 feet constantly on it, and a 6-inch pipe running across the building. A 6-inch pipe will run round the whole of the outside of the building, with sixteen branches into the interior, by which, with one length of hose, and without the aid of a fire-engine, they consider they will be able to control the whole area. A special arrangement has been made with the Chelsea Water Works Company for the water to be always on; and the Company have been at the expense of an additional auxiliary engine, for the purpose of insuring a constant supply; whilst in ordinary cases they are bound to supply 300,000 gallons per day.

PAPERHANGINGS IN THE GREAT EXHIBITION.—An important resolution has been come to by the Committee of Class 27, viz., That in allotting space to paperhanging manufacturers and decorators, no direct copies of foreign paperhangings or decorations shall be admitted for exhibition.

INSTITUTION OF MECHANICAL ENGINEERS.—The fourth annual meeting of the members of this Institution was held at Birmingham, on Wednesday week, Mr. J. E. M'Connell in the chair, when the secretary read the council's report, in which the members were congratulated on the satisfactory position of the institution. The number of members for last year was 202, sixteen of whom are honorary members, and three graduates. The formation of a library and museum is talked of. A donation of 100l. by Mr. R. Stephenson was announced, and some books were presented. The chairman intimated that the subscription for erecting a testimonial to the memory of their late president, Mr. George Stephenson, now amounted to 2,020l. He had good reason to hope that before long that sum would be doubled. Papers were then read,—by Mr. W. A. Adams, "*On the Improvement of the Construction of Railway Carrying Stock*;" by Mr. W. Parkinson, "*On a Water Meter*;" by Mr. R. Peacock, "*On the Workshops for the Locomotive Carriage and Locomotive Departments of the Manchester, Sheffield, and Lincolnshire Railways*;" by Mr. F. Bramwell, "*On a Vacuum Gauge for Condensing Engines*;" and by Mr. Barrans, "*On an Improved Axle-Box for Carriages and Engines*."

"CASTING PAINTED GLASS."—With reference to a letter from Mr. Deacon on the subject of stained glass, in a recent number, we are called upon by Mr. Pettitt to state that a wrong idea is given of his patent, and that he does not contemplate "casting painted glass on sand," as therein described.

FIRE AT NEW PARLIAMENT HOUSES.—Considerable alarm was excited on Monday last, by the breaking out of a fire amongst some timber in the Clock Tower of the New Palace; but, although it burnt pretty fiercely for a time, the damage, owing to the nature of the construction, will not exceed 100l. in all. The only injury to the building consisted of the cracking of a few stones. At first incendiarianism was suspected, but the circumstance afterwards appeared to have been merely accidental—either from the overheating of a jointed pipe flue in the tower, or from an infringement of the regulation against smoking in the building. It is to be hoped, at all events, that a flue capable of even being suspected of such a trick will not be allowed to continue as it is, or where it is.

FALL OF TWO FLOORS IN A MANCHESTER WAREHOUSE.—On Monday in last week, an accident, fortunately not attended with very serious results, occurred in the warehouse of Messrs. Ormrod and Hardcastle, cotton spinners and manufacturers, at the corner of Pall-mall and Newmarket-lane. The warehouse in question is a building of five stories, including cellar. Workmen of Mr. T. Dale, joiner and builder, had been raising the floors. Five new beams of Dantzic pine, each 24 feet long, and 15 inches by 9 inches in thickness, were placed under the flooring of the top room, which is about 80 feet long. All the goods in the warehouse, consisting of calicoes, were piled in that room, during Saturday and Monday morning, so as to leave the other rooms free for the workmen. During the Monday, a number of joiners were working in the highest story but one, putting in new beams for the intended new flooring of that room. Three window-frames had been taken out, for the purpose of the arches of the windows being raised. While these and other men were at work in the different floors, a sudden and very loud crash was heard, the new beam under the end of the top room next to Newmarket-lane snapped in two, and simultaneously the flooring resting upon the beam gave way, and it and the pieces of goods piled upon it fell into the next room below. The flooring at the same end of the latter room gave way beneath the shock and the weight of the rubbish and goods falling upon it, and all fell into the next room below, where their further downward progress was stayed. One end of the broken beam, which rested in the brickwork between two of the windows in process of alteration, on the breaking of the beam, forced out part of the wall. A large number of bricks fell. Strange to say, scarcely any of the workmen or porters were injured. A heavy stone from the string-course fell into the carriage-way, and made a deep indentation in the pavement. A few bricks fell into the street, but did no mischief, owing probably to their falling within a board enclosing the footpath before the warehouse. The accident seems to have resulted from the weight of goods placed in the top room having been too great for the beam to bear. It was intended, it is said, to put a pillar under the centre of each beam. The workmen had previously cautioned the porters against overloading the floor of the fifth story; and, after the accident, are stated to have declined to continue their work till that floor had been lightened.

THE METROPOLITAN MOVEMENT FOR ABOLITION OF THE LIGHT TAX not only continues, but has grown into "monster meetings." One of this sort was held in St. Pancras on the 27th ult. Large deputations were present from all the other metropolitan parishes. The Vestry-hall, at King's-road, Camden-town, in which the meeting was held, and which is calculated to hold at least 2,000 persons, was densely crowded. The chairman, Mr. Churchwarden Fraser, stated that the reason why St. Pancras, second to none in the metropolis, had not previously convened a public meeting was, that it was felt advisable to wait until the verge of the opening of Parliament, when the subject was being agitated all over the kingdom. As a medical man, he was opposed to the continuance of the tax, upon social and sanitary grounds. Darkness and dirt, ignorance, sickness, and crime certainly went hand in hand, and nothing so contributed to this and to the physical depression of the poorer portion of the people as the window-tax. If he wished to show the oppressive character of the window duties, he need only refer to the report of the Metropolitan Association for Improving the Dwellings of the Industrious classes, in which it is stated that "Sets of rooms in the inns of court, or the Albany, in Piccadilly, having as many windows, and being parts of larger houses, would pay only to the extent of 1½d. per week out of a rental of from 80l. to 100l. per annum, while the tenants of the Metropolitan buildings pay 7½d. per week out of a rental of from 13l. to 16l. per annum." After entering his protest against any attempt to introduce a house-tax in lieu of a window-tax, it was resolved by

acclamation, "That light and air being necessary to existence, and the free gift of God to man, it is the opinion of this meeting that to tax these essentials is in opposition to every principle of morality; that, in the language of our forefathers, it is a badge of slavery, and a reproach to a people boasting of their freedom. That this meeting, therefore, calls upon the Commons House of Parliament to abolish forever, without any substitute or modification, the impious, odious, and tyrannical tax on windows, and that a petition be presented to Parliament to this effect."—A meeting of the inhabitants of the united parishes of St. Andrew-above-Bars, and St. George-the-Martyr, was also held on the same evening, in the hall of the workhouse, Gray's-inn-lane, for the same purpose, and with the like results. On the Wednesday previous a meeting of the parishes of St. Giles-in-the-Fields and St. George, Bloomsbury, passed similar resolutions.

ACTINISM.—A fair correspondent, in the fairest of handwriting (which, having been sent to a profound professor of calligraphy, at the expense of thirteen postage stamps, is pronounced to show all that is nice), writes thus:—"In the *Household Words*, with reference to the building for the Exhibition, I find the word 'actinism.' Dictionaries have been vainly searched for a definition, and wiser heads than mine confess themselves puzzled. Will you be so kind as to enlighten us?" The word is of too recent coinage to be found in the dictionaries. The solar ray consists of three distinct though associated principles, namely, light, heat, and another agent, which has been recently named the actinic principle. It is this agent that is supposed to operate more especially in the promotion of vegetative processes, which the light itself, in certain stages, retards and injures, while the actinic ray promotes them. Previous to the demonstration and denomination of actinism, it was called the chemical ray, and was supposed to have some peculiar relation to electricity. Indeed, it has been stated, in *THE BUILDER*, that the actinic principle would perhaps be ultimately found to be *antithetical* to the electric. In this idea we have since been supported by experiments of some chemists, showing that the positive electric force had manifested phenomena analogous to cold, while the negative had equally exhibited effects such as those of heat, that is, in peculiar circumstances, in which each was likely to manifest its own peculiar mode of operation, without mixture with its opposite. Now the solar rays are altogether radiant, as heat is, and although, doubtless, the luminous and actinic principles are not mere heat any more than heat is light or actinism, still they are so closely analogous, that some men of science have insisted that the three principles are merely different phenomena of one agent. We hope our correspondent has now some idea of "Actinism."

SAFETY-VALVES.—With reference to the continual recurrence of steam-boiler explosions, Dr. Murray, of Hull, suggests that the action of safety-valves might be improved if the waste or surplus steam, previous to its issue, were made to pass through a pipe traversing the hot-water in the boilers. The sudden emission of steam at a high temperature, he thinks, may have something to do with the explosion of boilers, and the gagging of the valve be dependant on the same cause. The necessity of two safety-valves to every steam-boiler is advocated.

CO-OPERATIVE LABOUR EXPERIMENTS.—As incidents peculiar to the age in which we live, we cannot but regard with interest the attempts made from below to find a more satisfactory solution of the labour question. It is a new and impressive thing to find the artisan mind of the country deeply involved in the abstract logic, as well as in the practical logic, of such a question. Certain we are, that this great question is as yet unsolved; and we are hopeful enough to believe that some contribution towards its better understanding may be drawn from the cogitations and the experience of the workers themselves. From the report of a meeting of operatives in Manchester we learn some curious facts in illustration of the progress of

a doctrine often stated in our columns—to the effect, that the next great social experiment will be one of association. Three hundred men on the strike have taken a mill. We believe these few words will startle some ears like a report of barricades. Such a circumstance may or may not help to revolutionise industry; but it speaks of sobriety, union, character, and forecasting habits in the men. A factory is a costly affair. A vast change must have come over the factory population ere a man possessing mill-property could dream of letting it out to strikers. Much as we have seen and heard of the progress of Manchester during the last dozen years, we remember no fact so powerfully significant of advance as this attempt—however more or less wise or hopeful—at co-operative labour.—*Athenaeum*.

A "LOST FRIENDS DEPARTMENT" AT THE GREAT EXHIBITION.—Considering the great number of persons from the provinces, totally unacquainted with London, that will visit the Great Exhibition; considering that a great proportion will be accompanied by relatives or intimate friends; considering that many of these will be young persons not quite capable of taking care of themselves; considering the frequent liability of parties to get parted in the throng of sightseers by momentary lingerings at attractive objects; considering that the pleasures of the day would, in most such cases, be disagreeably interfered with; considering the advantage found to accrue from the "Lost Luggage Department" of railways;—would not a "Lost Friends Department" be a desideratum at the Great Exhibition, e.g. a conveniently situated space, slightly elevated and railed off, so as to present the "lost ones" in a well-defined row or two, "until called for?"

W. S. M.

THE IRON TRADE.—In the Newcastle district a rise of 5s. in bar and bolt iron has, it is said, been formally resolved on, at a meeting of the district masters. The great rulers of the English trade, as they hold themselves to be, resolved just the other day that no rise should at present be attempted. What will those who regard all but the highest priced masters as "small and needy" say to this? The Newcastle masters must be very great men indeed, and the ruling powers of past times small by comparison, and needy too!—A very influential meeting of the Scottish iron trade was held at Glasgow recently, in order to consider how the prejudice in England against Scottish iron could be removed. A committee was appointed to report. Thus the recent efforts in the English trade to put down the Scotch appear to be only stirring Sawney's iron "dander" up into a reactionary glow of ire, and we may anticipate a new invasion by the Scots, with iron bars in place of broad swords, and on pigs in place of horses.—The Welsh are also still heating their furnaces for hot work of some sort or other. The Downais Iron Works are getting on, according to the *Swansea Herald*, "in a most spirited manner, and are making, on an average, from 1,300 to 1,400 tons of marketable bar-iron per week."

OUR NATIONAL GALLERY.—In a city containing nearly 400,000 houses, the Government of this country can find four rooms only which they can devote exclusively to the keeping and exhibition of the nation's gallery of pictures. The small city of Dresden has long found room for the fair exhibition of 2,000 pictures, and yet is preparing a new gallery expressly designed for the purpose; and the people of another small German city, Munich, have actually four great galleries within a few hundred yards of their doors,—the Pinacothek, the Glyptothek, the new gallery for modern pictures, and the gallery of the Hofgarden; not to mention the great gallery of Schleissheim, a few miles from the capital, besides the Palace, and twenty other art-exhibitions in churches, and other buildings, always open to the public.—*R. Wornum, in Art-Journal*.

PORTLAND BREAKWATER.—The daily papers state that its present length is about 1,040 feet—12 feet above high-water-mark. It stands the present gale well, and two points of the compass are already sheltered in Portland-roads with smooth water.

ADVERTISEMENTS.

MASTERS and WORKMEN. A Tale,
illustrative of the Moral and Social Condition of the
People.
By Lord B——.
“Ay, verily, it will be a comely sight in England, when men
shall go on as in a better world, bearing with each other's infirmi-
ties, and joining in each other's comforts.” — *Sir Walter Scott.*

The Builder.

No. CCCCVIII.

SATURDAY, FEBRUARY 8, 1851.

REVIOUS volumes of our journal contain accounts and notices of the Model Baths and Washhouses for the Labouring Classes, erected in Goulston-square, Whitechapel. In the fourth volume especially (p. 471) there is a description of the building; also a reply by a member of the Committee (p. 496) to some comments on the slowness of the proceedings, which we then felt it our duty to make; and in the fifth volume (p. 249) there are some further particulars. In our present number we give a plan of the establishment, a section, and some of the constructive details,* and we shall avail ourselves of the opportunity to place before our readers a variety of statistical particulars, and to strengthen the appeal that the committee are making to the public for some further assistance to enable them to complete their work.

The establishment of baths and washhouses is a matter of the utmost importance. The purification of the body is a great step towards the purification of the mind.

When it was first proposed to provide the working classes with a warm bath and a clean towel for 2d., few expected that so important an experiment would succeed; but notwithstanding many difficulties, the success of the bathing establishments has been complete: they are at length self-supporting, and the number of persons using them increases steadily every month they are open.

The cost of cleanliness can now no longer be pleaded as an excuse for dirt; and no one who reflects upon the wonderful and delicate mechanism of the skin, and its susceptibility to disease, can doubt that the 500,000 baths which have been taken in the past twelve months at the Baths in Whitechapel, in St. Martin's, and in St. Marylebone,—or that the 1,000,000 which have been taken in London in the three years since the first was opened, have very much contributed to the health and comfort of those who use them, to say nothing of the social improvement and moral elevation induced.

The Parent Committee for Promoting the Establishment of Baths and Washhouses for the Labouring Classes was appointed at a public meeting, held at the Mansion-house, on October 16th, 1844: the Rev. Sir Henry R. Dukefield, Bart., was chairman of the committee; Mr. William Hawes chairman of the committee of works; and Mr. James Parish and Mr. John Bullar were the honorary secretaries. The committee was established to promote the health, cleanliness, comfort, and improvement of the industrious classes, and its duties were twofold,—firstly, to promote the establishment, as generally as possible, of public baths and washhouses; and, secondly, to erect and open for use, in London, a plan establishment of baths and washhouses, the plans and construction of which should be so carried out as to render it serviceable, not only for the industrious classes in the neighbour-

hood, but also for imitation *universally* as a model establishment.

The benefits to be expected are those which result from the improvement of the condition of the labouring classes. In all crowded cities and towns the labouring classes are exposed to much evil, from being compelled to endure, and so being gradually habituated to, an amount of personal and domestic dirt, which tends to moral degradation as well as to the loss of health. The main object of these establishments is to enable the labouring classes to escape from that evil, by bringing within their reach those means of cleanliness which they could not otherwise enjoy. Let us see what the committee have already done.

Their proceedings have led to the establishment of seven institutions besides the Model Establishment, namely,—one in George-street, Euston-square; one in the parish of St. Martin-in-the-Fields; one in Marylebone; one in Westminster; one in the parish of St. James, Piccadilly; one at Greenwich; and one at Poplar: also to the establishment of similar institutions in Manchester, Birmingham, Bristol, Norwich, Hull, Preston, Oxford, Wolverhampton, Macclesfield, Nottingham, Bolton, Worcester, York, Exeter, Hereford, Chester, Plymouth, Sunderland, Newcastle, Carlisle, Coventry, Belfast, Waterford, and other places. The number of bathers at the four establishments in London already exceeds 1,155,000; and the number of women who have washed and dried the clothes of themselves and families, amounts to no less than 215,000. The fact has been established that warm and cold baths, and the means of washing and drying linen, can be profitably provided for the working classes, at prices so low, and with conveniences so great, as to place these necessary means of health within the reach of all but absolute paupers. The committee have circulated in all parts of the kingdom the results of their experience. They actively promoted the passing of the Act of Parliament (drawn gratuitously by a member of the committee) to enable boroughs and parishes to erect public baths and wash-houses. They have provided plans and information to promote the erection of similar establishments in foreign countries, and have reason to believe that, through their exertions, the city of London now enjoys the credit, not only throughout almost the whole of Europe as well as the United States and other parts of America, but also in other parts of the globe, of having taken an effective lead in promoting the general establishment of these important institutions.*

So much then having been effected by the committee—by the aid of their supporters—they may justly look for some further help, not to defray the current expenses of the establishment, for it is now self-supporting, but to enable them to bring it to that state of completion which is required to meet the wants of the very poor neighbourhood in which it is placed.

All that they require to increase the number of tubs from 44 to 88, is 700*l.* With this sum,

* As an evidence of the success abroad of the exertions of the committee, it may perhaps be sufficient to state that, in consequence of a report made to the French Government by a commission appointed in November 1849, after an examination of the model and other establishments in England, a grant by the authorities is about to be made of twelve sites for public baths and wash-houses in Paris, with a gratuitous supply of water to each.

this large establishment, with 88 double wash-tubs, ironing-boards, drying chambers, and 98 first and second class men's and women's baths—the first projected in London—that upon which the construction and arrangement of all others, of any importance, have been based—will be complete; and whereas, in ten months of the past year, nearly 75,000 persons have been supplied with clean linen, and in twelve months, nearly 140,000 people have been bathed, there can be no doubt that in the next twelve months nearly 200,000 will be supplied with warm baths and towels at an average cost of 3d. each; and, supposing the washhouse completed, as proposed, that 400,000 men, women, and children, or 80,000 families, will owe to its conveniences and cheapness, clean and pure linen, at an average cost of one half-penny per week for each person—a cheapness obtained without recourse to public assistance by annual subscriptions. This sum is now only required to finish the works, built in about equal proportions, with capital borrowed at interest on mortgage and upon personal security, and by voluntary subscriptions.

The total outlay, up to this time, has been 30,023*l.* The building, machinery, steam-engine, boilers, tanks, baths, wash-tubs, drying apparatus, gas and water fittings, &c., cost 19,786*l.* 6s. 3d. The engineer's commission on works executed, clerk of works, surveyor's charges, and fees to official referees, &c., 1,474*l.* 17s. 3d. The furniture, towels, bath fittings, tools, and utensils, cost 650*l.* 10s. The experimental works incidental to the erection of the first establishment of baths and washhouses on a large scale, for ventilating apparatus, drying apparatus, mode of supplying water to the baths, &c., necessary to attain the most economical arrangement and the minimum annual cost for working expenses, are estimated at 1,500*l.* The expenditure has been much greater than was expected, and (as we cannot help thinking) greater than it ought to have been. The committee themselves admit it; but they plead that they have been working for the general question, and that money will be saved, not only here, but in foreign countries, by means of their expenditure. Even were it not so, however, the fact that a large part of the money raised has been provided by members of the committee themselves would suffice to stop further comment on this head.

There must be no such expenditure in other places, nor is it likely that there will be: some of the other establishments, erected with the benefit of the committee's experience, are now paying 7½ and even 10 per cent.

An establishment may be erected at a cost of from 2,000*l.* up to 8,000*l.* With reference to the smaller sum, it can either be expended in a building complete in itself, or in a portion of one, to give afterwards double or treble accommodation. If, in all probability, the town will not eventually require a larger building than could be constructed for 2,000*l.*, it would be well to expend the money in a complete building in the first instance; but if, on the contrary, increase is to be looked for, then part of a building should be erected, to be added to as the habits of bathing and washing become developed, bearing in mind that the machinery, in the first instance, be suited for the building when increased to its full extent.

It is not so much the first cost which is to be looked at as the after expenses, consequent upon the building not being erected in a sub-

* See pp. 89 and 90.

stantial and proper manner. The peculiar traffic and the requirements of an establishment of this description render it essential that it should be constructed in the best manner; and the economical working and success of the institution depend greatly upon the adaptation of suitable machinery and fitting.

The contract for the establishment to be erected in the parish of St. Margaret, and St. John, Westminster, which will contain 64 first and second class baths, 60 washing compartments, 60 separate houses in drying chambers, 16 ironing compartments, 2 large plunge baths (first and second class), boiler-room and engineer's workshop, and dwelling-rooms for the superintendent and matron—is (with machinery) for the sum of 7,500*l.* To this must be added 1,500*l.* for fittings, furniture, towels, &c., required before the baths can be opened to the public—making together a sum of 9,000*l.*, exclusive of the cost of the ground,* the value of which is so dependent on the locality, that it is excluded from the calculation: it may, however, be safely estimated on an average as forming a charge of 1,500*l.*, making the total cost of such an establishment 10,500*l.*

The committee have published some "Suggestions for Building and Fitting up Parochial Establishments," which parties who desire to avail themselves of the Act 9 & 10 Vict. c. 74, "to Encourage the Establishment of Public Baths and Washhouses,"† should obtain. The committee point out that the site chosen for the building should be in a good thoroughfare, having entrances from two streets if possible.

The building ought not, at first, to be too large, but, as we have said, should be so arranged as to be capable of enlargement. For a district containing a population of 80,000 or 100,000 persons, it will be more advantageous to provide two establishments. If a sufficiently large site can be obtained, it is desirable to construct the baths and washhouses with the waiting-rooms upon the ground-floor. The building, with its machinery and fittings, should be constructed with the best materials and workmanship—plain, but strong—suited to the class it is intended to accommodate, and with a due regard to ventilation, light, and order.

They consider it would be false economy to make a saving in the expense of construction at the risk of requiring a single additional attendant; and that it is true economy to spend 300*l.* at the outset, to save the services of a single bath-attendant.

Too much importance can hardly be attached to obtaining the best valve, or cock, for the supply of the water to, and its withdrawal from, the baths. In the summer, when it is difficult to accommodate the bathers, one minute saved in filling, and one in emptying a bath, will, upon 1,000 baths, be equal to an addition of four baths, for eight hours each, to the establishment, producing, when fully employed, 16*s.* per diem.

The cost of fuel depends greatly on the perfection of the apparatus. That cost, at one of the earliest establishments, with coals at 12*s.*

* The ground at Goulston-square cost 1,200*l.*, with a ground-rent of 30*l.* per annum, for 99 years; at St. Martin's, a rent of 82*l.* per annum is paid to the Commissioners of Woods and Forests; at Hall St. has cost 1,200*l.*; at Bristol, the ground has been given by the Corporation; and at Westminster, including a house for the superintendent, it will cost 3,500*l.*

† Copies of this Act and the subsequent Act, 10 & 11 Vict. c. 61, may be obtained at the Committee Room, 6, Exeter Hall.

per ton, has been about 7*s.* per 1,000 warm baths; while at the Model Establishment, with small coals at 10*s.* per ton, it has been about 14*s.* per 1,000 warm baths.

The following comparative statement will serve to show the development of the practice of bathing, and the extent to which the people avail themselves of the provision of the means of that essential condition, cleanliness of person, which is afforded to them. The receipts prove that the price paid for the baths (warm baths, first-class, 6*d.*; second-class, 2*d.*: cold baths, first-class, 3*d.*; second-class, 1*d.*), small as it is, covers all expenses incidental to their maintenance, and will eventually prove a source of considerable income.

The Bath Department consists of ninety-four first and second class baths: and here we see the attendances and payments during three years:—

Quarter ending	First Year, 1848.			Second Year, 1849.			Third Year, 1850.		
	Number of Bathers	Re. ceip. of	Re. ceip. of	Number of Bathers	Re. ceip. of	Re. ceip. of	Number of Bathers	Re. ceip. of	Re. ceip. of
March	5,769	70 12 8	11 6 8	10,166	161 16 0	17 6 0	248 1 4	248 1 4	248 1 4
June	13,000	178 10 3	34 2 7	835	8 6 4	678	678 8 8	678 8 8	678 8 8
September	13,848	22 11 4	47 7 1	610	0 0	49 5 1	537 0 0	537 0 0	537 0 0
December	9,084	100 11 4	14 1 3	1,415	19 14 3	21 6 9	283 13 0	283 13 0	283 13 0
Total	44,687	889	9 8 10	124,110	137 19 9	1889	3 7	3 7	3 7

* Two-thirds of these were second class.

Of the bathers, there were in 1849, 4,695 women, and in 1850, 10,589.

In the washhouse and drying department there are forty-two washing compartments in work. On the 1st January, 1850, the present tariff of charges, 1*d.* for each of the first two hours, and 1*d.* for each half-hour afterwards, was adopted. At first, so strong was the prejudice against "washing in public," as it was called, that few women (when the dense population of Whitechapel is considered) availed themselves of the accommodations provided. The advantages to be derived are, however, gradually becoming better known and appreciated by the working classes; and the rate of progress is now satisfactory, as the following table will show:—

1850. Quarter ending	Number of Washers.	Number of Hours Washing.	Receipts.
June	2,340	5,730	32 16 3
September	3,910	8,018	41 18 3
December	7,988	17,379	97 14 4

The average time occupied by each woman has been two hours and a half, at a cost of 3*d.*, exclusive of time and soap. The temperature of the drying chamber in which the clothes are placed to dry is above 220 degrees.*

The engraved illustrations which we give will explain themselves. The plunge bath joins on to the main building at A A; but we were unable to draw it on the same page without adopting a smaller scale for the whole, which we thought undesirable.

* See THE BUILDER, December 7th, 1850, for the details, and the time occupied in drying. A. The mode of constructing drying-closets has been fully discussed in our pages.

Without repeating the description of the building already given, we may briefly mention that the main area covered is 130 feet long by 81 feet wide. Beneath the baths on the north side is a large reservoir, the walls of which are tied together by iron rods, and rendered with seycel asphalt. The roof is of iron, framed in divisions. The floor is of slate. Each bath is surrounded by slate partitions of a sufficient height, and covered in at the top with galvanised gauze. Turning the same handle to points marked on a plate supplies hot water, or cold water, or empties the bath, by means of a "three-way" cock. The baths are sunk in the ground, and are made of cast-iron.

Mr. P. P. Baly was, as our readers know, the architect, and Messrs. Piper were the contractors.

We objected strongly, when the building was completed, to the ugly shell in which the committee have encased their valuable kernel, and we have reason to believe that our remarks were not without effect on the exterior appearance of the other establishments which have followed.

We will only say, further, that the institution is always open for the inspection of visitors; and that the accounts, the cost of the building, the receipts, and the expenditure, may be seen by an application to the active and intelligent assistant secretary, Mr. Woolcott, at the committee room, in Exeter Hall, Strand.

There can be no doubt that public baths and laundries will produce important benefits to all classes, and we hope to see them springing up in all our towns, properly built and efficiently managed.

PROFESSOR COCKERELL'S THIRD LECTURE ON ARCHITECTURE.

IN pursuance of the proposal, in a preceding lecture, to give a short analysis of the writings left us by the great masters of antiquity, who ought to be worshipped as the fathers of the noble art of architecture, reference was made by the Professor to the writings of Vitruvius, Serlio, and De Lorme, which formed the subject of the last lecture. In continuation of the latter able author, it would be found that he had especially treated of roofs on the circular principle, with cross joints: the cross joining of short pieces was elucidated by diagrams exhibited. These were on the same principle as the transept roof of the building in Hyde-park for the Great Exhibition, and this experiment had now to be tested by experience, the span of it being 72 feet, being within 4 feet the same as the span of Westminster Hall. Alberti says, "The great writers are too little studied, because we run after the whims of the moderns." Balthasar Peruzzi had proved that he was not only an excellent painter, but that he was great in perspective—he also was worthy of study. We were apt to neglect those great men, as old fashioned, whose works were called obsolete, mostly because we had no good translations of their writings. In the midst of practice we should not forget that this is a learned art, and must be guided by the great masters. The mission of an architect was to direct the builder, and he should be superior to him in all theory. Socrates says, "If you mean to be an architect, you want many books." Yet not one in ten of the present practitioners ever read the works of the great masters who had preceded them. In the 11th chapter of the 3rd book of Philibert de Lorme, the precise mode of making concrete was given in detail; yet, in ignorance of this, concrete was boasted as a modern invention. Ware, who published a valuable book, had certainly never read De Lorme, as he says nothing about concrete. On the contrary, when William the Dutchman came to England, the fashion of laying founda-

tions on wooden planks came with him, and was followed for a considerable time. When Palladio appeared, everything in Italy was encouraging. He was sought for and patronised by the great merchant princes, and the most dignified ecclesiastics. Palaces and villas were building in all directions, and of his works it may be said Palladian art combines all that is magnificent in the proportions. At the age of thirty he established himself at Vicenza, where, in competition with such men as Julio Romano and others, he triumphed by the erection of the famous theatre in that city. At the age of ages, when he says he was looking forward to a more glorious world, he published those models we find in his admirable work. His four precious books are useful to all generations. He designed a restoration of the Forum (of which a drawing was exhibited) with the Temple of Nerva at the extremity. This temple was then existing, but has since been destroyed. Its Greek portico he united to the other lateral erections by arches, which may be objected to for not being trabecate; but it had lately been adopted at the New Exchange, in Glasgow, and was said to have a very beautiful effect. The use of the arch was indispensable in building: its union with the Greek orders was achieved by the Roman architects, and carried to the highest perfection for modern purposes by Palladio. His writings might be called the Holy Writ of architecture. Like Herodotus and Sir Christopher Wren, he asserts and reasons upon every point, but may be said, nevertheless, to be often throwing pearls to swine. He treats of the orders of arches: the orders of arches will be dilated on in a succeeding lecture, as a subject deserving intense consideration, although the very term of it was scarcely received. Chapters 21, 22, 23, and 24, treated of the proportions of rooms, a subject hitherto quite overlooked among us, but now of great importance; for, with the better feeling of the age, we were not forced to build hutches such as suited our ancestors. Staircases were also treated in this book. In the second book, houses and villas form the contents; for the epoch of Palladio was not a church-building age: the merchant princes of Italy loved to build palaces worthy of their taste and fortunes. Forty-five examples of them are in this book. The third book treated of roads and bridges. The fourth book contained ninety-nine plates, illustrative of the temples of Rome; fifteen of these in the city, the greater number of which have been since destroyed, and eleven temples out of Rome. There have been three English editions of Palladio: one is by Leoni, who built Anglesey House, in Burlington-gardens. This mansion had the remarkable features of the façade being constructed with nine pilasters—an odd number not admitted in the orthodox rules, and probably never noticed by the greater number of living architects, although it had a very excellent effect. The most splendid edition, however, was the one published by B. Scamozzi, which was well worthy of the subject. So much for Palladio, that great and illustrious man.

Vignola is the next writer to be commented on. He was much encouraged by Francis I. of France, who knew how to congregate all men of talent about him. Vignola's book treats only of the five orders, and is practically useful, although his entablatures are much too heavy. He first gave the true rules for forming the entasis of columns, and was certainly a man of extraordinary merit. His name has been used for an abundance of small works treating of the first principles of Greek and Roman architecture. Scamozzi, who followed, had great merit, but not comparable at all in the Palladian style. His book is called "Universal Architecture of all known Scenes in the World!" From his exceeding boasting, Inigo Jones refers to him as Signor Bragadocio. In his will he imagines the universal affliction his death would cause, but consoles himself that his works will preserve his name to all eternity, and gives directions for a monument to be erected to the memory of "such a man as he."

No one approached Palladio like Inigo Jones. His design for the palace of Whitehall is be-

yond all praise. The only part we possess, the Banqueting House, is universally admired by architects of all countries. He left only MS. notes, which are preserved in Oxford, on Palladio, and on Stonehenge. The first are valuable to the student: those on Stonehenge display the vanity of Jones, and paint him a bit of a coxcomb: herein he exhibits a sad ignorance of history and antiquity. As Jones had the arrangement of the masques and similar entertainments at the court of James I. he had an excellent opportunity of indulging his fancy in the architectural scenic decorations. Dramatic scenery affords great play for the imagination and for study. Servandoni, who built St. Sulpice, at Paris, was a scene-painter. Next in rotation is F. Blondel, a very accomplished architect, whose fame as an original genius is fully established by the truly beautiful Porte St. Denis and Porte St. Martin at Paris. His book on architecture is divided into five parts: there is an ungracious absence of his great contemporaries in his work, as he never names either Sir C. Wren, who had then greatly advanced with St. Paul's, or his own talented countryman, Perrault. The first book treats of the orders, as received by the great masters, and in true ancient monuments. The second book treats of the parts, and especially of the composite. The third is occupied with the peristyle and intercolumniations. The fourth treats of openings, such as doors, windows, arcades, and arches, especially the two remarkable ones erected by him, before named, in which there is an originality never attained in classical times. The fifth book contains optics and perspective. These five books are remarkable, as no similarly elaborate work had before been composed. Sir William Chambers wrote an elegant work: the student is always safe in the hands of Chambers, whatever be the fashion of the times. In the Professor's early days, architects were devout Greeks: now Romish Catholic art is the fashion for a term of time only. It is not by fashion, but by great monuments that an epoch is typified. Adams followed Chambers, but they emasculated art and made it feminine. Athenian Stuart and Walpole opened new veins: the remains of art in Greece were worthy of adoration, but they were fitted to the climate and position. The Parthenon or the Acropolis had a majestic base, which would have made it ridiculous if built in a swamp. The glorious Doric was at Athens on a fitting site. It were equally ridiculous to adapt the Gothic of churches to hotels, bazaars, and similar buildings. Gothic was now in the ascendant, but the rage for mimicking it would soon pass away. Youth follows blindly, but at mature age we criticise and reflect. The problem we have to solve is by the cultivation of the mind, which is the certain index of an artist's capacity to emancipate himself from routine and to become a distinguished ornament of his profession.

In conclusion: of the high importance of the architect, he would mention that of Blondel, quoting Holy Writ, where he said "*pour comble de malheur*," the loss of the architects was expressly bewailed. The passage is in Isaiah iii. 3.

TESTIMONIAL TO DR. CONOLLY.—Some of our readers will be glad to learn that the promised subscriptions now amount to more than 600*l*. The committee have decided to have Dr. Conolly's portrait painted by Sir John Watson Gordon, for which purpose Dr. C. proceeds forthwith to Edinburgh. They have further determined to limit the outlay on the painting and engraving to 400*l*. in order to have a residue sufficient to obtain a handsome piece of plate, with an inscription. The list is still open, and Dr. Forbes, of Old Burlington-street, will gladly receive fresh subscriptions. Never was a testimonial more truly deserved.

WINDOW FOR ST. LUKE'S, CHELSEA.—Some of the inhabitants of St. Luke's, Chelsea, having long been desirous of seeing a stained glass window at the east end of the parish church, a subscription has been commenced for that purpose, and Mr. Gibbs has furnished a design.

ARCHITECTURE AND THE EXHIBITION

THE clever author of the "Historical Inquiry into the Principles of Beauty in Art," has, it seems to me, misrepresented, in his letter to you last week, both Mr. Barry and the art he professes.

Mr. Barry (in common with other architects), it is said or implied, "*could not*" furnish what was wanted for the Hyde-park Exhibition,—because, being an architect, his rule (like other architects) was "*to copy*."

Will the author of this discovery be kind enough to show us in what respect Mr. Barry (and modern architects in general) have copied more than Mr. Paxton? or more than the ancient and mediæval artists who (this author tells us) followed the same principles and nothing more? Will he show us how or wherein Ictinus (for instance) copied less from the Doric of others,—or William of Wykeham less from the Gothic of others,—or Mr. Paxton less from the greenhouses, the columns, the girders of others;—than Mr. Barry from the architecture of others? If Mr. Fergusson will only do this, will only descend from sweeping generalities to particular instances, and show us examples of what he calls "*copyism*" in Mr. Barry's works, or in modern architecture at large; I will undertake, for every one such instance, to find him two analogous ones in ancient architecture, and two more in modern engineering.

That William of Wykeham and Charles Barry and J. Paxton represent three totally distinct arts, working on fundamentally different principles, none is more ready to maintain than I; but that this word "*copyism*" affords any test to distinguish them, I must deny. If Mr. Fergusson will but give it a fair trial, he will find it apply (in any sense that is not wholly new) just as much and just as little, to one or another of the three things,—Old Architecture, New Architecture, or Engineering. We builders have long harped upon the word as though we thought it the *Sesame* to open the whole labyrinth of our difficulties; but it is not the golden key: we must look for another.

Meanwhile, allow me to state what seem to me the plain common-sense reasons for what Mr. Fergusson thinks such a pity,—that neither Mr. Barry, nor any other architect, erected the exhibition-house. Firstly, because he was not asked to do so; secondly, because it was not his business; and thirdly, because it was so much beneath his business, that no real architect could be expected to stoop to it, and none would have done so had he known what would be wanted. The country (supposing, at first, that it wanted a work of architecture) invited the architects of Europe to make their suggestions; whereupon those who were "*green*" enough (chiefly foreigners with little knowledge of English character) did so. We then discovered that we did not want a work of architecture (or at least could not have one), because (among other reasons) *there was not time*, while the designs hung, to ascertain the *practicability or feasibility* of any one of them—I mean any one of those that were *real* architecture, for of course the majority were only sham palaces or sham temples, the majority of modern art necessarily consisting of shams. Well, then, seeing we had no time for architecture, and no more wanted it than the fox did the grapes; seeing we had, like him, mistaken what we wanted, and that the 200 architects had paid for our mistake (I congratulate them, and have no doubt they will be wiser next time); seeing we now wanted not architecture but a packing-case;—not the most *excellent* structure we could contrive for a given purpose with given means, but the *easiest* to fulfil certain conditions,—that most easily proved practicable,—most easily calculated,—and capable of answering its material ends with least expenditure of thought;—this being what was now wanted, Mr. Paxton had the merit of seeing that it was so, and proposing one way of doing it; and as this was the only way proposed, or the only one that there was time to consider, it has been pieced and patched into what may possibly answer the end. But no architect proposed a way, or

ever thought of doing so, because in doing this he would have descended entirely out of his sphere: he would have repudiated architecture, would have renounced the high and distinctive aims of his art, and evaded all its difficulties. Architecture, even the most unambitious, attempts qualities that in this structure have not been dreamt of. Architecture attempts, for instance, the excellence of completeness, of an integral whole so adjusted as to need (like the works of nature) no remedial after-patching. Architecture attempts things higher than keeping out the wet; and that which does not, which attempts no more than material necessities, is not architecture at all, but simply engineering. That it is an essential part of architecture, I readily admit. The greater includes the less. Architecture includes the whole of engineering (statical engineering) as much as grammar includes the whole of orthography; and can no more exist without it than poetry without language, or painting without brushmanship. Every real architect, therefore, must be both as *able* and as *unwilling* to turn mere statical engineer, as Landseer to turn sign-painter, or a physician to keep a druggist's shop.

I cannot but think it a fact creditable to English architects, and which (whether now appreciated or not) will hereafter redound to their honour, that not one should, in the present juncture, have condescended to degrade his profession by renouncing his art: not one has been seduced, by the prospect of royal favour and the popular fame of an hour, to stoop unsolicited to a task wholly beneath the noble aims of a fine art, and in doing which he would have forfeited his claim to the proud title of artist. It might go worse with architecture yet. I should be very sorry to belong to a profession that could not completely disown the "crystal palace" and all its wonders.

On the other hand, it is to be wished architects would learn more respect to themselves and their noble art, than to degrade it by complaints about their "bread being taken out of their mouths" by those beneath them. Do we ever hear of the sign-painters, how they rob the bread of the Royal Academy? or does Dent complain of the increase of wooden clocks? If England choose to have less architecture, or to do without it altogether, that is *her* disgrace and loss, not *ours*. We may mourn over it, as all earnest men over the brutalising tendencies of a sinking age; but, though it should grieve us, it cannot affect our bread, because, if we be what we pretend, able to do more than the age wants, we can, at least, do all that it does want. No professor of a liberal art has any right to complain on this narrow ground, because, in professing the greater, he necessarily professes the less—the lower—the mechanical parts of his art. If he want bread, let him descend, and instead of doing what he can, do what will pay. The hardship is not of £ s. d. if wholly a matter of taste.

If Landseer and Maclise were obliged, for want of higher work, to paint signs, or the professors at our universities to teach schoolboys, they would have no right to complain about bread, but solely on higher grounds.

Admiring, as I do, the "Historical Inquiry into the Principles of Beauty," &c., it astonishes me that its author should imagine any of his principles carried out in a work repudiating beauty. That architecture can only advance by the same process that advances greenhouse-building or any other art, is a bare truism which we needed no historical inquiry to discover. Growth perfects a sheep: growth perfects a goat: but no process converts a sheep into a goat. Practice and stored experience advance architecture—the same things advance engineering—but no practice can convert one into the other. Improvements in greenhouses or exhibition-houses, though carried on by a succession of Paxtons for 1,000 years, could approach not a step nearer architecture. You might as well tell me that Dent's improvements in chronometers, if pursued far enough by his successors, will produce architecture.

Improvements in construction (even if not arising in architecture) doubtless have their

effect on that art; but there must first be the art itself on which they are to act. If structural inventions can of themselves produce new and true art, why did not the arch (invented before the Christian era) ever produce this effect till twelve centuries after? When iron shall be made a material for churches by men like the monks of the twelfth and thirteenth centuries, zealous for God's glory, and weaned from lower motives,—then, and not till then, will there be a new order of architecture: and it will require no long series of improvements—one generation will suffice.

An order of architecture does not originate out of the temple.

An order of architecture is a great thing: it is that which, itself no counterfeit, is thought worth counterfeiting and sub-counterfeiting for ages.

This is a greater thing than the world for its own purposes can do. Religion has done it in many ages, many climes, and many creeds. The results mutely challenge the world to do the like. The world has not responded to the challenge, and cannot.

I am aware that Mr. Fergusson has the *Times* and all the newspapers with him in calling the "glass palace" architecture. They have no more right than he to call it so. Every one has a right to coin new words—no one to change the application of old ones. Such change is no trifle, for the world is governed by words. However, if right be in this case to yield to might, we may consider that the thing hitherto called architecture has been robbed of that name, it being applied to that which never before 1850 claimed it. We must preserve the thing at all hazards, let who will take the name. So, if the name has been fraudulently appropriated to something else, it will behave us to find the old thing a new name; for without a name of its own exclusively, it cannot subsist. If I might humbly suggest a name for consideration, it would be CALOTECTURE.*

E. L. G.

RESOURCES OF IRELAND.

MARBLE AND MINERALS.

WHILST the energy, capital, and enterprise of this great commercial nation are being lavished over every land of the terraqueous globe, it is somewhat puzzling to explain wherefore so little attention is devoted to the elimination of Irish fecundity. In that island the surface is blessed with a soil fertile in the production of all the vegetating varieties of the temperate zones, and the lower stratification abounds in all that is valuable in metallic minerals, coal, marble, granite, with every species of building stone and slate. This profusion of Nature's choicest (because most useful) products is now well known to exist there, and still a repugnance to invest money in Irish speculations obtains to such an extent amongst the capitalists here, that the fairest, the most vicinal, and therefore the most convenient field for adventure, is left, if not wholly untried, at least wholly unprofitable.

Some copper mines have been wrought in Wicklow, and with moderate success. Coal-mines are being worked (and have been for many years) to great advantage in Kilkenny (a central county). Marble quarries exist and have been long worked in the same county. Coal is also found in Antrim, Down, and other counties. Black and green marble quarries have of late been yielding some profit to two English gentlemen, named Franklin, brothers, and the quality of these marbles is much prized for their hardness and for the immense size of the blocks which may be raised, as well as from the beauty of the colour; but, with this latter exception, there is no English mining or quarrying company in Ireland.

Granites are also to be found in mountain masses, ranging over nearly one-half of the island, and fencing with lofty peaks and giant bluffs the margin of the ocean down to several of her best harbours; still this material is rarely used for buildings or for paving, save in the country of its deposit.

* Mr. H. B. Garling, Mr. Edward C. Hakewill, and others have also forwarded protests against Mr. Fergusson's view.

Very recently, also, quarries of paving-stone (flagging), in large slabs, which laminate freely into equable flakes of one, two, or three, or more, inches in thickness, and to almost any required superficies, are being worked by the same enterprising English gentlemen: being harder than York paving, it is less absorbent, and is peculiarly adapted for causeways with much traffic, as it dries much sooner after rain, and resists longer the tread of multitudes for city pavements.

The only evidences of the Hibernian Quarry in London are to be seen at Messrs. Franklin's wharfs, Westminster (Whitehall, Cannon-row).

It is true that some few capitalists are now encouraging the manufacture of peat charcoal for deodorization, and for the conversion of London sewage into a fertilising stimulant; but even this latter is the result of (as many may perhaps say it ought to be) Irish enterprise.

Our architects have hitherto imported from Italy or distant lands the materials for the construction of such few marble palaces or churches as we have; and they were constrained to do so, for the existence of that material so near at hand was (if known) not divulged before the present century.

Shafts as large as the columns of the Pantheon might be hewn from the Dalkey Hill, close to Kingstown harbour, and columns of marble, equally large, from the Galway quarries alluded to; but the spirit of the age seems little to favour the grandiose notions of Romans, who transferred the pillars of their temples from Egypt.

The grey and red granite of Scotland has been latterly imported, and forms, when polished, the most ornamental as well as the most durable material for fine elevations in this variable climate. The evidences exhibited in the pilasters that adorn the front of the Conservative Club in Pall-mall, discover the aptitude of these formations for effect and beauty. The same hardness and susceptibility of polish belongs to the Irish granite, but in a much higher degree to the numerous kinds of marble; and now that a taste for ornate designs in domestic architecture seems to prevail, it is to be hoped that some individual of spirit, or some club or company will essay to produce a monument of native skill in diverse marbles of duly interspersed colours, which may surpass one that I have seen in Italy (the church of Sienna), and which certainly left on my memory a recollection rather of the striking than the agreeable kind; for that sacred edifice, with its piebald alternations of black and white in horizontal lines, had the effect on my sense of the ludicrous, not dissimilar to the entrance of Mr. Wright on the Adelphi stage with a pair of broad-striped trowsers, representing hoops, round his shanks, or the line of black circles that commonly encompass a gin cask (somewhat misplaced) in an ale-house.

The example of the pilasters in the Pall Mall Club are truly ornate. I will not say so much for the sunken panels in the same material in a Venetian's Piccadillico palace! But what might not be effected if the whole paries were finished, tooled, and polished in the same material?

This last suggestion I throw out as an inducement for architects to send their drawings and scales to Ireland, where labour is exceedingly cheap, so that the blocks might be there hewn, finished, and polished at the quarry; that by such management the specific weight of the requisite material only should be chargeable in the transit; besides that, by such means the cost of workmanship must be vastly reduced and the expense of carriage proportionally diminished, for the packing of blocks to save abrasion could not add much to the outlay in buildings where the cost of the elevation is so little considered. The same design is carried out both in the back and front elevations of the Pall Mall Club-house, so justly admired.

With respect to the stone now in use, Portland or Bath, every lover of architecture must regret the instability not only of the colour, but of the material; and all who have seen the smouldering tracery year by year obliterating

the elegant designs of our Oxford colleges, must deplore that so many fine achievements have been constructed in these friable fossils; and that the tasteful palace of Lord Ellesmere in the Green-park and the more severe and massive mansion of the Marquis of Hertford in Piccadilly are of so perishable a nature both as to colour and form.

Possibly in our smoky atmosphere the old maxim of "*nimum ne crede colori*" may be good, but I take it that the gloss of polish would resist the deposit of a sooty fog, and that a good shower of rain would be a perfect detergent for unseemly concretions such as those which defile St. Paul's; and it must be here remarked that the upper portion of that *incomparable dome* is nearly as clean as when first chiselled, because perhaps somewhat above the dense vapour, and more exposed to the rain-wash. I have often perceived at twenty-three miles' distance (in a right line) the whole upper portion of that edifice glittering in the sun, whilst the eddying London particular enveloped the whole "*pian terreno*."

These remarks may be foreign to materialism, or the nature of the ingredient stone composing our great buildings; but if they show the advantage of polish, if they conduce to encourage labour amongst a now inert and discouraged, because redundant population, they will not prove altogether idle. Whatever increases the industrial habits of a people humanises and refines them, and the money expended on elaborate architecture, whilst it elevates taste amongst citizens of the metropolis, must in this wise extend the advantages and comforts of improvement to the long-sunken peasants of Ireland. QUONDAM.

DOCTORING DAMP WALLS.

I WAS much interested in your article of the 4th January, in regard to "Doctoring Damp Walls." In this country (N.B.) we have principally a damp stone-clay slate and its varieties to build with, and with an average of about sixty inches of rain we find *damp* a little difficult to deal with. This stone is both *vet* and *damp*; that is to say, it often has flaws, which admit rain when driven by storm through apparently solid stones of two or three feet, which perhaps show no crack when dry; and, on the other hand, even in internal walls, and in pavements, though laid hollow, it "*sweats*," as it is technically called, on some changes of weather. This is principally to be explained, I believe, by its being a *bad conductor of heat*, and therefore condensing moisture from the warmer air on a sudden change of weather, as a bottle of cold water does when brought into the air of a warm room.

Many years ago I tried the receipt for a "mongrel cement," as you call it, of tar, with kitchen grease, glass, and lime. I laid it on the inside of a wall and plastered on it, and except in one very small spot, the room has been perfectly dry ever since. I may mention that not having a very large supply of kitchen grease, I substituted "*grease butter*," such as is sold for sheep-smearing; and though I thought I had more broken glass than most private individuals, I was constrained to seek a substitute, which I found in smithy-ashes, or rather in *slag* from the forge. I have, however, since tried this in a large room close to the sea-side and a good deal exposed, but not built of slate-stone, but of a compact, flinty white limestone, containing a good deal of iron and pointed with Roman cement. This is occasionally very damp. I also tried it on the inner face of the walls in our prison cells, which are of slate-stone and similarly exposed to the last. Here it has done much good, but the plaster still shows damp occasionally. I was told it had been much improved by washing with soda.

I made several small attempts at laying asphalt on the outer face of a wall, sometimes by dashing it on as in bailing, sometimes by pouring it into a sort of mould formed with wood or slate, or an iron plate: these, in many instances, adhered so strongly that they could not be got off entire: the dashing is also very troublesome to do, and I suspect

that, however put on, asphalt could not be trusted on the *outside* of a wall exposed to the sun, even in latitude 56°. Some years ago a very intelligent friend, now, alas, no more, recommended me to try doing my walls with a lather of soap and hot water, and, as soon as dry, sprinkling them with a saturated solution of alum. We prepared several places in this way, and, for many months, the effect was extraordinary—water, poured on the stone, running off as from a duck's back, without affecting it in the least, though the unprepared stone turns as dark as a slate as soon as wetted. I believe, however, that the effect of this is quite worn out, though my friend told me that he had done a church all over in some part of England, and that the operation had been effective for, I think, seven or eight years. I have heard of this as a plan for waterproofing cloth, and believe that this, or the similar plan of mixing alum with sugar of lead, and dipping cloth in it, was the plan for the application of which to the fleece on a sheep's back the late Mr. Smith, of Deanston, was taking out a patent when he died. I have since seen that a patent for a similar purpose was taken out by some one, whose name I forget.

I was unfortunately persuaded by an English builder to make an addition to my house of brick, under the idea that when properly cemented outside it was to be free both from wet and damp. I cannot complain of it as regards dryness; but I find it impossible to keep a respectable-looking face upon it. The plan we tried at the outset was very nearly one of the receipts you give: it was 1 cwt. sand, 8 lbs. litharge, 8 lbs. whitening, mixed with sufficient raw linseed oil to be workable. This makes a sand putty, which turns extremely hard, and bears a beautiful face. We also used it as a finishing instead of stucco on many internal walls with great success. Its first failure was near the ground, where it peeled or flaked off the second or third season. The more exposed face soon after began to come off, principally from below the projecting stone mouldings and copes, which were fine sandstone from the Garecube quarries. It still remains, after fourteen or fifteen years, on the more sheltered parts; but failing even there in patches. We have since tried Roman cement with very little success; then Arden lime (a sort of Scotch Roman cement), which has been little better; and now I should be glad to try almost any reasonable suggestion. I have often thought of facing it with stone; but this, to look well, must be carried up extremely thin, so as not to cause the building to project much, as it is in a line with the older (and some newer) stone buildings. I have thought of tile facing, and even of trying a fusible cement, to be laid on with a blow-pipe. If you or any of your correspondents can suggest the best cure, I shall be not a little grateful. The building is about 30 feet high, by 60 long, with a 12 feet projection of 6 feet in the middle, and with about 20 inch octagon angle columns both at the extreme ends and at the angles of the central projection. I may add, that Glasgow bricks are not exactly the best in the world, and have very little suction in the surface. In some cases where I had used them for internal walls, and plastered upon them, the walls have been very damp. I cured one of these completely some years ago with india-rubber lining, but it was both troublesome and expensive.

In these cases we blamed sea sand for the dampness of the plaster; but in the outside sand putty we used nothing but pounded freestone shivers, in order to avoid this supposed danger. I intended to have written, as you say many correspondents have done, to ask the proportions of your proposed recipe. I see them in your paper of the 18th, and hope to give them a trial, and to report the result. I wish, also, that any of your correspondents could inform me how far gutta percha pipes are successfully used for bringing in water under pressure; and whether, when laid in the ground, they require protection from either mechanical or chemical injury? I see notice of a patent for the use of *lime* to improve and preserve gutta percha. In many instances I

have heard of lime (in mortar) attacking and corroding lead when laid in it.

HYPERBOREAN.

UNION OF ARCHITECTS AND ENGINEERS.

IN the course of the discussion at the Institute of Architects, on the 13th ult., Mr. Tite lamented the separation of the two professions, which, he said, had been identical until within the last few years,—so few, indeed, that many there could remember men who had practised successfully in both, and had united in their persons the characters of architects and civil engineers, and it seemed to me to be a prevailing cause of regret among the majority of the Fellows and Associates of the Institute that the breach was every day widening, and that petty rivalries were springing up between members of these twin professions, whose common object ought to be the advancement, and, if possible, the perfection of the various branches of constructive art, by finding the means of obtaining the *maximum* of strength with the *minimum* of materials, and of adorning, as far as practicable, according to the rules of architectural beauty, the almost innumerable structures which the requirements of this advanced age have called into existence.

With a view to make engineers and architects work more in concert for the future, and enable them to profit by each other's experience, I venture to make some suggestions which, if carried out, would, I feel convinced, be of the greatest advantage, both to themselves, individually and collectively, and to the public. Allow me then, sir, to propose, through the medium of your useful periodical, that the Institutions of Architects and Civil Engineers throughout every country, should agree *de part et d'autre*, to admit members of the sister profession to an *ad eundem* rank or grade, without going through the form of electing them *de novo*. For instance, if a member of the Institution of Civil Engineers was desirous of becoming a fellow of the Institute of Architects, or *vice versa*, he should be admitted *ad eundem*, and should enjoy all the rights and privileges which he had obtained in his own Institution. In the same manner, Associates of the one should have the option of becoming Associates in the other: thus the professions would interchange valuable ideas for their common good, identify themselves with each other's proceedings, and they would thus mutually assist, by their combined labours, in raising monuments of their skill which would surpass all that has yet been achieved, and would remain as lasting memorials of the superiority of mind over matter, graced with the legitimate adornments which taste and refinement would appropriately supply.

Of course I do not say that building churches and houses, &c., comes within the province of the civil engineer, any more than constructing a railway, making a harbour, or erecting a lighthouse could properly be said to come into the category of an architect's ordinary avocations: still I do think that much more might be done were the professions more closely allied. Each engineer—each architect—has his own business to carry on separately and independently of the other members even of his own profession. Yet he finds an advantage in meeting his professional brothers at the institution to which he belongs—reading a paper, discussing some subject of general interest, hearing opinions volunteered, and obtaining useful hints to guide him under similar circumstances for the time to come.

And while I propose this co-operation between engineers and architects, I would strongly urge upon them both to agree upon some plan of keeping their professions select, by devising a means for preventing the intrusion of interlopers, and I think the way to act under present circumstances is to recognise the claims of *all* who now exercise the calling of either engineer or architect, irrespective of their past history; to look upon their introduction into the profession as a *fait accompli*, and to have a list of such persons forthwith made out; but

to determine that for the future no one shall be considered an architect or engineer who has not been duly admitted a member of the profession by such form or diploma as may be agreed on. No other course, I feel satisfied, could be taken in this matter now, as no decision whatever which may hereafter be come to could with justice or propriety be made to have an *ex post facto* operation. We could not, it is true, nor would we wish to, have excluded Telford, or Rennie, or Stephenson, although one was a stone-mason, the other a millwright, and the last a collier. These were among the greatest ornaments we can boast of. Our profession was, however, in their time, comparatively in its infancy, and should such men again come on the stage, an honorary degree would be given to them as the LL.D. was given by the universities to Dr. Johnson and other great men. Such master-minds are ever able to raise the temples of their own fame by the assistance of an innate genius which helped them to overcome every obstacle, to surmount every difficulty, to find in the originality of an exhaustless intellect an abundant supply of those resources, stratagems, and inventions which alone could have enabled them to raise up the most stupendous structures—triumphs of engineering skill—in defiance of the tempest-tossed waves of the ocean, the trackless and burning sands of the desert, the dread impetuosity of the swollen river, or the secret and sudden action of the shifting quicksand.

WM. H. VILLIERS SANKEY.

NOTES IN THE PROVINCES.

SOME delay has occurred in putting the Adelaide window at Worcester into the hands of an artist in consequence of an objection made to the one selected, namely, Mr. O'Connor, that he is a Roman Catholic. The son of Mr. O'Connor was suggested, as he is a Church of England man, but Mr. O'Connor, Jun., though ready to undertake the task, and having "very little connection with his father," frankly stated that "he would be sorry to be deprived of his professional advice." Both of these gentlemen were, therefore, rejected, and the question now stands between Mr. Wales and Mr. Roger. The subscribers are to vote by letter on this question.—Efforts are being made to establish a school of design in Worcester.—There appears to be now an assurance that the school of design at Stourbridge will soon be placed on a permanent basis by help of the sum of 100*l.* per annum granted by the Government in aid of it, besides 150*l.* for patterns, models, &c. A meeting, presided over by Lord Ward, was to be held on Monday last.—The bronze statue of Sir William Nott is now in course of erection at Carmarthen, under the superintendence of Mr. Davies, of that town, sculptor, and Mr. Collard, the town surveyor. It is not to be inaugurated till the Spring Assizes.—An application, signed by Messrs. John Clayton and James Bell, architects, was some time ago made to the Ecclesiastical Commissioners, for leave to convert the Prebendal Church of Christchurch at Brecon into the parish church of St. David's, Llanfawr, the present church of St. David's being both inconvenient and ruinous. Considerable restorations would be required in the Prebendal Church itself, which is also in a bad state, but is said to be much more favourably situated, as well as possessed of more architectural interest and pretension. Mr. Clayton, in recently drawing attention to this application in the *Hereford Times*, alludes to a statement made by Sir Benjamin Hall's agent, to the effect that "the nave (of the Prebendal Church) is used as a horsefold, and the cemetery as a circus," and denies that it ever had either nave or cemetery, the ruins adjoining being those of an ancient Roman Catholic convent.—Endeavours are being made by the Roman Catholics of Liverpool to erect, with the aid of Government and by subscription, a school for children of Roman Catholics in the district of Holy Cross. A school for 1,500 is said to be wanted. Mr. Allan Kaye subscribed 100*l.* at a recent meeting.—Some time since the price

of gas was reduced at Ragby, and it is now announced, that in consequence of the increased demand for gas by private consumers, the mains have become quite inadequate to supply the place, so that the consumers are on short allowance till a plan be decided on.—The new church erected at Clay Cross, and consecrated on 25th ult., is in an incomplete state, and consists of a nave of four bays, which, with the side aisles, is 56 feet long, and 43 feet wide; a chancel 22 feet long, by 16 feet wide; and a western tower 14 feet square within, open to the nave by a lofty arch. The tower is intended to have a broach spire, and the entire height will then be 125 feet: it is temporarily roofed in at the ridge of the nave. Preparations are also made for the erection of a south porch, and a vestry on the north side of the chancel; but the above with the spire are unavoidably suspended for the present, in consequence of great deficiency in the funds. The church is completed internally, and is capable of seating 450 persons, including children. It is designed in the simplest form of the style of the twelfth and thirteenth centuries. The east end of the chancel has a three-light transition window: with that exception, there are no ornamental details. The architect is Mr. Henry I. Stevens, of Derby. The contract for the building alone was taken by Mr. Samuel Watts, of Derby, and Mr. Kirkland, of Clay Cross, at about 2,100*l.* The building stands near to the Chesterfield and Alfreton turnpike-road: it is dedicated to St. Bartholomew. Clay Cross is now quite a manufacturing town, with a population of 2,509 souls.—The twenty-four sets of competition plans for the new market-house at Bolton are now open to public view in the Baths Assembly-room there.—The interior of St. Mary's Church, Andover, has been improved by stained glass in the two windows facing the northern and southern aisles.—A monument to the memory of the late Earl Talbot has been erected in the parish church at Ingestree. It consists of an altar tomb, with a recumbent full-length colossal effigy of the earl. The work is by Westmacott.—Sir John Barrow's monument, so lately erected at Ulverstone, was, on 30th ult., struck by lightning, which partially destroyed the cupola and damaged other parts of the building. After the many instances of such casualties, it is matter of surprise and regret that early means are not resorted to for guarding such structures against the destructive effects of atmospheric electricity.—The foundation-stone of a Surgeons' Hall and Medical School was to be laid at Newcastle on 6th inst.—The Derby Water Works Company are now supplying a portion of the public with water on the "constant system." The humbler class are shut out completely from all participation in this advantage by an oversight of the directors, who seem desirous of reviving the late policy of the "gas merchants." The price for one tap for domestic purposes is 16*s.* per annum. For the artisan it is a prohibitory price.—It is intended to erect a new school-house (in connection with the church) at St. George, Gloucestershire. Style, middle pointed. Mr. P. E. Masey, architect. Wm. S. Monks, builder.

LIVERPOOL ARCHITECTURAL SOCIETY.—At a meeting of this Society in the week before last, Mr. T. D. Barry (in the chair) opened the general business by directing attention to a subject which had been brought before the profession and public of London during the last few weeks. He alluded to the Board of Health surveys, which, he complained, were monopolised by the stipendiary hangers-on of the Board of Ordnance. The surveyors of London, many of whom were architects, were memorialising against the monopoly; and the co-operation of the profession in the country was solicited. Mr. Joseph Boulton, who had, at the last meeting, given notice of a motion for taking into consideration the proposed amendment of the Building Act, postponed his resolution until the next meeting of the Society. Mr. Huggins read a paper on "Expression in Architecture."

CAUTION TO BUILDERS.

COLLYER V. DAVEY.

An action was tried last week at the Clerkewell County Court to recover compensation, in damages, for injuries sustained by the plaintiff, who is a messenger at the Mansion House, and has been several years in the employ of the Corporation of the City. The defendant is a builder, and the owner of several houses in Rydon-street, New North-road, Islington. The damages were laid at 40*l.*

The facts are as follow:—On the 10th of September last, the plaintiff was proceeding along Rydon-street, with the intention of visiting a fair which was held in the immediate vicinity. The street, which was in an unfinished state—the areas not being railed in—was thronged with persons, and the plaintiff was accidentally pushed down one of the areas, his leg being severely fractured from the effects of the fall. The accident was of a very serious nature, and plaintiff was conveyed to St. Bartholomew's Hospital, where he remained for a period of nearly two years.

Mr. Parry, for the plaintiff, submitted, upon the authority of *Lynch v. Marden* (2 Queen's Bench Reports, p. 29; 5 Roscoe, p. 373), that, notwithstanding the injury which the plaintiff had sustained was the result of accident, and had occurred in the manner described, the defendant was liable for the consequences. In the case which he (the learned counsel) had referred to, and which was most elaborately argued, it was held that the defendant was liable, in damages, for the negligence of his servant; Lord Denman observing, that whatever negligence there might have been on the part of the plaintiff, it sank into insignificance compared with the negligence of the defendant's servant.

Mr. Waking, for the defendant, having taken several legal objections, which were overruled, addressed the Court in mitigation of damages.

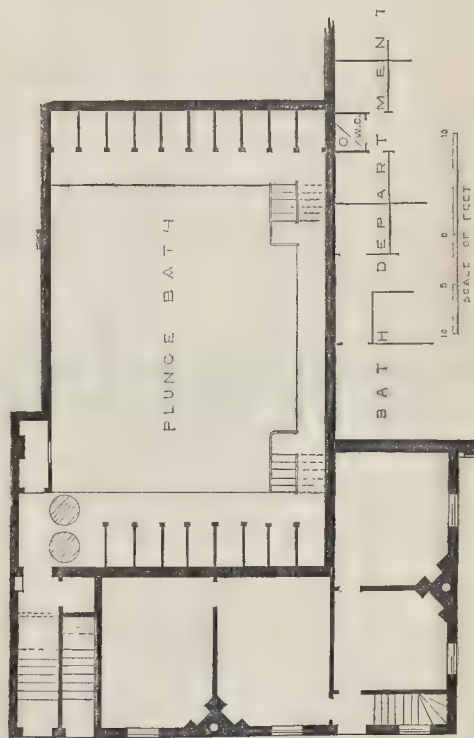
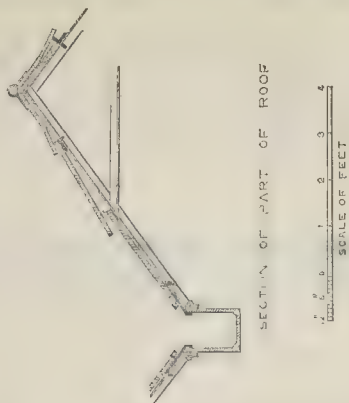
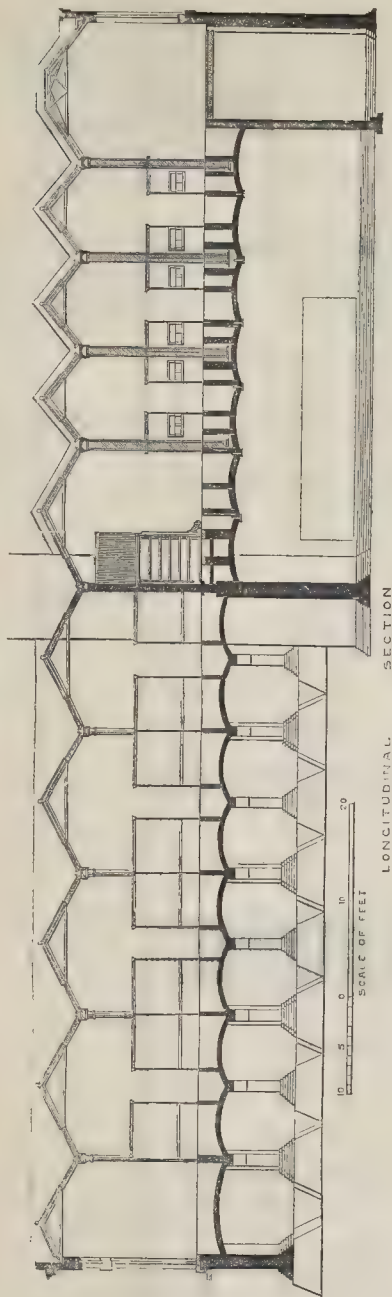
His Honour observed, that there was not a word of blame to be attributed to the plaintiff, who had evidently met with a very serious injury. A person leaving areas in such a state as that which had been deposited to, was guilty of great negligence, and the negligence in this case was the more culpable, the defendant having received a previous caution. It was perfectly immaterial whether the plaintiff was pushed by another person: the party through whose negligence the accident occurred was liable, in law, for his negligence. He (his Honour) did not feel justified in assessing the damages at less than the amount sought to be recovered: his verdict must, therefore, be for the plaintiff, and he would make an order for payment in fourteen days.

LIGHT IN BUILDINGS.

The repeal of the Window Tax, and the amending or remodelling of the Buildings Act, should be effected at the same time, so that clauses may be introduced into the Act fixing the minimum areas of window surface in proportion to the sizes of rooms of all other erections to be built or rebuilt in future, and making it imperative that all existing windows which do not admit sufficient light to rooms should be enlarged. In order to determine what is the least amount of window surface necessary to light different sized rooms in different situations, many of your numerous professional and other readers and correspondents will probably be induced to give some information. J. P.

HOW THE WORKING CLASSES HAVE APPRECIATED AN EXHIBITION OF PICTURES.—During the eleven days the rooms of the Society of Artists were opened, six thousand four hundred and fifty persons visited the Exhibition, and it is almost superfluous to add that in no instance was there the slightest departure from the strictest decorum. The success of the experiment, however, must not be measured by the attendance, because the number of visitors was only limited by the capacity of the rooms, and in the evenings they were crowded to excess, many persons waiting outside for an hour before they could gain admission.—*Birmingham Journal*.

THE MODEL BATHS AND WASHHOUSES, GOULSTON SQUARE, WHITECHAPEL.*



* See page 83 in our present number.

CAST IRON COLUMNS AND ANGLE SHOPS.

It is no uncommon thing to see a superstructure, at the angle corner of a street, some three or four stories in height, supported on a few slender cast-iron pillars, these being the only points of support. The extremely fragile nature of cast-iron, arising from its crystalline character, must render this an exceedingly vicious principle of construction.

It must also be borne in mind that the load, from various requirements, such as unequal floors and openings, &c. is seldom or ever

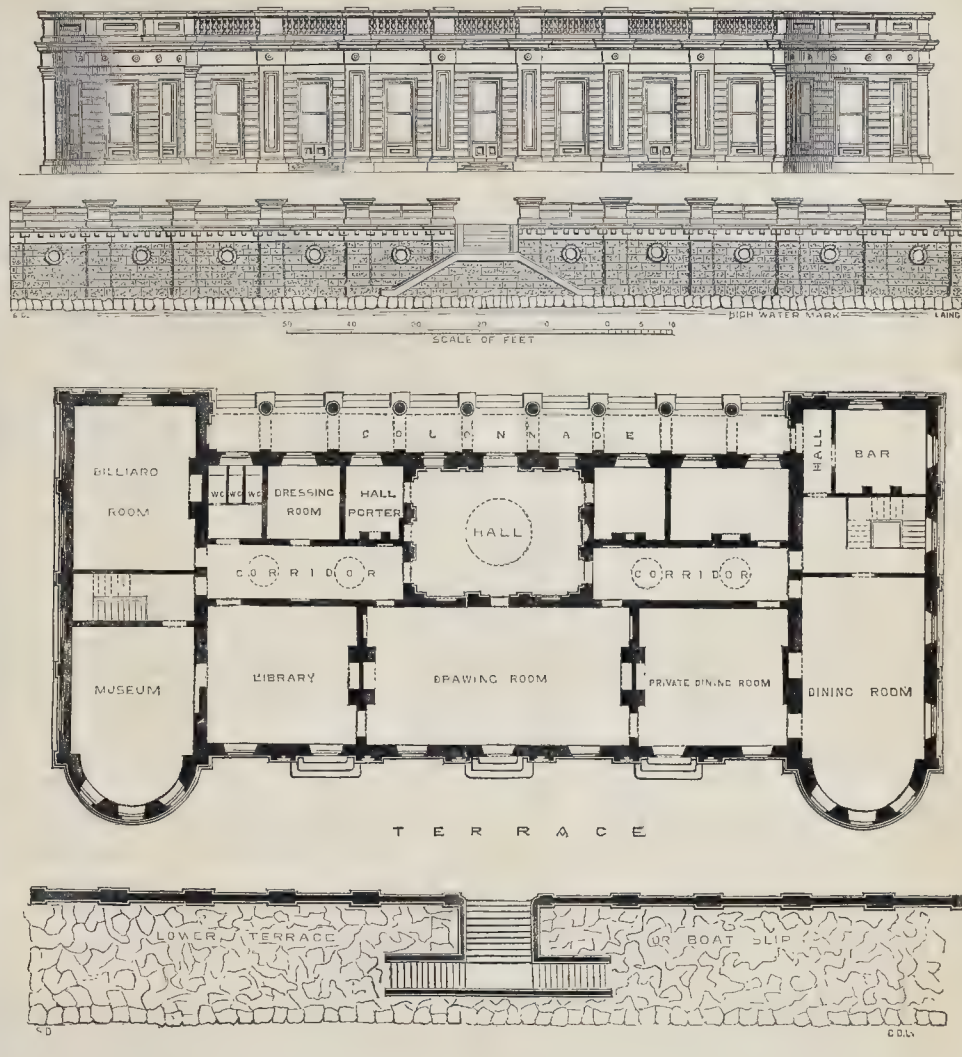
coincident with the axis of the columns: in consequence, the liability to fracture is increased by torsion and side strains. Conceive an accidental blow in this state. Their absolute strength should always equal six times their movement load; but, as a district surveyor, I protest against their use. Hollow cylinders, containing the same quantity of metal in sections (assuming a certain proportion), would bear four times the weight (theoretically). It appears to me that, although timber story-posts are objectionable in case of fire, a combination of wood and iron—iron standards

encasing timber story-posts—would be desirable, particularly in an angle quoin, or where any considerable weight has to be carried. The tendency of the building practice seems to be growing "fine by degrees and beautifully less," and is assuming a dangerous lightness with a treacherous material, in points where solidity of construction is most essential.

It is not long since all the leading engineers were using flat girder bridges (of cast iron) of considerable dimensions, until the frightful accident at the Dee bridge stopped the practice.

R. L. S.

THE ROYAL IRISH YACHT CLUBHOUSE, KINGSTOWN.—MR. J. S. MULVANY, ARCHITECT.



THE ROYAL IRISH YACHT CLUBHOUSE, KINGSTOWN.

THE Royal Irish Yacht Clubhouse, Kingstown, county Dublin, of which a view of the water front and a plan are annexed, has been lately erected from the designs of Mr. J. S. Mulvany, architect. It is situated near the terminus of the Dublin and Kingstown Railway, from which a good view of the building is obtained. The exterior of the building is executed in Roman cement. The principal entrance is in the elevation facing the railway, in the centre of a colonnade, composed of eight Ionic columns, 15 feet 3 inches high. In front of the marine elevation is a terrace, supported by a substantial retaining wall, composed of hammer-dressed black stone, with cornice supported on cantilever blocks, surmounted by a parapet of granite. This terrace was designed for the purpose of affording the members and their friends an opportunity of witnessing the regattas which take place in the harbour; and a portion of the roof of the clubhouse is constructed flat, to serve as a platform for the same purpose.

The following are the dimensions of the principal rooms:—Drawing-room, 43 feet

6 inches by 21 feet; dining-room, 36 feet by 19 feet; library, 23 feet 6 inches by 21 feet; museum, 28 feet by 19 feet; billiard-room, 25 feet by 19 feet; hall, 24 feet 6 inches by 20 feet; and committee-room, 20 feet by 11 feet.

THE DECORATION OF THE BUILDING FOR THE EXHIBITION.

ECONOMY being the chief recommendation in the use of the materials of the present building, to look for any thing like symmetrical design or artistic beauty, is to expect, probably, what never entered into the mind of its originator to supply. Nor could it well be expected: necessity demanded a building of enormous length, rendering a harmonious proportion of due height next to impossible. Iron bars are employed in the most simple forms, in reference to their geometric strength rather than their architectural beauty. It seems necessarily to follow, that any fantastic display of decoration of these simple forms would be a violation of all consistency; yet I would not infer that no kind of embellishment is at all admissible, provided it can be given with a due sense of propriety. The ancient

Greeks well understood this principle: indeed, it seems to have been with them a great governing law, which is so abundantly exemplified by their beautiful works, both in sculpture and architecture.

If propriety, then, is a rule to be applied to the decoration of this great building, it would follow that the metallic character of its structure ought to be inviolably preserved.

Merely a pleasing assemblage of colours is not all that is required in suitable decoration: there is a higher principle, more connected with the mind, that has to be considered, as in this instance. The known properties of metal convey to us the idea of strength, and a sense of security wherever it is employed. Only let us be impressed with the idea of danger, by standing under an expansive roof, sustained by what appears to be slight and narrow columns of wood, and the pleasure intended to be conveyed by their outside decorations of colours, would be more than counteracted by this irresistible impulse of our nature.

Conceiving, then, that to preserve the appearance of metal is essential, the obstacle to be overcome is to find one of a proper colour: as those of a yellow or green tinge do

not seem admissible, it seems that the only one available is that which is already employed, requiring only to have imparted to it its most pleasing aspect, namely, as when seen under the form of tempered steel, when it receives every variety of beautiful neutral tint.

If this Great Exhibition Building and its contents will bear analogy to a painting, a neutral back-ground would seem to be the one most proper. In the works of Titian (the prince of harmonious colouring) this principle seems invariably to be adopted. Sir Joshua Reynolds has also commented on the value of neutral or cold colours to be thus employed, and laid it down as a fundamental rule to be observed in all good colouring. With these authorities, and if the same theory be applicable, it would then be asked, "How is the end to be accomplished?" I have just hinted that the object of imitation is a steel colour, of a light hue, from its seeming to possess all the elements of colour and character required, and this I would propose to obtain by the following means:—

First, to paint the groundwork of a pure white, and when dry, to glaze over the same with thin, transparent colour, of purple, blue, grey, green, &c., heightening, if required, with red and yellow. On the roof, and perhaps certain other parts, not likely to be in immediate contact with the articles, a high degree of illumination might be given by judicious use of either tinfoil, silver, bronze, or frosted glass: the colours used are to be blended together, and the white ground is afterwards to be made apparent here and there in streaks, by wiping off the colours: this would give a lightness of effect. It might not be necessary to use all the different hues of colour thus named,—merely a general, or uniform one, as a clear transparent blue, partaking rather of a purple tinge, evenly glazed over the white ground, without wiping off, and to heighten the general effect by the application of silver bronze on all the ornamental parts or fittings would admit of it: the silver, white, and clear transparent blue would have a chaste, harmonious effect, and preserve the idea of strength I have contended for, without looking heavy and monotonous, and possess the additional advantage of presenting a cool and an agreeable repose to the eye during the hot summer months—a result not to be obtained from the use of warm, vivid, posite colours.

I am quite aware, that, in spite of all our theorizing on the subject, be it ever so correct, it can only be proved by its results; and it does appear to me that, in order to obtain the most appropriate idea, an experiment ought to be made, on some portion of the building, of the different methods and styles proposed, if they seem to possess any advantages: then, by a fair comparison, a more correct judgment might be given; for it does not seem to be necessary, however politely we may be told to suspend our judgment till the whole is done in one particular style. This may answer the purpose of closing the mouths of many, but will not satisfy the understanding of others: a small portion done would suffice to show the relative merits of each, and lead to the adoption of such as would not hazard the character of this great national work.

AN ARTIST.

INSURANCE OF OPERATIVES AGAINST ACCIDENTS.

In your last paper you noticed the accidental falls from scaffolding, ladders, buildings, &c., which required treatment and received medical care at the Charing-cross Hospital during the past year, and you expressed some surprise that they should have amounted to so large a total as 3,200. This amount may seem considerable to any one whose attention has not been specially attracted to the subject, but it probably does not represent a tithe of the number occurring in this town. I need only cite in evidence the monthly returns of one other hospital, viz., the London Hospital, where, in December last, there were 772 cases of accident, which is at the rate of 9,264 in the year, in that establishment alone. And the rest of the metropolitan hospitals, of course, furnish their proportionate contingent.

Now, an accident is an expensive matter to a poor man. If fatal, it costs the surviving family the better part, or perhaps the whole, of their means of livelihood: if less than fatal, the loss of time, that is, the loss of money, during the consequent disability, which may be permanent, will always be a circumstance attended with much distress. The number of accidents shows how frequently such a state of things is likely to arise, and every reflecting, right-minded person must be anxious to provide against it.

In some cases, where other parties may be found in fault, the law professes to make them pay a compensation; but that remedy, it is to be feared, is somewhat doubtful. Many, of the unlearned, at least, are apt to think it worse than the complaint. There was a case tried the other day, in which an unfortunate actor, having fallen through a hole in the floor at a theatre, and broken his leg, sued the manager for damages, and played his part so well before a jury, that they awarded him 30*l*. But the poor fellow never got the money, for on appeal the decision was reversed. And such, too frequently, is "the glorious uncertainty of the law."

The best means, no doubt, of providing against the injurious consequences of these disasters is by insurance. Amongst the wealthier and more educated classes the practice of insurance is all but universal.* The amount annually paid by them in premiums for this purpose is said to be upwards of 5,000,000*l*. I am aware that a general insurance of the same kind would draw too heavily on the workman's wages. But it appears that there is a means of insuring at a cheaper rate against those sudden calamities of which we are now speaking. The annual sum of 15*s*. will insure to builders, masons, house-painters, &c., 100*l*., payable to a man's family on his death by accident, or a weekly allowance of 1*l*., so long as he may be disabled by a similar cause.

AN INSURED.

A RAILWAY REFERENCE.

A CASE of considerable importance has recently been settled by arbitration, at Liverpool, between the Earl of Derby and the Liverpool and Southport Railway Company. The railway, from its junction with the Lancashire and Yorkshire line in the suburbs of Liverpool, runs for about two and a half miles, with some interruptions, through the estate of the Earl of Derby, the quantity of land abstracted being nearly fourteen acres. The discrepancy between the claim and the offer being very great, it was agreed to leave the matter to arbitration. The referees were Mr. Thos. Statter, of Bury, on the part of Lord Derby; Mr. J. A. Pictou, of Liverpool, on the part of the company; and Mr. D. Bellhouse, of Manchester, as umpire. Counsel for the claimant, Mr. H. Segar; for the company, Messrs. A. Spinal and Pollock. The viewing of the land, and taking the evidence, occupied thirteen days, a prodigious number of witnesses being examined on both sides.

The claim of Lord Derby was originally 40,000*l*., but raised by the professional witnesses to upwards of 50,000*l*. The offer of the company had been 18,000*l*., subsequently raised to 20,000*l*., but the estimates of their valuers ranged from 10,000*l*. to 18,000*l*. The cause of this enormous difference may be told in very few words. A great part of the land is in that transition state between agricultural and building land, which renders its value dependent on such a variety of circumstances, contingent and prospective, as to reduce its present estimation in a tangible form to the state of a mathematical "surd," or unresolvable quantity. Whilst many of the claimant's witnesses considered that a high value, as building land now available, should be affixed, other learned mathematicians (retained on the other side, of course) were of opinion that ages must elapse before building could by any process be attracted or coaxed into the neighbourhood. Some thought that a more delightful situation for villas could not be found. Others con-

sidered that it was only fit for cottages, manufactories, and nuisances of all sorts.

The great bone of contention, however, was that usual "*crux surveyor-um*," the question of severance. Here imagination had free scope, and never probably did she indulge in wilder flights. His lordship's witnesses conjured up all kinds of horrors and "chimeras dire" consequent on the desolating march of the victorious railway through his territories. Fearful pictures were drawn of "level crossings," with little children cut up into mince-meat by the terrible locomotives, their frantic mothers looking on; or of bridges, with gradients so steep as to cut off all communications between the valleys on each side. According to this view the country was to be desolated and the population driven away. These dreadful calamities were to be atoned for by a payment for severance of 38,000*l*.

The picture was by-and-bye reversed, and gentlemen of great experience were brought forward to show that, in every instance where a railway had been carried through an estate laid out for building, the population had been seized with a sort of mania, rushing to build by the sides of the railway. According to them, so far from being paid for severance, a premium should rather have been paid by his lordship for this additional attraction to his property. Statistics, tables of population, Acts of Parliament, maps, plans, &c., were employed as light artillery on both sides.

The professional witnesses examined on behalf of the Earl of Derby were Messrs. Young, Reed, Ellis, and Hay, of Liverpool; Messrs. Grundy and Gorton, of Bury; Mr. Hutchinson, of Over-Darwen; and Messrs. Cawley and Brunles, of Manchester, engineers.

On the part of the company, the following professional gentlemen were examined:—Messrs. Tite, Hammack, and Shaw, of London; Mr. James Newlands, Borough, engineer, and Mr. W. Kishon, district surveyor, of Liverpool; Mr. Thomas Wylie, surveyor, Liverpool; Messrs. G. Shorland, Richard Lane, Charles Lee, and T. Fisher, of Manchester; and Mr. Wright, engineer to the Lancashire and Yorkshire Railway.

The award of the arbitrators amounted to 23,293*l*. 9*s*. for the land, and 800*l*. costs. In effect (as we are told) this is rather less in amount than the offer of the company, as a larger quantity of land was comprehended in the award.

It is believed that the united costs of both sides will not amount to less than 3,500*l*.

LANDLORD AND TENANT.

KEATES v. CADOGAN.

In this case, tried at Westminster, January 20th, the plaintiff brought an action against the Earl of Cadogan, for letting him a house in the county of Middlesex, which was in so dilapidated a condition, unknown to the plaintiff, that it tumbled down, injuring his wife, and damaging his furniture. The declaration set out these facts. The defendant pleaded not guilty; that the house was not in a ruinous state; that the defendant did not know that the house was in such a condition; that the plaintiff had full knowledge of the condition of the dwelling-house; that the defendant did not know that the plaintiff was not cognizant of its condition; and that it was not the defendant's duty to give the plaintiff such information regarding the house. On all these pleas, except the last, the plaintiff joined issue, and to the last he specially demurred, on the ground that the plea put in issue matter of law,—the "duty" of the defendant, under such circumstances, being a question of law.

The Lord Chief Justice in delivering judgment said, the difficulty was that the declaration did not disclose a sufficient cause of action. It was not pretended that there was an implied warranty on behalf of the defendant that the house should be fit for immediate occupation, but it was said that because the defendant knew that the house was in a dangerous state and might fall down, and did nothing whatever to apprise the plaintiff of that fact, therefore he was liable to the present action. The fact

* Not nearly so much so as it should be.—Ed.

might have been that the defendant knew the house was in the state described, and the plaintiff might have come and said, "I wish to take that house: I have not seen it;" and the defendant, knowing its condition, might have said, "Yes, I will let it to you." But the declaration did not say either that the defendant made any representation to the plaintiff, or that the defendant was aware that the plaintiff would not do what persons ordinarily would do in such a case,—namely, before he began to occupy the house make a proper investigation as to its condition himself. This, therefore, appeared to be a mere ordinary case of letting. There was nothing to show deceit, and therefore in the declaration no cause of action was described.

Judgment for the defendant.

MR. LAYARD'S RESEARCHES IN ASSYRIA.

THE funds placed at the disposal of Mr. Layard by the British Government being exhausted, that gentleman has been obliged to abandon several new excavations which he had commenced at Nimrud and at Nebbi Junas, and which promised to lead to historical discoveries of the utmost importance. He has now proceeded to Babylonian, for the purpose of examining the various ancient sites that are scattered over that extensive country, and with a view of ascertaining the spots most favourable for excavation.

As this object, however, is one of national rather than of individual interest, it is thought that there are many in this country who would regret to see the expenses of the work thus thrown upon Mr. Layard, and who would willingly come forward with pecuniary aid, in order to relieve him from personal liability.

Mr. Murray, of Albemarle-street, will receive any such contributions, and will take the necessary steps for transmitting to Mr. Layard the sum subscribed, to be expended by him, during the ensuing winter, in Babylonian or Assyrian excavation, according as circumstances may render advisable.

A DEFENCE OF IMITATION.

IN your journal of the 1st inst. an attempt has been made by a correspondent to overturn a defence of imitations of woods and marbles, as practised by house painters in this country, which formed part of a paper on Ornamental Art as applicable to the Internal Decoration of Houses, prepared by me, and read at a meeting of the Architectural Institute of Scotland, an abbreviated report of which appeared in *THE BUILDER* of the 18th ult.

Your correspondent accuses me of blasphemy for having, by way of showing the absurdity of the objections made to imitative art employed in house decoration, stated, that the conceivability of heaven—the rainbow itself—was a deception. It would appear that "Calotect" had consulted Johnson, and found that "deception" was to "lead into error." Had he pursued his inquiry a little further, he would have found that "deception" meant "counterfeiting" or "imitating," and he would thus have seen the connection the comparison has with my argument, in support of the imitative arts, in such a light as might have induced him to dispense with using the ridiculous term of blasphemy.

Man is an imitator and adaptor; he is neither an inventor nor a creator; and if the arts wherein imitation is practised are set aside, I should feel obliged by "Calotect" informing me where professors of the fine and decorative arts are to find material on which to exercise their adaptive faculties. Is not blasphemy a fitter term for him who, fancying himself a creator, shuts his eyes to the beauties of external nature, and disgusts the world with monstrosities in the name of designs, than for the true student of art, who diligently watches every phase of nature, and whose highest aspirations are to imitate humbly the beauties with which God has so richly adorned the work of his own hands.

"Calotect" does not assert that the conceivability of heaven and the rainbow are what they appear to the eye; neither will he attempt

to affirm that the sun, the moon, and the stars are orbs of fire, but he alleges that they are infinitely more glorious than they seem, and hence he argues, that this being the rule in nature, everything in *true art* should be more and richer than it at first appears, while, what he terms *false art*, seeks to make everything appear at first more and richer than it is.

According to this doctrine, all that is required to convert *false* into *true art* is to paint a rosewood door imitation fir; to plate gold with silver; to make picture-frames of gold, and cover them with stucco, instead of *vice versa*,—and this worse than useless extravagance, this wanton invasion of economy, in terms of your correspondent's definition, would instantly change the false into the true.

Even in works of high art, I have always understood that the nearer they approximated to perfect nature—the more complete the deception—the greater their excellence, whether exhibited in the flesh tints of Titian or Elty, the expression of Raphael or Wilkie, the Venus of Milo, or the Apollo Belvidere.

In decorative art I have experienced much pleasure in gazing on the walls of many of the entrance halls and vestibules of the palaces and mansions of England, wherein the imitation of marble was so perfect that the eye was completely deceived, while the mind was all the while conscious that the walls were neither more nor less than plaster painted. I look upon the art that can accomplish this with pride and pleasure, as having attained such perfection in my native country (a *Snobland* according to "Calotect") and being quite aware that marbling and graining were practised in Egypt 3,000 years ago (not 2,000, as your correspondent, out of sheer pity, states for my information) when the Memnonium was in all its glory, and society was in a high state of civilisation, I have no hesitation in asserting that such arts flourish best in a country like Britain, where the domestic properties arising from the love of home afford the best guarantee for progress in all that ministers to man's intellectual and physical improvement.

I have now answered those points of "Calotect's" letter which have reference to me. I shall not prolong a controversy with an anonymous writer, and should "Calotect" again enter the lists, unless he attach his name to his challenge, I shall leave him in possession of the field.

JAMES BALLANTINE.

BLOTS ON HYDE PARK.

FROM the care taken some five years back in planting belts and clumps, coupled with the attention usually shown for the preservation of the greensward, one might naturally suppose that the authorities really have a desire to preserve the semblance of its primitive rural beauty.

In the memory of many, high dingy brick walls encompassed the bounds, but these have been removed and substituted by railings: the Serpentine was also some thirty years back improved, and the carriage-way continued over a new bridge, in itself the chief improvement, for the views from the balustrade are excelled by few private parks in England. About the same period the enclosure (next Kensington-gardens), called the Deer-park, was thrown open, and a road formed round the whole extent of about 400 acres. The cascade, or steps where water should fall, is hardly worth mentioning; for whatever might have been the original intention, there is no object of attraction there save when the wind blows strong from the west, and on such occasions crowds collect at the pond head to see the only waterfall visible in Middlesex, as the force of the wind blows the surface into mimic waves, and drives a streamlet through the grating which might possibly turn a knife-grinder's wheel!

If there be any plantation, any bridge, any scenic beauty in Hyde-park—if Regent's-park and its bowers, its waters, its long walks be an improvement to London,—it never was to any Board of Public Works that these advantages (and they are inappreciable) are due. No! it is to a monarch of surpassing taste, who, foreseeing the growth of the metro-

polis, provided for its increasing extent; who planned Regent-street, through the slums of town, and designed its extent towards Highgate, through the noble causeway (which he found accidentally constructed) of Portland-place.

If any taste prevailed we should have no blots on the national parks such as now disgrace them, no powder magazine, no sergeant's guard-house, no hovels for the harbour of carts and rubbish, no petty ranger's lodge, with four acres surrounded by a shapeless board—and we should have a free current of stream water flowing over the chute that now tells a dry tale of ridicule to the basquet which overhangs the artificial ravine.

That eight acres (or perhaps ten), the most beautiful portion of Hyde-park, should continue to be appropriated to the use of a subordinate pensioner (who, as is apparent from the neglected state of the grounds, prizes it not); that a paltry guard-house, useless but to protect the misplaced powder magazine—that woodcutters' hovels should be suffered to mar our boasted park,—shows want of taste in the office of management. The patronage, however, which bestows the power to provide for a single favourite, however little his merits, is, it seems, not to be given up; and if we may judge from the appropriations of public grounds made to private uses in Regent's-park, there is little to be expected by way of concession from commissioners to the public. In the latter park upwards of 100 acres have been fenced off and bestowed upon private residences within ten years! ! !

Judging from these facts, who could expect, in the proposed inclosure of the New Forest, an impartial, public-spirited, and just disposal of the lands? And unless the strictest vigilance be used in this respect, and that the whole district be appotted and submitted to fair sale by auction, there will be ample scope for jobbery.

The great building now occupies 18 acres of Hyde-park, and, excepting Mr. Elger (whose lordly mansions are much depreciated in value by its too close approximation), perhaps no individual can be found to fault it. Since this, then, restricts the public liberty on one side, surely it ought to be met by the relinquishment of the inclosures in the centre of the park. There is no telling how the objects for which the building was designed may yet be perverted. Should it be formed into an expansive conservatory it may be a public benefit; should it, on the other hand, be made exclusive, or permanently mercantile, or turned to any government or official advantage, it must prove an annoyance to the citizens.

The encroachments of officials make a government unpopular, while due attention to public wishes and wants reconciles the multitude, as in Russia, to even an absolute rule.

May it not be suggested that Wormwood Scrubs, about three miles from town, would be sufficiently vicinal for a powder magazine, and more out of the way of accident (a blow-up) than the site in Hyde-park; and also that the same location would also be better suited for barracks (cavalry, at least) than Albany-street or Knightsbridge? There is not as yet any great number of houses in that neighbourhood, nor are the Scrubs used for a place of public resort or recreation: in fact, they are of little value for building, and of none for pasture.

As a free population advances, let guards and pretorians recede: a civil police is best for free and popular institutions. H.

AMERICAN ARTISTS.—We learn from the Boston *Daily Transcript* that a large number of artists, foreign and American, residing in New York, have agreed to contribute each a picture, for the purpose of forming a lottery, the proceeds of which are to be appropriated towards the relief of the 200 German emigrants who are sufferers by the wreck of the *Helena Sloman*.

AMERICAN HOTELS.—A new hotel is about to be built at Boston, six storeys high, with a dining-hall containing 5,625 square feet, and other rooms, to the number of 200, in due proportion. The building is to be erected by a joint-stock subscription.

ERRIS FISHING SETTLEMENT, MAYO, IRELAND.

MR. TINKLER, ARCHTCT.



ERRIS FISHING SETTLEMENT, MAYO, IRELAND.

SIX VIEWS OF THE ANTIQUITIES OF ROME.

SIX large views of the antiquities of Rome, carefully drawn on stone by Mr. T. C. Tinkler, architect, from sketches made by himself on the spot, have been published* in aid of the funds of the Fishing and Industrial Settlement for Boys, at Belmullet, Mayo, Ireland. The subjects are the Forum of Nerva, where

—“In many a heap the ground
Heaves, as though Ruin, in a frantic mood,
Had done his utmost;”

the Temple of Antoninus Pius and Faustina; the Arch of Constantine; the Temple of Jupiter Stator (?); and the Coliseum, “a noble wreck in ruinous perfection.” The cheapness of the work, and the goodness of the object should ensure for these prints such a sale as will aid the funds now being raised, which are intended for the erection of a building capable of receiving 100 boys, to serve as a training-school, curing-house, workshops for boat-building, &c. Annexed we give a view of the intended settlement.

CHANCELS IN EARLY CHURCHES.

SIR,—I have no wish either to fight for Dr. Wiseman or to make your columns the arena of ecclesiastical disputation, but, as you have permitted Mr. Elliott on two occasions (see Nos. 374, 415) to make assertions relative to early church arrangements, which differ almost diametrically from the opinions of the majority of writers on the subject, I may, perhaps, crave your permission to beg of that gentleman to favour your readers with a brief statement of the authorities from which he deduces, and the arguments by which he substantiates, his opinions; as, if he can prove his points, he will be undeceiving those who have been led to entertain contrary views, or, if he fail, he will be removing any erroneous impressions which his, as yet, unsupported assertions may have produced.

The two points of which the *onus probandi* lies with Mr. Elliott are: First—that the chancel in early times was not screened, or, at the least, had only a low rail, and that merely to prevent persons stepping inadvertently from an elevated platform, not from any idea of sanctity; secondly—that the altar or communion-table did not stand within this space, but “in the midst of the congregation.”

The received opinion is, I believe, the contrary of both of these, being, first, that the

chancel was inclosed by a screen (whether high or low may be an open question), rather from an idea of the sanctity of the services to which it was devoted than from mere convenience, though probably from both reasons; secondly, that the altar or communion-table invariably stood within this inclosure. S.

BODLEY'S REGISTERED REVOLVING AND SLIDING WINDOW-SASH.

WE have seen a rough model of an arrangement, devised by a working man, George Bodley, for preventing the necessity for workmen and servants risking their lives, as heretofore, in painting, glazing, or cleaning windows. The sash, which is hung in the usual way, is ripped down on each side flush with the face of the mitred bead, and is hung on a pivot to the slip on each side thus cut off, so that the sash can revolve, either to afford extra ventilation, allow the passage of furniture, or admit of being cleaned. When not required to revolve, a tongue of hard wood or metal is slipped down a groove formed in the side of the sash and of the slip cut off, which holds the two together, keeps out the weather, and enables the sash to slide up and down in the usual way. He proposes to alter old windows for a few shillings, and we trust that the opportunity will be afforded him of testing his plan on a large scale.

THE DRAINAGE OF THE METROPOLIS NORTH OF THE THAMES.

METROPOLITAN SEWERS COMMISSION.

ON the 31st ult. the following report, by Mr. Forster, on the drainage of the Metropolis north of the Thames was brought before a Special Court:—

“In devising a plan of drainage for the northern portion of the metropolis, in accordance with instructions, and also in conformity with those principles by which I was guided in laying down the plan for the interception of the sewage of the southern side of the Thames, the district appears to divide itself into two separate areas, for which different means require to be adopted,—viz.:

1. The interception of the drainage of that district, which, from its elevation above the level of the outlet is capable of having its sewage and rainfall carried off by gravitation.

2. The interception of the drainage of that district which, from its low-lying position, will require its sewage, and in most localities its rainfall, to be lifted by steam-power to a proper level for discharge.

These two districts are indicated upon the

general map (attached thereto) by distinctive colours.

The district for natural drainage is tinted red, its area being about 25½ square miles.

The district for artificial drainage is tinted blue, its area being about 16½ square miles.

In the two small tracts coloured dark blue,—viz., the southern part of the Isle of Dogs, and a narrow tract on the west side of the river Lea, it is intended to allow the rainfall to run into the Thames and the Lea respectively. The area of these two tracts amounts together to 1½ square miles.

The total area, therefore, proposed to be drained by natural outfall from the district coloured red will be about 25½ 25½

The total area proposed to be drained by the application of steam power from the district coloured blue will be about 14½ 16½

Rainfall, Square Miles. Sewage, Square Miles.

39½ 41½

It will be observed, that the district lying to the south-west of the portions tinted red and blue upon the general plan is not included in the foregoing calculations of area, although it contains a portion of the Counters Creek, and the Fulham and Hammersmith districts, the total area of which is about 16 square miles. Of this area but a very small portion is at present built upon, and probably if one-half, or 8 square miles, be estimated as requiring the provision of means for interception of its sewage and rainfall, it will include an area which may not be built upon and populated for the next half century. I have not, therefore, deemed it needful to provide in my plan for the interception of the sewage and rainfall of a larger area than 8 square miles.

An additional reason for not doing so is that the establishment of the Metropolitan Sewage Manure Company's works is in the heart of the district, which is eminently adapted for the application of sewage water as a manure, and affords grounds for belief that the whole of the sewage produced in the district may be profitably applied, and that the interception of the sewage even of the eight square miles may not be rendered necessary, although to guard against contingencies I have provided for that area in calculating the sizes of the main low level line.

In the event, therefore, of the sewage not being applied as expected, it may be lifted and discharged, with the rest of the northern sew-

* At the Office of the Committee, 32, Sackville-street, London.

age, at Barking-creek; but it will be needful in that case to extend the Whitehall sewer from Scotland-yard so as to intercept the main low level sewer at Chelsea-road.

Having described the tracts to be drained, I have now to lay before the committee a statement of the means by which it is proposed to accomplish the effectual interception of sewage upon the principles laid down.

Commencing with the upper portion of the tract coloured red upon the general plan, and taking as a starting point the pumping station (hereafter to be more fully alluded to) on the eastern bank of the river Lea, at which point the whole of the sewage of both the high and low level districts will be concentrated, the main high level sewer commences, and crosses over the river Lea, near the "Four Mills," proceeding in a westerly direction under the East and West India Dock Railway and the Blackwall Extension Railway, beneath the Regent's Canal, to the east end of the Bethnal-green-road, at the crossing of the Cambridge-heath-road, at which point it will be joined by the proposed northern diversion of the Hackney-brook, which drains an extensive district up to the water-shed line north of London, including Hackney, Stoke Newington, and Holloway, and part of Highgate and Hampstead: from thence the main sewer proceeds along the Bethnal-green-road, Church-street, Old-street, Wilderness-row (where a short branch from Coppice-row will join), to Brook-street-hill; from thence to Little Saffron-hill, where a distance of about a hundred yards is proposed to be carried by an aqueduct over the Fleet valley; thence along Liquorpond-street, at the end of which it will receive a branch from Piccadilly on the south side, and a diversion of the Fleet-river on the north side; thence along Theobald's-road, Bloomsbury-square, Hart-street, New Oxford-street, to Rathbone-place, where it receives a diversion of the Regent-street sewer from Park-crescent; along Oxford-street, and extending thence across Regent-circus to Whitehorse street, where it will intercept the King's Scholars' Pond sewer; continuing still along Oxford-street to Bayswater-place, Uxbridge-road, where it is joined by the Ranelagh sewer, the sewage of which it is capable of receiving, and at this point it terminates.

	Miles.	Yards.
The length of this main high level sewer will be about.....	7	1,143
The Hackney-brook branch north	6	1,417
The Coppice-row branch north	0	1,135
The Piccadilly branch south	1	1,585
The interception of the Fleet up the Gray's-inn-road north	1	266
The Rathbone-place and Cleveland-street interception of the Regent-street sewer north	0	1,600
Making a total of	19	106

With respect to the low level tract, coloured blue on the general plan, it is proposed, commencing as before at the lifting point on the eastern bank of the river Lea, to construct a sewer at a depth of 47 feet below the invert of the high level sewer, proceeding beneath the river Lea, near to Four Mills Distillery, taking the north-western bank of the Limehouse-cut, at which point it receives the branch intended to intercept the sewage of the Isle of Dogs, thence continuing along the bank of Limehouse-cut, through a portion of the Commercial-road, Brook-street, and beneath the Sun Tavern-fields, into High-street, or Upper Shadwell, at a point opposite to the church; thence along Ratcliffe-highway and Upper East Smithfield, across Tower-hill, through Little and Great Tower-streets, Eastcheap, Cannon-street, Little and Great St. Thomas Apostle, Trinity-lane, Old Fish-street, and Little Knightbridge-street; thence beneath houses in Wardrobe-terrace, and on the eastern side of St. Andrew's-hill, along Earl-street to Blackfriars-bridge. From Blackfriars-bridge it is proposed to construct the sewer along the river shore to the junction of the Victoria-street sewer at Percy-wharf, which sewer, between Percy-wharf and Shaftesbury-terrace, Pimlico, becomes an integral portion

of the intercepting line at Bridge-street, Westminster. A branch from the Victoria-street sewer is intended to proceed along Abingdon-street and Millbank-street, so far as and for the purpose of taking up the King's Scholars' Pond, and other sewers, at their outlets into the Thames.

From Shaftesbury-terrace the Victoria-street sewer is proposed to be extended through Eaton-square and along the King's-road, Chelsea, to Park-walk, intercepting all the sewers along its line, and terminating at a point where the drainage of Kensington may be brought into it without pumping.

	Miles.	Yards.
The total length of the main low level sewer, including the extension of the Victoria-street sewer to Chelsea will be about.....	8	1,601
The length of the branch southwards and westwards for the drainage of the Isle of Dogs about....	4	360
The branch from Bridge-street, Westminster, along Millbank	1	1,300

The total length being about .. 14 1,501
Having now described the whole of the lines of intercepting sewers westward of the proposed pumping station on the eastern bank of the river Lea, I have, in the next place, to lay before you a similar statement as regards their proposed extension from that point to the outlet.

The invert of the high level sewer at the pumping station will be 20 feet above the Ordnance datum; the invert of the lower level sewer will be 27 feet below the Ordnance datum; the difference between the two being about 47 feet. The sewage of the lower level will thus be lifted to the higher level by steam-power, and both will be conveyed by two parallel lines of sewers from the pumping station to the bank of the river Roding, being the eastern extremity of Galleons-reach. The length of this extension will be four miles.

At this point the level of the inverts of the parallel sewers will be eight feet below high water mark, and here it is intended to collect the sewage into a reservoir during the flood tide, and discharge the same with the ebb tide immediately after high water; and as it is estimated that the reservoir will be completely emptied during the first three hours of the ebb, it may be safely anticipated that no portion of the sewage will be returned with the flood tide to within the bounds of the metropolis.

The inclination which has been assigned to the whole of the lines of sewers, with the exception of an inconsiderable portion, is not less than four feet per mile, or 1 in 1,320.

The sewers are calculated to carry off a fall of rain equal to a quarter of an inch in 24 hours, in addition to the average daily flow of sewage, which, in anticipation of the progressive increase in the population, has been assumed at double the present water supply. The pumping power needed to raise the sewage and rainfall of the lower level to the required height (or 47 ft.) is estimated at 1,100 horse power, in order to meet which it is proposed to erect two 550 horse power engines, together with a third engine of equal power (550 horse power), to meet the contingency of accident or want of repair.

An abstract of the various lengths of sewers proposed will be as follows, viz.:-

	Miles.	Yards.
Of the high level sewer and its branches	19	106
The low level ditto and branches	14	1,501
The extension from the pumping station to the point of discharge at Barking-creek (parallel sewers), four miles each length. .	4	0

Making a total of . 37 1,607
The whole of the sewage and rainfall (with the trifling exception before stated) of the areas coloured red and blue upon the plan (which at present discharge by the various outlets into the Thames) will be diverted and carried down to Barking-creek, excepting upon the occurrence of long-continued and heavy rains, or in frequent and violent storms,

when the surplus water will be carried off by certain of the existing outlets into the river, but upon all such occasions the first scour or cleansings of the sewers will be conveyed to the main outlet at the river Roding.

From the time consumed in the manifold considerations necessarily involved in works so extensive in their nature, I have been prevented from laying before you a detailed estimate of the cost of the plan of interception. I am therefore only able to submit approximately that I estimate the cost of the whole of the lines of sewers, the pumping-engines, and station, the reservoir, tidal-gates, and other apparatus, at 1,080,000*l*.

This estimate does not include the sums required for the purchase of land and houses which may be needed for the site of the pumping-engine-house, and compensation for certain portions of the lines of sewer."

Sir H. De la Beche (in the chair) said it would be observed that in the report they proposed to avail themselves of two methods of draining the northern side of the metropolis, viz., to take a certain portion under a general level, and by means of what was generally called "gravity," to carry away all the sewage by a uniform slope of 4 feet per mile to Galleons-reach, which was, in fact, to arrest all the sewage that flowed into the Thames at that level, and to carry it away. Then another portion was left, which was to be raised by artificial means, in order to be carried to the same distance. That artificial raising was to be effected by steam power. He should not enter into the details of the scheme, but, looking at the whole plan as a generality, he thought it would strike the Commissioners as having a general resemblance to that which had been sketched out to them by Capt. Vetch some time previously. The main point was to convey away the whole of the sewage from the Thames, and to take it down to a point whence it could not return to annoy the inhabitants of the metropolis, and this plan, when finally adopted and carried out, would, in conjunction with that upon the southern side, entirely remove the sewage of London to beyond a point whence it could ever return again.

On the motion of the chairman, seconded by Mr. Alderman Lawrence, it was resolved, "That the engineer be instructed to prepare detailed plans and estimates in respect to the works recommended in the report now presented to this Court, and, so far as may concern the city of London, that such plans and estimates be prepared in conjunction with the surveyor to the Commissioners of Sewers for the City (Mr. Haywood)."

[Mr. Haywood, it is right to state, co-operated with Mr. Forster in the preparation of the report.]

Mr. Peto, M.P., said, in the course of other observations, that assuming this plan to cost 1,080,000*l*., and assuming that, with the various incidental expenses which they all knew would arise in public works, and taking into account the further contingencies that might result for the site of the engine-house and compensation to parties who would be injured during their execution, he would take the estimated cost at 1,250,000*l*., and he inquired what would produce that amount in thirty years, taking it at first at 4 per cent., and then at 5 per cent.? He found that the rental of the district north of the Thames, exclusive of Fulham and Hammersmith, was 6,337,624*l*., and that a rate of only 3*d*. in the pound for a period of thirty years would reproduce the whole amount of 1,250,000*l*., and would give to those who should succeed them at the termination of that time a perfect system of sewerage, for which every farthing would be paid. This was a very important fact. 3*d*. in the pound would cover the whole expense upon the northern side of the Thames, and 2*d*. in the pound the whole expense upon the southern side. The speaker strongly urged the establishment of public "halting places."

On the motion of Mr. Hardwick, who said he considered this report was the most important that had been brought under the notice of a public board for many years, it was resolved, "That the report upon the drainage of the metropolis north of the Thames, including

the city of London, which has now been presented, be printed, with a coloured map attached."

Sir J. Burgoyne stated, that some very influential gentlemen had it in contemplation to take up, upon a grand scale, a plan of utilizing the sewage matter.*

Books.

The Schools of Painting in Italy. Translated from the German of Kugler, by a Lady. Edited, with Notes, by Sir C. L. EASTLAKE, P.R.A. Second Edition. Two Parts. London: John Murray. 1851.

THIS new edition of Kugler's Hand-book of Painting, translated, if we mistake not, by Lady Eastlake, and edited by the accomplished President of the Royal Academy himself, is enriched with upwards of one hundred illustrations, drawn on wood by Mr. George Scharf, jun., from the works of the old masters mentioned in the book. It gives a general survey of the history of Italian painting, and will be found a valuable and pleasant instructor. Book I. treats of Early Christian art (the later Roman style, and the Byzantine style); Book II., of the Romanesque style; Book III. (the second stage of development), deals with the masters of the fourteenth century and their followers; Book IV., with the masters of the fourteenth century,—the schools of Padua, Venice, Umbria, and Naples. Book V. is devoted to the period of highest development and decline (the sixteenth century), and treats of Da Vinci, Michelangelo, Raffaele, Coreggio, and Titian; and Book VI. treats of the masters of the seventeenth and eighteenth centuries,—the period of the Restoration and second decline.

We hope before long to make this work the text-book for an outline of the early history of art, and therefore content ourselves on this occasion with warmly recommending it to all who would gain a correct knowledge of the subject. It is very nicely got up, as all Mr. Murray's books are.

The Land Steward. By G. A. DEAN, Agricultural Architect and Engineer: with Illustrations. London: Atchley and Co.

THIS is a volume of 300 pages, addressed, by the nature of its contents, to a much more numerous class of persons than its title would imply. The work may be said to be a general epitome of all that relates to land, as between landlords and tenants, as well as to intending purchasers,—each of whom will find useful information. The writer unites the advantages of being a practical agriculturist, as well as a practising farm architect. The first chapters are elucidatory of the tenure of land and buildings, the nature of dilapidations and fixtures, and the laws respecting them. The geological structure, soil, and climate of Great Britain and Ireland lead to some observations on drainage; and as this is now one of the great elements in the improvement of land, the extended inquiries on the subject by Mr. Dean are of value. The importance is evident, as hitherto the drainage of lands has been too often a work of haphazard, by persons totally unacquainted with the necessary laws of nature to ensure success. Upon farm buildings the author is at home, and makes some valuable observations on the choice of site, fitness of each class of buildings for their intended purposes, and the arrangement of farmsteads on the principles of economy of tending stock, and performing the various operations of the steading. In the construction of farm buildings the work will be found of great utility,—the improved system of agriculture imperatively demanding the superintendence of the architects for modern requirements,—the old and inconvenient erections, which were formerly made by unskilled country carpenters, for farm buildings, being fast superseded by others. In the present

—We have received letters from several parties pointing out the extent to which (as they say) Mr. Forster's plan agrees with their own. One writer shows, without mentioning any thing invidious, that Mr. Netherway's plan is, in many respects, identical with it. We would suggest to Mr. Forster that where he has an opportunity to give appointments to any who have worked out the subject he should do so.

state of the agricultural interests, in a condition of transition from torpor and routine to the application of science, "the land steward" becomes more than ordinarily valuable, and its readers will derive ideas of what is required at the present day, to ensure success in farming.

Miscellaneous.

ESCAPE FOR FOUL GASES.—Mr. R. Sutcliffe, of Idle, has addressed the following letter to *The Times*, in reference to the use of a tall chimney for the purpose of carrying off foul gases. "In the month of August, 1849, while the cholera was most virulently raging, I laid a line of pipes from the privies in our mill to the chimney. The draught of the chimney was thus brought to act upon the privies, and the noxious gases were thus carried aloft into the clouds. It has, indeed, been a relief to us, and our mill now enjoys as pure an atmosphere as any private dwelling-house. I felt myself bound in duty to lay the plan before our inspector (Mr. Saunders), and at his strong recommendation it has been extensively adopted, and has in all cases been found completely to answer. In fact, I have no doubt that even London itself might be completely ventilated by draughting the effluvia from the sewers into tall furnace-chimneys, when in active operation. The sulphuretted hydrogen, already so light, would be rendered lighter still from its expansion by the heat of the chimney, and would thus be carried into the clouds, and completely dissipated."

IMPROVEMENT IN PAINTING IRON SHIPS.—We understand that a private trial of an apparatus for warming the plates of iron ships while in the graving-dock was made on Friday, at Messrs. Garnett and Moore's North Foundry. It has been made to the order of Mr. Bacon, painter, Oldhall-street. The great difficulty of drying the plates of iron ships to make them in a fit state for painting has been long felt, while the ordinary methods of warming them have been tedious and troublesome, as well as very uncertain. The machine tried on Friday consists of a small furnace of plate iron, lined with brick, to which is attached a small fan. The whole is very compact, and is placed on wheels, and is moved by two handles like a wheelbarrow. The fan, being set in motion by a winch, drives a rapid current of air through the fire, which is of a hard coke, and this passes out through a pipe of eight inches diameter. This pipe has at the bottom a universal joint, so that it can be moved in any direction. The mode of using it is as follows:—The machine being placed in the graving-dock, a boy turns the fan, while a man directs the pipe to the bottom or side of the ship. By these means a powerful current of hot air is jetted on the plates, which soon become dry and warm, and in a fit state for painting. The trial was made on some large plates, with water poured upon them, and the result was very satisfactory. It will shortly be applied to an iron vessel. The apparatus is the invention of Mr. Grantham, who has obtained a patent for it.—*Albion*.

SANITARY REFORM.—A deputation of the members of the Metropolitan Sanitary Association had an interview within the last few days with Lord John Russell. Thirty-three gentlemen attended, among whom were Viscount Ebrington, M.P., Colonel Sykes, Colonel Thompson, M.P., the Rev. J. M. Worthington, D.D., Major-General Sir John Rolt, Mr. C. F. T. Lord, the Rev. M. W. Lusignan, M.A., and Adolphus Barnett, M.B., honorary secretaries. Sir G. Grey and Lord Seymour were present. Dr. Barnett introduced the deputation, and Dr. Worthington read a letter of excuse from the Bishop of London for non-attendance on the plea of indisposition. Dr. Barnett presented a memorial, and the Secretary drew attention to the principal points alluded to in it, and to the filthy and degraded state of various parts of the metropolis, and the necessity for the introduction of comprehensive sanitary measures. Mr. Lord said, that on behalf of 3,000 medical men, he would urge the speedy passing of a bold, comprehensive system of sanitary

reform, which should embrace the abolition of the window-tax, an improved water supply to the metropolis, and the regulation of lodging-houses. Lord John Russell thanked the deputation for their attendance and information. The subject was one which had received, and would continue to receive, the serious attention of the Government. It would be admitted that much had been already done by Government, and that the difficulties which arose from the due regard for the liberty of the subject and for existing interests rendered it difficult to proceed gradually and with caution.

USEFUL DISCOVERY.—An elegant snuff-box, made from a particular species of carbonic coal, by the Rev. W. Mitchell, minister of the Scottish Presbyterian Church, Woolwich, will be exhibited at the Great Exhibition of all Nations. The carbonic mineral takes on a polish so very transparent and beautiful, as to vie with that of the richest and finest alabaster marble. It has been ascertained that it can be fitted into fine lobby or bed-room tables of a deep and rich polish. It will also be of great utility in forming finely-polished picture-frames, flower urns, watch-seals, pillars for mantelpieces, public monuments, and for other purposes, and at an expense so trivial as to be almost within the reach of all.—*Advertiser*. Parrot coal (a species of cannel) has been made use of for many years in Scotland, in a small way, for ornamental purposes. It cuts with a fine polish, much as plumbago does, even with a common pen knife, and when properly finished yields a beautiful but somewhat frail surface of jet black colour and marble lustre. The substance alluded to by the *Advertiser* is probably the same. Other amateurs are at work on it.

ENGLISH SCULPTORS AT ROME.—A communication from Rome announces a graceful act which must be recorded to the credit of Mr. Gibson, the sculptor; and which involves a suggestion—but now a vain one—to his brethren of the Academy at home. Mr. Gibson has, it is said, put up, in the English Protestant burial-ground in that city, a monument to the memory of that fine sculptor, the late Mr. Wyatt. . . . The Academy loses more than Mr. Wyatt in not having added its title to such titles as he had to show.—*Athenaeum*.

"LONDON LABOUR AND THE LONDON POOR."—Under this title Mr. Henry Mayhew is publishing, in a revised form, with many additions, the startling relations first issued by him in the *Morning Chronicle*. The first portion of the work is devoted to the London world in London streets, and is illustrated by views of real life from daguerreotype reflections.

THE SHOP-BLIND NUISANCE, &c.—Observing, in a recent number of *THE BUILDER*, that you have been measuring (by the altitude of "the whole of your architectural framework," from ridge-tile downwards) the height of shop-blinds, perhaps some of your readers may like to learn that in an Act of Parliament (10 & 11 Vict., July 22, 1847) for regulating the police of towns, clause 28 enacts "that every person who, to the obstruction, annoyance, or danger of passengers, places any blind, shade, covering, awning, or other projection over or along any footway (unless at least eight feet in height in every part thereof from the ground) shall be liable to a penalty of forty shillings for each offence. In last week's number of your useful journal, a district surveyor suggests, with regard to halting places, &c., that "the paving boards of the different parishes can be at no loss to find suitable places for their erection." I beg to inform you that, in 1848, the St. John's, Clerkenwell, Paving Board constructed (under my superintendence), in Wilderness-row, by Charterhouse-wall, a public halting-place: it is in three divisions, and formed of inch smooth slate, with trapped gratings, drain, &c., and cost 15*l.*: it is supplied with water by the New River Company, at a nominal charge of 5*s.* per annum. The cistern on the top, with ball-tap, waste-pipe, &c., cost 3*l.* 5*s.* It has been a benefit to the public, and, if generally adopted, as suggested by your correspondent, would be much appreciated.

W. P. GRIFFITH.

CONSERVATORIES OPENING INTO THE DWELLING-HOUSE.—Every day the many gallons of water given to the plants rise into vapour, to settle on the various objects within reach. Therefore, in the drawing-room, or the room adjoining the conservatory, there should be nothing that will take injury from damp, because it will settle in pure water on the walls, and sink into tapestry, curtains, the backs of paintings, the covers of sofas and chairs; in short, it will lie or hang in drops on whatever will not absorb it, and sink into all that will. There is no good without its evil,—no enjoyment, without some corresponding trouble to maintain it. The conservatory—so great an ornament—so exquisite a luxury—may, without care, be the means of producing sickness in the house, destroying the furniture and ornaments, and doing endless mischief, unless it be counteracted by attention. Let the throwing open of the doors be the exception, and not the rule. Keep the damp air from the house as you would a pestilence. It is delightful to smell the perfume, but it carries poison with it, if allowed to make its way all over the house.—*Glenny's Journal.*

MACHINED PAPER-HANGINGS.—The *Journal of Design* says—"It is well known that it is at least some dozen years since the cotton and calico-printers of Manchester first began to print from cylinders, and it was not until within the last four or five years that the paper-stainers applied the same principle to printing papers, of a simple character, in one or two colours. At the outset their success was very moderate, being unaccustomed to the use of body colours, and unacquainted with their peculiarities and the best methods of applying them. Consequently the papers produced were of a very inferior character and quality, and did not enter into competition with the block-printed papers. Lately some of the leading printers of the "golden flock papers," in London, have turned their attention to the use of the machine; and it is most satisfactory and surprising to witness the rapidity and precision with which papers of six or eight colours are run off, the whole eight colours being printed during the passage of the papers *once through the machine*. A single machine is capable of printing in one hour 200 pieces of paper, each 12 yards long, or 1,500 pieces equal to 18,000 yards, or 54,000 feet per day. The paper upon which the patterns are printed is manufactured in lengths of 2,880 feet each: these are afterwards cut into 80 pieces, each 12 yards long."

LITHOGRAPHY.—It is stated at Munich that Mr. Nicholas Zach has discovered a new process in lithography, by which he can give to any metal plate, traced by a sharp needle, a preparation that makes the design in less than an hour show itself in relief on the metallic plate. Zach calls the process metallographic.

MANUFACTURE OF DRAIN PIPES.—I observe, in the last number of *THE BUILDER*, with reference to stoneware drain pipes, you say,—“As to the pipes now manufactured, complaints are made that they have not advanced in quality: on the contrary, it would seem that the increased demand has led to slovenliness and overhaste. The manufacturers should look to this in time, or they may be superseded.” Now, sir, although it is perfectly true that a great proportion of the pipes are bad, both as regards shape and material, I apprehend the *cause* does not arise from the “great demand” (as I believe in this neighbourhood, at least, the potters have been, generally speaking, slack), but that builders &c. prefer an inferior article to a superior one, when they get the former somewhat cheaper. The consequence is, that those potters who make a good article, find they get “cut out” by others who make an inferior one; and, as a superior article does not command a fair price, they are sufferers to a great extent, the inferior description of pipes costing considerably less to manufacture, while they sell at a trifling reduction in the price. Would builders and others patronise those who make a superior quality (although they may pay a trifle more for it), you would soon find that pipes would improve.

THOS. SMITH.

SURREY CONSUMERS' GAS-LIGHT ASSOCIATION.—On Friday in last week the ceremony of laying the foundation-stone of the works of this company at Rotherhithe was performed by the Lord Mayor, in presence of a large concourse of spectators. His lordship said he had no personal interest in the association, but he considered himself bound, upon public grounds, to support it, inasmuch as its object was to supply a good and cheap article of general consumption. The site of the buildings is close to the river. The retorts will be able to carbonize 66 tons of coal, and make 594,000 cubic feet of gas daily; or, when in full work, the annual amount of coal to be carbonized will be 24,090 tons, making 216,810,000 cubic feet of gas. Mr. F. A. Hedley is the engineer.

CARLISLE BOARD OF HEALTH.—I would beg to call your attention to an advertisement issued by the Local Board of Health of Carlisle, relative to the appointment of surveyor; as I consider they are degrading the profession of an engineer. The duties required are, that the surveyor should give plans, reports, specifications, and superintend the drainage of the city, and other works connected with the laying out of land, preserving the river banks, &c.; the whole of which duties require a person of education and ability in the profession of engineer. So far, so good; but the Board, not content with these duties, actually degrade their surveyor, and call him “inspector of public nuisances,” the duties of which are, that he has to make frequent personal inspection of all the privies and other vile holes in the city, and to see that these places are preserved clean, no person being placed under him to do these duties, which a policeman could perform in a superior manner to any engineer.—P. S.

EARTH-SLIPS.—On Monday week a very extensive slip of earth (about 1,000 yards) took place within about forty yards of the Woolley Tunnel, on the Barnsley end of the Lancashire and Yorkshire Railway. The embankment had for some time been watched. “Mr. Miller, who formed the line,” says a contemporary, “and whose engagements extended over twelve months, expired only a week or two ago: hence the expense now incurred falls on the company.”—Also, on Monday week, owing to the recent heavy rains, a slip of considerable extent took place in the cutting of the Aberdeen railway, about half-way between Laurencekirk and Marykirk.

FIRE AT NEW-CROSS RAILWAY STATION.—A fire occurred on Tuesday night (last week) at the New-cross railway station. The building, in which much property was consumed, was 700 feet long and 39 feet wide. It was formed of thin wood, similar to weather-boarding, and stretched in a continuous line along the railway from the more substantial brick buildings which form the passengers' station. Adjoining this long range of premises stood a temporary wooden shed, in which was deposited wood for lighting the fires of the various apartments in the station, and there is no doubt that the conflagration commenced in that small building. The loss will reach, according to the company's own estimate, 5,000*l.*

CANADA TIMBER.—The lumber Trade of Canada with the United States is fast increasing. There were received in Lake Champlain the past year, from St. John's, no less than 31,785,941 feet of sawed lumber, and 1,660,000 (cubic) feet of square timber. In 1849, 12,000,000 feet of the former, and 1,150,000 of the latter. In 1847, there were received but 7,000,000 feet of lumber, and 310,000 of timber.

PLASTERER'S EXTRAS AND LOSS OF PLANS.—At the Birmingham County Court lately, an action was brought to recover 7*l.*, as a balance of plasterer's work done by plaintiff (a journeyman), for the defendant, a tradesman in Bull-street, who has land and buildings at Soho-park. A verbal agreement was come to between the parties that 12*l.* should be the price of such work, but, according to plaintiff's statement, extra walls and cornices had been added by defendant, and his demand in consequence came to 27*l.*: of this 20*l.* had been

paid. Mr. Norton thought the charges fair and reasonable, but Mr. J. Newey, architect and surveyor, considered 15*l.* as amply sufficient. This last witness admitted that, although he had looked at the work, and had designed the building, he had not measured the work done. At this stage of the case the judge asked for the original plan. This was said to have been lost by the workmen employed; and, under such a state of things, his Honour said, “I feel bound to order a verdict to be entered for the plaintiff for the amount claimed.”

THE GLASGOW ATHENÆUM.—One of those distinguished meetings, so characteristic not only of this age, but of this country, in which the noblest aristocracy in the world holds out the right hand of fellowship and goodwill to a people of whom none but rivals, emulous in the same good cause, ever hesitate to attribute a nobility no less superlative, took place on the 28th ult., when the Duke of Argyll for a whole hour-and-a-half absorbed the attention and the interest of more than 2,000 persons assembled in the great City Hall of Glasgow, as friends and promoters of the Athenæum in that city. Lord Eglintoun, Sheriff Alison, the Lords Provost of Edinburgh and Glasgow, and others also addressed the meeting, which “went off” with great éclat.

HULL WORKHOUSE COMPETITION.—We understand forty-four sets of designs were sent in, varying in cost from 5,584*l.* 7*s.* 9*d.* to 23,000*l.* and differing as widely in style and character as in estimate. The committee devoted five days to their examination, and, from the report, it seems they were of opinion that although a number of the designs possess many, and some of them most, of the essential requisites, yet that the design of Messrs. Lockwood and Mawson contains the best combination of them all. The building will accommodate 763 inmates, including the vagrants. The style of architecture is Italian, and the estimated cost 9,045*l.* The second premium was awarded to Mr. Moffatt, of Doncaster.

THE ARTESIAN WELL AT SOUTHAMPTON.—The boring for water at the Artesian well on Southampton Common, from which the town has been partially supplied with water for the last few years, and which has been looked upon as such an interesting experiment by the whole of the geologists of England, is to be stopped. The boring is nearly 2,000 feet deep. It must have ruined the original contractors. Either geology is greatly at fault, or ignorance has had the conduct of this unfortunate undertaking.

BRASS IN MEMORY OF MR. BASEVI, ELY CATHEDRAL.—In our notice of this brass in Ely Cathedral, last week, we omitted to mention that it was executed by the Messrs. Waller, and we now gladly supply the deficiency. Messrs. Waller are striving very efficiently for the re-introduction of memorial brasses: they are preparing a large specimen of the art for the Great Exhibition.

SURVEY OF SWANSEA.—As I am able to satisfy, or partly so, “A Civil Surveyor,” I do so with pleasure, by quoting the inclosed from the *Cambrian*.—“Several gentlemen connected with the Ordnance Department have arrived at Swansea, and they commenced the triangulation survey of the borough on Monday last,—a task which will, we understand, occupy their attention for five or six weeks. The rest of the survey will be carried out by Mr. Gant, the new resident surveyor of the local board.” It is rather, I think, uncourteous in the Swansea Board of Health making no further disclosure of their proceedings to the competitors than the fact of their tenders being unaccepted. The least they could have done would have been to have given, in their circular, a list of the tenders, and their intentions with respect to them. It seems to me that they, in the first place, wanted a good survey, and afterwards discovered they had not sufficient funds to pay for it. I trust there is yet time for some friend of the family to prove practically that they are swivel-necked, and to turn them to the right about.—GUSTESSH.

	£	s.	d.
Oliver, jun.	.....	4	20 0
Hall	.....	3	254 0
Burton	.....	3	571 0
Hopkins and Roberts	.....	3	800 0
Hill and Son	.....	3	775 0
Hobbs	.....	3	797 10
Hay	.....	3	825 0
Hill	.....	3	650 0
J. and C. Knight	.....	3	540 0
Evans	.....	3	468 10
Carlisle	.....	3	469 0
Deeks and Son	.....	3	489 0
K. and G. Curtis	.....	3	442 0
Withers	.....	3	258 0
Steele and Son	.....	3	218 0
Wood and Sons	.....	3	195 0
Perry (accepted)	.....	3	084 0

A WELL-EDUCATED YOUTH, who is about leaving an architect's office in London, in which he has been for two years, wishes for a SITUATION which will afford him opportunities for further improvement. He is a good draughtsman and colourist. Improvement being the sole object. Salary will be required.—Address, post-paid, B. T., Earle's Liberator, 51, St. Giles, London, E.C. 4.

[illegible]

The Builder.

No. CCCCIX.

SATURDAY, FEBRUARY 15, 1851.

THERE is a bustle in the workshops; and buildings in progress are being pushed along so that the "hoards" may be taken down before good May-day, when the world is to be emptied into London.* The Marble Arch is being proceeded with rapidly. It is already as high as the springing of the main archway. The marble of which it is composed, and which, as we have often said, is not adapted for external use in England, had decomposed considerably in parts, so that much of it has required rubbing and working. We have objected to the site chosen for it, and even more strongly to the hasty way, without the slightest intimation to the public, in which this was determined on. But as the thing is done, and alteration is hopeless, it seems useless to keep up an ill-feeling by repeating objections. The object now should be to make the structure as complete and satisfactory as possible under the circumstances. At the time when Buckingham Palace was first placed in the hands of Mr. Blore, with a view to its improvement, the arch was, as it has continued to be, a subject of difficulty and discussion. It was at length determined to abandon the expensive style of decoration commenced by Mr. Nash; to patch it up at as little cost as possible; and, after finishing it in a plain manner, to leave it standing where Mr. Nash has placed it, satisfied with exclaiming, "Thou canst not say I did it." Among the fragments of Mr. Nash's intention was found a handsome frieze, executed by some of the first sculptors of the day, and intended to adorn the upper compartment of the arch. Not knowing how to apply this piece of work, yet desirous of reserving it from being cast aside as rubbish, Mr. Blore fixed the several pieces of the frieze in separate compartments of the external wall of Buckingham Palace; but was compelled, by the nature of the elevation, to place them at such a height that since that time they have never attracted observation, and are probably forgotten; and, moreover, they are now inclosed in the court formed by the recent addition to the building.

Would it not be worth while to consider, whether, in finishing the arch in its new site, the original plan might not partially be carried

* Among the new schemes in America in connection with this descent upon our shores, is a lottery, under the disguise of "The World's Fair Art-Union," limited to 4,000 subscribers, each paying 5 dollars. Every subscriber is to receive an engraving of the Interior of the Building as fitted up, and there are to be twenty-five first class prizes and twenty-five second class prizes: the first class prizes to be "a first cabin passage from New York to London and back, with every requisite for the voyage, together with 100 dollars for expenses in London; and each second class prize will be a first cabin passage from New York to London and back, with every requisite for the voyage." The advertisement, which we find in the New York Day-Book, says: "We have taken the trouble to ascertain, by a careful and elaborate estimate, that to produce an engraving worthy of this memorable occasion, and to make 4,000 copies of it, would cost at least 5,000 dollars. For such an engraving the printellers would charge certainly 10 dollars, probably 15 dollars a copy, and pocket perhaps 20,000 dollars of profit. Instead, however, of letting this enormous sum be swallowed up by the print-sellers, we will publish the engraving by co-operation; so that each subscriber can obtain a copy at, to say the least, one-half the price the printeller would charge, and then have a large sum to spare to distribute prizes." An American artist is to be sent over!

into effect, adding to the beauty and importance of the work, by removing these pieces of sculptured marble, and others now scattered about, to their original destination? A bronze Victory, or car and horses, resembling that on the Brandenburg Gate at Berlin, would be a material addition to its general effect.

At Buckingham Palace, whence it was removed, the new enclosure, in accordance with the plans of Mr. Decimus Burton and Mr. Nesfield, is being erected, consisting of massive stone piers, about 15 feet high, with an ornamental iron railing on a large stone curb. On the four piers in the centre, forming the entrances, are,—on one, the lion; on the second, the unicorn; and on the two others, groups of dolphins, with their tails entwined, to carry lamps; the whole carved under Mr. John Thomas. There are also to be sculptures in the panels of some of the piers.

Relative to the figures already up, we have received a number of objecting letters. One writer says:—"Surely we are getting into an odd fashion of sculpture for buildings. If a coat of arms is to be erected, it must now be broken into fragments—the supporters are divided, and each has a separate sentry-box of his own; as, for instance, the lions at the Victoria Tower, Westminster. Then, again, on the gate-posts at Buckingham Palace: you see a lion bolt upright, with his board, on one post, and look to the right, three doors off, and you see a monster of an unicorn, trying to hold on by his board; and then, on the main gate-posts, you see shoals of blubber-headed fish trying to twist each other's tails; looking, for all the world, as if they had come by sea all the way from Cathay to a strange land, in woeful plight, being bad sailors, and fairly put on the shelf for their peccadilloes."

Another, who pretends to be a Frenchman, supposes they were put there to enliven the coming foreigners and provincialists. In seriousness, however, they are not so satisfactory as could be desired.

The ugly wreath, unnaturally projecting forward above the shield in the central group on the top of the palace, to which we objected at the time of its execution, has not been altered. A slashing writer in the *Times*, who signs himself "The Lion that supports the Royal Arms," says, between the central groups "the eye of faith may discern a gate leading to nothing, and above it either a wreath extended to crown the kingdom's acknowledged 'strongest,' when Mr. Carlyle shall have found him, and he may chance to be wending his way to the seventh heaven through the said gate, or an eyelet hole, in which a 'sufficient' rope may be rove to hang the arch-scurdrel when he shall have been ultimately detected by the same philosopher, and be finally despatched through the airy portal into infinite space." How difficult is excellence!*

At the British Museum, also, the enclosure is now going on. A granite curb about 3 feet high above the pavement is being erected, on brick foundations, large and deep. The piers for the central gates will be very massive, and so will be the iron scroll-work that will form the enclosure. Our readers know that statues are to surmount some of the piers.

* A correspondent suggests an alteration of the line of railing round the park where it meets the iron gates dividing the space in front of the palace from the Bird-cage-walk; but it would not be understandable without a diagram. We may also mention here a plan by Mr. Gray for laying out the park, which has some picturesque features.

The scaffolding has been put up for raising the sculpture which is prepared for the tympanum of the portico, so that gradually we may hope to get some life into the exterior of the building. The decoration of the new western galleries (by Mr. Collman, under Mr. Smirke) is now nearly completed, ready for the reception of the Assyrian antiquities, which are at present just as much buried as if Layard had never lived. The ceiling of the new galleries is formed, like those of the other galleries, into a series of small deeply-sunk panels: the ground of these is coloured blue, and upon this, in the centre of each, is a gilt star, or a composition of four honeysuckles, placed alternately.* The plaster bed-moulds around each panel have red in them, and on the soffit of the main beams, forming the larger divisions of the ceiling, panels are formed by green lines. The frieze on the walls has a white honeysuckle pattern on a quiet green ground; but where it runs out over the projecting piers, frets are substituted for the honeysuckle. The upper part of the walls is coloured sage green, with panels formed by red lines, and the lower part (the podium) is to be coloured dark red, as a back ground for the sculptures. The decoration of the Elgin room will be richer,—the walls wholly red.

We have no doubt that the general effect, when the works are completed, will be satisfactory as to colour; at all events, far superior to the blank white walls and ceilings formerly in vogue. What we have to object to is the entire absence of *art*: there is nothing that called for thought, or will give thought. There is a little more variety in the Etruscan room, where, by the way, the common glass skylight has a bare and inharmonious effect.

Coming away from the Museum, we went to see if any steps had been taken in Leicester-square; thence to the Ordnance Office, Pall-mall, that we might reply to an inquiry on the subject; and afterwards to the building near Thames-bank, which is being fitted up as a "Mechanics' House" for the May meeting.

Our readers know that the centre of Leicester-square is the spot fixed upon for the erection of a building to receive Mr. Wyld's intended great Globe. After much difficulty, and the payment of no less than 3,000*l.*, the arrangement for the ground is now completed. The building is to be of a circular form, 90 feet across, enclosing the Globe, of 60 feet in diameter. Corridors for promenade will surround it, and it is to have four covered approaches from the sides of the square. The external elevation at the sides is proposed to be 20 feet high, surmounted by a large bell-shaped roof of zinc. The building itself will be mainly of timber, the inner surface of the Globe of plaster of Paris.

In the centre of the Globe will be a series of galleries, four in number, constructed so as to enable visitors to see every portion of the model. These galleries, it is said, will afford accommodation for 1,000 or 1,500 persons at one time, and are to be approached by spiral staircases in the centre. The entrance is to be at the south of the Globe.

Mr. Welch is the architect. Tenders were received a few days ago for the construction of the main portion of the building, and the tender of Mr. Myers was the lowest; but

* These patterns are from Greek fragments.

even this was greater than it was thought desirable to accept, and the plan is to be modified.*

As to the Ordnance Office, a brick building on the south side of Pall-mall, some of our correspondents, seeing the works now going on there, thought that its symmetry was about to be destroyed by raising one wing and not the other. It appears, however, that both are to be raised and the balustrade replaced on the top of them. The centre will remain as it is, and the balustrade there will therefore stop against the wings on either side. An additional building has been erected for the purposes of the office on the west side of it. It is of brick, with dressings of Anston stone; Italian in style. Mr. Pennethorne is the architect. Adjoining it a house is being built for Messrs. Harding and Co., where the dressings are of Aubigny stone.

As to the intended Mechanics' House now being fitted up, it is a large warehouse, of most lugubrious aspect, formerly called the "Thames-bank Depository," in Ranelagh-road, at present a very unapproachable district. There are two floors in the main building 250 feet long and about 50 wide, besides other buildings; the whole calculated to provide nightly accommodation for 1,000 persons. The separate rooms (one for each lodger) are to be formed by partitions 7 feet high: there is to be a general dining-room and reading-room, and many excellent arrangements are talked of. We should be sorry, therefore, to discourage a speculation which is being made at great cost to supply what will be much needed, but we must, nevertheless, wish that a brighter spot had been selected. The men from the coal districts will not discover that they have left them; and to find their way home alone after dark will be quite out of the question.

ON THE STUDY AND APPLICATION OF ART.†

WE have completed the first part of the argument, having treated, convincingly I hope, with respect to the right study of art, mainly of the necessity of the desire to study, and of knowing how to do so; subordinately, of method, of regard to time, of self-denial, industry, patience, and care; corroboratively, of purpose, principle, honour, and duty. Nor can I think that there has been set up too high a standard. For our consideration it will appear evident that all these things are closely connected together, and that to be persuaded, for instance, of duty in the matter, is to be persuaded of, and indeed to observe, all the rest. I have endeavoured to take a comprehensive view of the case, and to set forth the system which appears to me the best in real, solid advantage both to ourselves and to others, and from which, moreover, we may derive, not only artistic excellence, but actual good in the mode of obtaining it. It is true that there have been many who, either in this or that particular, have failed to observe these necessities; but very few who have not acquiesced in most of them. No one would tell us that Raffaele, for instance, young as he was, did not choose the highest range of art—did not give himself up to it—observed no time, no method—had no industry, patience, or care in painting—no one would tell us this, whatever he might say of Raffaele's moral principle, which, after all, was not unusually indifferent, considering his age and that in which he lived; and, on the other hand, we may repose on the memories of Michaelangelo,

and Milton, and the guileless Newton. In proceeding, as I would now do, to consider the application of art, I shall make a few remarks on what we ought to study, chiefly bearing reference to architecture. In a former paper I have said that we must study Nature herself, and as she has been developed in art. It only remains, therefore, slightly to enlarge on that topic. With respect to the study of nature itself, the main benefits to be derived are large, general ideas, which act only indirectly on any branch of art by enlarging the mind which cultivates it. Thus, from nature you may gather the ideas of order, grandeur, extent, proportion, beauty, variety, &c., the knowledge of colour, form, and the like. Possessing these ideas, when, in imitation of nature, you endeavour to create, you also endeavour to express them in your work, and according to your sense and knowledge of their relative and combined powers will be the success of what you attempt. There are few things in which the study of nature may be more immediately useful than in the treatment of light and shade, and in most other matters of external effect. Yet how often and unwisely we disregard these things; important enough when we consider, for instance, that the play of light and shade is to a building what expression is to the face. Both are dependent on the features, and care should be taken that the features of an edifice be such as to produce a good expression. Attenuated mullions, poverty-stricken cusps, insufficient mouldings, meagre string-bondings,—all afford instances where a miserable or no effect of light and shade is produced: they give a pallid and bald appearance; for, there being neither prominence nor depth of expression, the lights are feeble, and the shadows pale. It may be said, "it does not signify if the parts are in proportion," which might abstractedly be true; but it must be remembered that the expression is required for the human eye to appreciate, and that therefore too minute a proportion is by no means desirable. The same rule should be followed in this as in the case of construction, when, for example, columns are made use of in some positions that they may appear to carry what is, in fact, otherwise supported—and this for the sake of satisfying the eye. Light, and especially artificial light, should fall, as far as is practicable, from above, as it does naturally. In the architecture of poetry this has been observed by Milton, where, speaking of the palace of Pandemonium, he says—

"From the arched roof
Pendent by subtle magic many a row
Of starry lamps and blazing cressets, fed
With naphtha and asphaltus, yielded light
As from a sky."

And again, says Pope, in "The Temple of Fame,"—

"The everliving lamps depend in rows."

And there are many other instances. An opposition of lights is bad, being as unpleasant to encounter as it is to sit in a draught. And how vexatious is a conflict of lights!—how distressing the situation of a stained glass window between two others blazing in their nakedness—a "dim religious light" between two profane starers. Let not the elegancies of your art be disregarded, because condemned by the ever practical and self-styled spiritual: who like four whitewashed walls, a waste white ceiling, and twelve square holes, set like traps for the whole day to fall through? Once encourage that description of palace or temple, and variety of form, for with her former offers every combination and contrast, and the latter is almost infinite. Who ever saw a bird dressed in what we call *bad taste*? Is there anything more chastely magnificent than the harmony of colour in the plumage of the peacock? What could better contrast than the red and grey in the uniform of the African parrots? Look at the butterfly Parnassius Apollo,—its wings are of a pale, semi-transparent white, the upper maculate with sable, the lower rich with crimson eyes. The Apatura Iris, or Purple Emperor, with dark

wings shot with glorious lights of purple blue. The Vanessa Antiopa, purple brown, bounded with a border of velvet black gemmed with violet spots, and beyond this a broad cream-coloured margin sprinkled with sable. And so we might run on through the whole range of natural history. As to form, even an ordinary garden will supply an inexhaustible variety. But in applying imitation of nature it may be necessary to idealise. You might desire, for instance, to introduce in Gothic foliage a leaf somewhat short and wide for the sake of its other attributes. Then it is allowable to apply the spirit of the style into which it is to be adopted, and consequently to point and elongate such a leaf. There results, then, an ornament at once natural and artistic—natural in its origin, so that a child would call it a leaf; but artistic in its expression, so that a critic would say it was a Gothic one. The consideration of this topic leads us to the study of Nature as developed in art. Here we again encounter precedent. It is a fact that, during past ages, men have, from time to time, expressed nature in their works in the very best manner in which it can be expressed, and have thus made what we may term the nature of art—in the establishment of certain inviolable principles. It follows, then, that these works must be studied by men who would excel now—not, indeed, servilely; not regardlessly of our age; but to obtain the spirit of them, and in spirit to re-apply their principles. As for authors, let us cling affectionately to the practical—to those who write from their own experience: let us listen gravely to the theoretical, because they often see more from a distance than do they who are close, and they have time to bestow in considering the elegancies of art for which many practical men have no opportunity. In practice we should not forget to keep up our manual skill, nor pass over such questions as those of the strength and duration of materials. And now, entering on the application of art, let us first of all regard utility, of one kind or another. A building too large or too small for its desired purpose is, in a degree, useless. There are several subordinates of utility, such as convenience and comfort. A dwelling with upper stores and no stairs, such as an amateur once actually built, with bad ventilation—with doors hung just the wrong way—with a huge cavernous hall, and burrows for rooms,—or with echoing rooms and a vestibule like a kennel,—a house all staircase, or with floors that, like fresh ice, sink with you towards the middle as you walk, half expecting to disappear,—is a monument of inefficiency and waste. And so of council-chambers peopled with echoes, and picture-galleries given over to darkness,—all of them more or less useless. Is it asked, what do we want with utility in fine arts? What utility, say, in the picture? Why, the use of it at least is to educate the eye—to assist the mind in forming images of great events and personages—in storing in its memory some great historical fact, some lovely scene of heaven's handiwork,—in contemplating great ideas of the departed. Think for a moment of the immense usefulness of our panoramas as a mode of instruction, when, by the power of the brush, either the city of Constantine or the wastes of the Nile are transported, as if by magic, to our land. Again, a man who could possibly form to himself no figure of a holy person that should at all express in its lineaments his divine attributes, might be immensely assisted by studying a great picture,—say of Correggio's,—and even affected with an awe and reverence before foreign to him. And by this means the senses, too often abused, are made the vehicle of the highest thoughts. On the same principle a barn may be perfectly useful for containing crops, but more than comparatively useless for public devotional purposes, since absolutely mute in expression. We find then that a subordinate of utility—if, indeed, a subordinate at all—is what I would call *educational worth of idea*, i.e. the expression in your works, according to subject, of some idea that shall teach the mind, and improve and amplify it. Let your churches be eloquent

* There will, doubtless, be plenty of Exhibitions. A building for such a purpose is about to be put up in the area of *House and Market, Chart* across Londoners' look after your open spaces and squares, and do not too readily allow them to be covered.

† See page 68, ante.

with the story of the faith, and of its martyrs; your senate-houses teem with the history of the land and its legislators; your theatres be rife with the memoirs of the drama and the mighty poets; and everywhere rejecting all that is of a debasing or contaminating tendency,—let this material teaching be as highly as it can to purify and to improve. Why may not the ecclesiastical edifice display on its walls the raising of Lazarus—the martyrdom of St. Stephen—the conversion of St. Paul? Why should not a nation's council-chamber represent, as doth ours, the inviolable dignity of its judges—their Gascoignes—the tender commiseration of its Sydneys? Why may not the theatre show forth some such illustrious scenes of forgiveness and the like as we may find in Shakspeare? If this were done in the highest manner, men would be continually familiarised with all that is great and pure, and would even find virtue gazing from the walls whither they may have thronged to avoid her. And *constancy of idea*, i. e. the not contradicting nor counteracting one part of your work by another, is of immense importance. You may do this in architecture as well as in any other art. Towering columns may be reared to produce the effect of grandeur; you may crown them with a shelf and a pepper-pot, and it is gone. Clustered columns, pointed arches, may be raised to produce beauty; you may cover them with a flat white ceiling, and it is gone. But, moreover, let there be a *leading idea*: for, for example, it be for grandeur, consider what causes will produce that best, and exclusively employ them, for other ideas will follow in the train of the monarch, and complete the effect; but the advantage of *unity* is, that we avoid overburdening our own minds, and perplexing those of others. Proportion will be found an essential in the development of all good ideas. Wren could hardly have crowned St. Paul's with a less dome than it has, nor could Milton have made the spear of Satan less than a Norwegian pine, with the same effect. And so, in minor effects of unity, a building should not be ornamented contrary to its purpose; but the ornament should lend the nameless harmonizing graces to an edifice, just as it gives the fine developing touches to a poem. There must be a connection between the whole subject and that of its adornment, nor there will result a counteraction or ineffectiveness of idea. Say that we are to raise a tomb for a dead Christian. What is the subject? Death. Perhaps we shall express it by the dark hue of the marble, the deep shade of the mouldings, the recumbent figure, the situation, and the retired nook. Now, let us consider the ornament. The subject of the tomb, we said, was death; but death is not all we desire to express for the dead Christian: there remains something for us to tell in the ornament. What, then, shall be the connected subject? Let us take the hope in which that still one died—and we will suggest it, no, not by a pagan urn, but by the simple or decorated cross. We have thence the desired expression given to our work. People pass, and are at once distinctly reminded, as though some one were speaking, of the common sorrow and universal hope. In this we may observe art wholly appropriate, at once gloomy and triumphant,—sad, yet even prophetically beautiful.

Very important is it in the application of art in architecture to regard *situation*,—to adapt your work to the place for which it is intended,—even to choose, as far as you can, a picturesque place. I would even consider the absence or presence of foliage, in determining the colour tone of my building, as to what would best contrast or blend with the surrounding green; whether, for example, the slate roof would not better harmonise in its quiet tone with those old oaks behind on the slope there, than would a fiery array of red tiles,—or whether the rich brown would not be preferable to both. I would regard, too, the prevailing wind and the force of it, as there would certainly be some difference in an edifice crowning a bleak hill, for ever buffeted by storm and hurricane, and one seated in a quiet nook of the hills, comparatively unex-

posed; and, moreover, these two different situations might call for different styles. I might consider, also, the lines of the country. Nor need we run into competition with nature, by raising up a lofty tower under a precipitous hill that dwarfs it, high as it is, into insignificance; but if nature be lowly, and we have only an undulating or level plain, let us lift our tower and spire to the clouds if we can,—rearing a mountain of art that shall tell the distant villages of the sunrise while they are yet in the shade. In all works, another most important thing is the *outline*. This is as the shadow of the artist's mind, and in architecture generally, will afford a correct figure of his genius. In "outline" are certainly to be considered the accustomed sky, the situation, and surrounding objects. It is from a regard to this fact, that many are inclined to prefer the Pointed style in northern countries, and especially in our own, where we are so much subject to mist, and a consequent uncertainty in the outer lines of our edifices. The high-pitched roofs, the lofty pinnacles, the soaring spires look often only the grander and bolder for the surrounding vapour; and the many gilded vanes flashing over the mist in the first die of the upper sunlight—seeming to wave simultaneously, like fire-flags, in the breeze—beautifully attracting the sight, and, as it were, lighting its way down the dark perspective, produce a fairy and magical effect. I have stood between two distant spires at sunset, with one rising like a pillar of light against the gathering thunder in the east, and the other standing dark and solemn before the departing glory of the western heaven. The contrast was so striking that it can never be forgotten; and it is from observing these grand effects of Gothic outline that one can easily understand why great architects have insisted on the Pointed style. With respect to classical outline, it would seem that by raising the classic structure well above surrounding buildings, and by making use of great boldness and depth of moulding—even somewhat more than usual—it may be made to enforce an effect in spite of the atmosphere. For what might be sufficient in the native clime to secure the due result, may, if merely copied, be here quite inadequate to the purpose; and with all regard for precedent, it must surely be allowable to adapt the exotic to the soil—to consider the difference between the sky mirrored in the Cephissus, and darkened in the Thames. For say—to assume a case—that it were possible, by somewhat exaggerating the proportion abroad sufficiently, to create a proper effect here,—that is, in fact to add what is taken off or lost in appearance by the haziness of our day: why should it not be considered? Are we to be always reproducing the Athenian temples without regard to the total change of climate, or is it really impossible to make any beneficial adaptation? The greatest possible boldness and grandeur in Greek are required to contend with our atmospheric difficulties. Out of this arises the question of detail and expression, connected with those of ornament and light and shade already treated of. Architectural expression must be dependent on outline and detail together; the former suggesting the main general idea, the other, as it were, more particularly describing it. If the one be bold and severe, graceful or florid, so let the other. As in all things, so in detail, the just mean is at once the most right and most difficult to observe; because, on this side, a building, from boldness, becomes uninteresting, and on that, from excessive elaboration, oppressive. It is here that a man's taste will be most tested, and while comparatively he works out his genius in outline, his art will declare itself in the detail. This is the minor execution of his main design, and in it he should never forget the ruling idea he desires to express, and that so clearly, that not so much himself, but that others may appreciate it. Let us have a grand outline, severe detail, bold lights and shades; a graceful outline, rich, yet chaste detail, soft lights and shades; the latter, of course, chiefly resulting from the mouldings, and perhaps depending somewhat on a modifi-

cation of square or circular form in either case—this for the soft, and that for the severe. And what was said before of ornament again applies. In the application of art, we must consider what we have to express, what ideas to embody, what stone words, so to speak, we have to write. I do not say that we want a minute symbolism, which would be wearisome, but rather a general indication of the purpose of our work, a kind of "allegory of general intention," as Spenser calls it; so that, in expression, the parts may assist the whole, taken as such, and each other individually. For were I building a baptistery, I would rather choose not to ornament it with carving of full-blown roses, but of the buds; and I should not desire the strong light of day, but, in preference, the hue of dawn, so that the general expression should be of the idea of birth,—of entering, beginning, purifying. Now it does seem to me that an alternating series of porticulices and fiends on such a building would be somewhat out of their appropriate place; just as would be the cypresses painted in a sea-piece. And is not this expression plainly called for by the thing itself? Were you, for instance, writing a description of Despair, would you depict him in some bright company, with a cheerful smile on his countenance, a gay robe studded with stars, and an altogether contented appearance, wholly contradictory of your idea? or would you not rather choose some solitude, whither, all haggard and wan, his robes rent by passion, he has fled to wall in loneliness—some dark time, some ghostly hour of nature suggestive of suicide, which should add to the idea? Or would you describe Joy dwelling under the "brown horror of the woods?" or depict Birth with the attributes of Death—Death with the attributes of Birth? Or, again; could you even attempt to use a similar description for every idea alike? Now it is—of course in a modified degree—quite possible and practicable to use this kind of expression in architecture—not so as to be burdensome or oppressive, but rather quietly suggestive, as are the crosses on church gables, the faces of angels in the chancel, and the sacred emblems on the altar; and it is evident that an attention to the reigning idea—the spirit of a place—must be equally good and desirable wherever it be exercised.

In the choice of styles, a man had better consult the bent of his own genius; settle on that which is most adapted to it; work himself into the very spirit of his choice; apply his whole knowledge of art to its development; and then not slavishly imitate—not seize somebody's book, and copy out of it—not fall down and worship the very dust of some old temple, and some day surprise the world with a totally unsuitable imitation of this architectural god: let him not do this, but boldly go upon his own experience, the result of his studies, his understanding of the right use of precedent, his knowledge of the age—its means and materials—and what will be the result? He will produce a work that is wanted, a work at once justifiable by the principles of art, and the particular style of art he may have chosen; and yet original, suited to the time,—great, because true; good, because rightly progressive. So that a man do thoroughly master some good style, it is mere waste of time to be fiercely struggling for the prevalence of this or that: that which has reason on its side will doubtless triumph, and beyond advice and example, to dogmatize and declaim,—to spend the hours in strife that should be devoted to improvement of the general art,—is mere architectural bigotry. The more we avoid conventional absurdities the better: the less we become ashamed of our country, our institutions, and ourselves, so far at least as expressing them in our works is concerned, the better; for, from the majority of our material works, it will be impossible for posterity, five hundred years hence, to tell who we were, what we did, and to what, beyond imitation, we aspired, save that we must have lived a long while ago in an unfortunate age, that, so far as art goes, "never told her love."

I have now brought to a close the second part of this paper. In the first, you will re-

member, I treated rather of the discipline and moral necessities of the student, than of his art, endeavouring to show how he should qualify himself for his work. In this I have wished to set forth what he should consider in applying it, in regard of nature—precedent, utility, educational worth of idea, constancy of idea, unity of design, situation, outline, detail, expression, and the choice of styles. The remarks, though necessarily chiefly intended for architecture, will apply, as far as the principles on which they are founded, to most other arts. In conclusion, in adding a few words on the uses and glory of art, I would say, let us consider how much we have to learn, how much to do, how much to suffer, if we would make those uses manifest, and that glory enduring. The age we live in is one of advance: all are hurrying restlessly onward: all are striving one against another in a huge, human competition, in which every man sends in himself against his neighbour, and the stronger are accepted and the weaker gradually disappear. We have then, like men in a race, to run—like men matched upon a mountain, to climb—men ranged in a battle, to fight. But men of art are in a different position from the multitude as respects their office. They are as teachers, guides, refiners: they are the priests of grandeur, beauty, and grace: it is theirs to lead the lower mind up, step by step, like a little child, to that eminence whence it may perceive its own capabilities; where it may breathe the air of intellectual liberty; where the consciousness of inward power shall be telling, telling, in the spirit of its Divine origin, and showing of that fountain in its works. The tide of civil education rolls along the channel of genius and the arts prepare; and if they become base, or worthless, or false, the way they make shall be like them, and that tide a torrent of universal destruction. I say, then, we are in a responsible position; I say, then, we have doubly need of power and excellence—power, in unity, mutual generosity, and support; excellence, by strong, earnest labour, deep thought, and the genius kept for ever wakeful and observant, grasping with the strength of a god at what is great. If we are to toil for nothing,—if the whole end of our labour is but to produce a fine poem, a fine building, a fine picture,—fine and no more,—we are but at the work of Sisyphus. But if the true end of it be to enlighten, teach, exalt—if we speak, build, paint, but to improve and adorn,—our labour will truly be Sisyphean; but the result is not: the stone does not roll back, but daily and hourly goes higher, higher, up the hill. Then, knowing what is due from us, let us arise to work,—let us rest, to think,—aye, let us sleep, but to dream of being greatly useful! No toil, no trouble, no disappointment shall stand in our way triumphant: we have a purpose: and a mighty one: we have a power, and to answer for its right exertion. And as we toil up the steep hill of life, beckoning to those in the valley to follow, bidding them raise their eyes and observe our path, we ourselves will daily lift up our gaze far, far on high: we will think of the eternal end; we will muse on the natural vanity of our highest art compared with what surrounds us, and shall so ever more and more understand that genius, art, labour, every power that we have, every thought we can express, every hope that burns within us then only is great, then truly excellent, when it glorifies the Almighty Architect of the universe, of the innumerable suns, of the infinite deep of heaven.

H. T. BRAITHWAITE.*

IRON LIGHTHOUSE FOR THE AMERICAN GOVERNMENT.—Mr. John Walker, of Gracechurch-street, is at present constructing a corrugated iron lighthouse for the American Government. He has only contracted for the iron part of it, and the lantern is to be furnished by the Americans, who are to erect it. It is now put together at the Shepherd and Shepherdess-fields, New North-road, Hoxton. The building will shortly be completed and shipped to its destination.

* We must compliment Mr. Braithwaite on the production of this excellent paper.—ED.

PROFESSOR COCKERELL'S FOURTH LECTURE ON ARCHITECTURE.

FROM the earliest time to the present period, the great writers on art, whose works form the subject of investigation in this series of lectures, have laboured for all ages,—the principles of the noble art of architecture being unvarying,—the only changes they are capable of receiving being from the new discoveries in science, or the application of material, such as iron. The strong recommendation to study these writers is not a vain pursuit, for art is ever unvarying and taste immutable. The student is not only encouraged, but becomes awakened to the dignity of the art, and is enabled to fill the position in society, and, satisfactorily to himself, assume the rank to which his profession is entitled.

Vitruvius is the most valuable of all writers on architecture: Sulpicius calls him "divine," as he holds to the principles of the Greeks. Schneider, another writer, says the principles of this art surpass all others. He is not, however, so learned as Alberti, nor so elegant as Palladio. Vitruvius, in the preface to the seventh book of his invaluable work, states that he had gathered his precepts from the writings of forty-one Greek authors—all of them lost to us, but for him. He is as truly the father of the moderns, as he may be called the child of the ancients. Although his sentences are sometimes clumsy and confused, yet he goes direct to his work. Alberti is a writer on the beauty and the ornament of the art, in which his essays, inculcating that beauty in architecture consists in the harmony of parts, leave nothing that could be added. Vitruvius, in his first book, indicates the qualifications required of an architect, and in the second chapter says, these principles when combined must be illustrative of order in all the members, as, for example, the regularity of a frieze. No other author insists so strongly upon order in design as a fundamental point, often overlooked. In the great character of nature is intermingled rocks, trees, and all the adjuncts of landscape composing the picturesque; but the architect's duty is to interfere with nature—he plants the avenue—he levels the terrace—everywhere order must be his guide, for he must remember that order is the source of the sublime. All Greek buildings, and some later ones, such as King's College Chapel, at Cambridge, are evidences of it. Blondel's illustration of order is conclusive: he likens it to an army drawn up in line with its regular masses and intervals, all producing a beauty which is the true source of pleasure. A work of order is like an oasis in the desert, or the Temple of Apollo in Areodia. In sculpture and painting the works of Phidias and Raffaele breathe repose;—this is the true aim of the fine arts, to be soothing in their effect. Order, disposition, and repose, then, are the great ends for art to achieve, for after all our pranks, we find tranquillity the great element of satisfaction to the eye, as in the forum of Nerva restored by Palladio, the library at Venice, and the palace at Naples, all delighting from the tranquillity of order. The picturesque school of architecture was invented by the painters, of whom Michaelangelo may be considered the chief. Raffaele having died at an early age, the completion of St. Peter's may justly be attributed to Michaelangelo. The façade of St. Peter's exhibits a total absence of order, the spaces between the columns being all of irregular width, as the exhibited elevation shewed. The columniation was originally intended to be open, but was subsequently filled up, and presents the appearance of a compressed bas-relief. The façade of our St. Paul's is every way superior, presenting an obedience to order very dignified, and the upper portico offers a grander position for Cardinal Wiseman to give his blessing to the multitude beneath, should he ever get there, than the Pope now enjoys from an insignificant window in the frontispiece of St. Peter's at Rome. Raffaele, the greatest of painters, was great as an architect; he has left, however, but few erections from his designs. It would be a great service to architecture if all his subjects and ideas in pictures were collected and published separately.

The order of window openings was also very striking, and good designs would arise from these openings being regularly determined first, and the intermediate spaces filled afterwards. In the chapel by Inigo Jones, at Whitehall, this arrangement of order in the windows was a striking feature. After Peruzzi, Vignoles, and others, a nausea came over the architects, owing to the picturesque influence, until they finally became the great image manufacturers of an idolatrous and superstitious age. In the insanity of this time the church opposite the Fountain of Trevi was built by Cardinal Mazani: Borromini also committed great absurdities, sometimes using an order and sometimes no order at all. Bernini, with a high sense of beauty, is not so objectionable in the abandonment of the classical orders. The pilaster was the great favourite, sometimes continuous with capital, and occasionally with mutative capitals of the orders. Rossi, Cicognara, and others may be studied with great advantage. With us the orders have been so misapplied that we are senseless of their beauties and appropriateness. Foreign critics say of us that the abuse of the orders has led us to place the columns of the Temple of Jupiter Stator to decorate a shop front. If we were to study portions of the remains at Pompeii we should find great resources in panelling, and it might be a very desirable matter to propose a premium for the elucidation of a panelling order as well as a fenestral order. Mr. Hope's new house in Piccadilly might be cited for originating new ideas in window arrangements. The old mediæval painters have left in their pictures many objects worthy of study if carefully investigated. The resources of architectural subjects introduced by painters should not be neglected. No man will ever make an architect who does not unite in himself a knowledge of the fine arts of painting and sculpture with an intense study of his own profession.

The second portion relates to disposition, as suited to locality, aspect, and utility. By the opportunity the Professor had enjoyed for years at St. Paul's Cathedral, he had especially observed in every part these intentions fulfilled. The windows to the north-east were always open, while those of the south-west were constructed to be closed. Blenheim is another example of disposition suited to convenience. The effect, external and internal, is really a delight: it is in this the wisdom and cunning of the architect are conspicuous. In the primæval ages, before the classical era, as well as in the dark mediæval ages, every erection was single: disposition of parts appears unknown: like Ajax, all was absorbed by the one feature. The grand effect of order is particularly conspicuous in the city of Carlsruhe, in Germany, and in the modern buildings of Paris. The analogy of military tactics, as an army drawn up in line of battle, is seen in Greenwich Hospital and Blenheim, and the same in the Building for the Exhibition, all breathing order. The art of arrangement is a rare gift, much neglected in these times, when a hurry and desperation have taken possession of us. Sir Robert Taylor's block of the Bank-buildings, and Lord Burlington's erection in Saville-row, bespeak a careful study for laying out the ground plans to all the varieties of convenience. The enlargement of London has since been left in the hands of builders, who have cut the land into slices. In England, we build with an economy of this kind, because we are a poor people. We should build in such a manner that the generous shall commend, and the frugal not find fault.

LIABILITY OF LITERARY INSTITUTIONS.

—Lord Campbell has given judgment in the Court of Queen's Bench in the case of a disputed exemption of the Royal Manchester Institution from paying poor-rates. The institution was established exclusively for scientific and artistic purposes, but Lord Campbell said, that although the object was very laudable and right, yet "the Court could only look upon the society as a club of 600 gentlemen associated together for their own amusement, and therefore not entitled to the exemption given by the Act."

SUBSOIL DRAINAGE OF TOWNS.

The salubrity of towns depends, in a very great measure, on the wet or dry state of the lands near to and upon which they are built. Lands saturated with water, and lands covered with stagnant pools, exhale large quantities of moisture, which make the atmosphere excessively humid and chilly, and sometimes produce thick mists and fogs. The atmosphere, moreover, becomes impregnated with the chemical impurities which arise from the decompositions of vegetable matter on such surfaces. Hence many diseases are aggravated by, while others are wholly traceable to, this cause. Dwellings that are erected on wet ground suck up moisture therefrom, causing the walls, floors, and rooms to be continually damp and cold. It is extremely desirable, therefore, that all such lands in and near populous districts, especially those which are to be occupied by dwellings, should be relieved of all superabundant moisture, and kept as dry as possible.

The effect of thorough drainage is to make ground, before saturated with water, dry, warm, and healthy. It also dries, warms, and purifies the atmosphere; modifies and chastens the climate; and the usual train of evils, discomfort, and ill-health are, in consequence, greatly remedied, and in some instances prevented. It follows, therefore, that in order to preserve the health of towns, their entire site, as well as that of the wet and marshy lands adjacent thereto, should be thoroughly drained. This, it is obvious, is a work as essentially necessary to be done as providing means for carrying off the waste water and soil from the houses. But since stoneware and other impermeable pipe sewers and drains have come into use, the drainage of the subsoil has been greatly neglected, and latterly it would appear to be entirely forgotten. These pipes can only convey away the fluids which are discharged into them at the various inlets; for, as the material is impervious, and as the joints all round are stopped with cement, it is evident that no water can escape into them from the subsoil. Hence, in many situations, where these pipe sewers have been and are now being put down, the ground is as wet as before the pipes were laid. No provision whatever is made to draw the water out of the subsoil, and so free the foundations of the houses from damp. This is a great error, which, in all future drainage works of this nature, should be avoided.

Preliminary to the putting down of sewers and main drains, as well as to the erection of houses, the condition of the ground as to dampness should be ascertained. This is an operation now never attended to, but which should on no account be neglected where it is proposed to lay down impermeable pipes; for if the ground be wet it will remain so if only such pipes be put in. Everywhere the subsoil should be thoroughly drained down to at least four or five feet below the foundations of the houses. This should be effected by forming permeable sewers at intervals, along the main roads and streets, of a material such as brick, which will admit the land water, and the rain which sinks into the ground, to percolate through the brickwork. The outfalls and inclinations of these sewers should be regulated so that smaller brick or permeable branch sewers can be laid from them through the minor streets lying between the main ones, at depths sufficient to drain the subsoil down to the level above stated.

From these sewers small porous drains should be continued immediately along the front and rear, as well as through and under the houses, which drains would not only dry the ground, but would also serve to convey away the surface-water from the roofs, yards, squares, and gardens, while the sewers and main drains would serve as outfalls for the drainage of the roads and streets. Thus would the entire subsoil of all the roads and streets, of the yards, areas, and gardens, at the front and rear of the houses, be effectually and permanently drained; the rain, as it falls on the surface, would be caught and carried off at once; and the land, as well as the houses, would be made perfectly dry and healthy.

It is not intended to depreciate in the slightest degree the value of stoneware and other impermeable pipes for sewers and house-drains. For these purposes such pipes are most indispensable, as, when properly laid and jointed, they effectually prevent the liquid refuse and soil from escaping into and filtering through the land; but, at the same time, they do not afford means for the water in the subsoil to drain away, and, therefore, the drainage, as a whole, cannot be said to be efficiently executed. Now, as it is absolutely essential that the subsoil should be thoroughly drained, and kept permanently dry, other sewers and drains of a porous nature, or such as would allow the passage of water into them from the land, should be laid down as well. This should be done, if the drainage is to be performed scientifically and properly, as a separate system, or in combination with the soil drains, either of which plans can easily be effected.

It would also add much to the dryness, salubrity, and value of houses if land drains—that is to say, pipe drains, capable of admitting water through their substance and at the joints—were to be laid down below and outside the foundations of all the exterior walls of buildings, particularly those walls sunk into or placed against the ground, in addition to the dry areas usually provided. The rain and land water, in soaking into the soil, and in flowing to the lowest places, would be intercepted by these drains, and so prevented from running under the houses and stagnating there. This would also tend very materially to keep the land around and under the houses dry, and so preserve the walls, floors, rooms, and furniture from damp and dilapidation. The cost of putting down such drains would be trifling and of no moment, as compared to the comfort and benefit that would be derived from the general adoption of this plan.

THE BRITISH INSTITUTION.

THIS annual exhibition of modern art was opened to the public on Monday, the 10th inst. The catalogue names 538 works, including the sculpture. As a display, it averages more than the usual amount of mediocrity, mingled with some few of considerable excellence. Four painters and one sculptor, among the Royal Academicians, and three associates, form the only contributors from that body. F. R. Lee, R.A., exhibits a wild and romantic site of Glen Locket; T. Creswick, A.R.A., two landscapes, and R. Redgrave, A.R.A., a landscape with a ruined hermitage (234): in the foreground of this last picture the wild herbage is carefully illustrated with true botanical knowledge. The talent of these three landscape painters, being fully appreciated, needs no remark. Mr. Creswick steps out of his usual line of subject, and, in a large picture, gives, in his best manner, a broad expanse of country, to which R. Ansell has contributed a clever group of agricultural animals in the foreground. By D. Roberts, R.A., there is a portion of the Portico of the Temple of Osiris—an admirable picture, illustrating the wonderful architecture of the Egyptians, and its polychromy. A half-length figure, of life size, by H. W. Pickersgill, R.A., entitled "The Last of the Abencerrages contemplating Granada," is finely painted. "The Sea-Cave," by W. E. Frost, A.R.A., consists of a single female figure crouching in a rocky recess on the seashore. The colour of the flesh is very beautiful, and the execution equally elaborate, but the expression of the face and shape of the head is less satisfactory.

"Mary Beatrice of Modena, Consort of James II., seeking Shelter under the Walls of old Lambeth Church," by F. Newenham, is a picture of great pretension, and also of great merit, yet not without some curable defects. The queen is of life size, holding her infant in her arms: there is a good deal of the grandiose in her form, and the expression of the countenance is satisfactory. The black robe she wears is not detached from the shadow cast by her form on the wall, and gives it an appearance of uncouth clumsiness, which a few feeble reflected lights would have lessened.

Notwithstanding some weak points, it exhibits high qualities of art. 448 is a circular picture, entitled "History," by J. Sant. Mr. Sant achieved great success last year by a similar picture, called "Astronomy," and this appears a continuation of the same idea. The figure personifying History is a half-length female of some beauty, with a book, drawn with great purity and learning, and imbued with charming tones of colour, particularly in the shades. It is wanting in the dignity and severity of History. In the execution a strange difficulty is offered by somewhat that would apparently be the ornament of a girdle, but from the absence of any gradation of tint to give it a circular form, and from the colour employed, the body of the female appears pressed upon by a wooden box.

(233) "Washing of Hands in a Turkish Harem," by Willes Maddox, is a cabinet picture of high finish and rich colours. (268) "Cupid," by C. Brocky—a life sized boy floating in the air—is noticeable for the freshness of the flesh tints. (369) "Blanche," by Frank Stone, a little picture, consisting of a small half-length figure, is painted with more solidity than this artist's larger works, and will doubtless be a favourite. (459) "A Study," by W. Wallis, a gem for finish and magnificent colour, consisting of small half-length figures at a table: one, playing a violin, reminds the spectator somewhat of G. Dow's own portrait similarly occupied at a window. The hangers have shown want of discrimination in placing this beautiful little work on the floor line. (491) "Sunset off the Isle of Arran," by J. Danby, is a clever marine picture by a promising son of the veteran associate. (492) "The Infant Moses," by W. J. Grant, a small historical subject well placed on the canvas. (501) "Van Dyck at Saventhem," by T. Dehaussy, is a very clever work, remarkable for truth of expression, finish, and many other good qualities.

Among the worthy specimens the following may be named, either for their pleasing qualities or artistic execution:—(25) "Grace," by F. Goodall, although inferior to former efforts by the same artist, is a good picture. (29) "The Farm—Evening," by J. Linnell, is brilliant in colour, a small work, but a gem for its lustre. (50) "Children feeding a Famed Eagle," by F. Taylor, is painted in a bold and dashing style. (68) "The Eagle's Throne," by J. Wolf, is firmly conceived and painted. H. J. Boddington is scarcely so good as usual: the distance in 72, "A Bright Summer's Noon," is cleverly painted. (73) "Signor Don Sancho Panza," by J. Gilbert, is characteristic. (136) "The Siccar Point, on the Coast of Berwickshire," by J. Hall, is a purely geological diagram, without the smallest pretensions to forming a picture. (142) "Early Moonlight, Bristol Harbour," an ice scene, by C. Branwhite, is one of the best works of this class he has exhibited. 153 is a "Musidora," by H. Pickersgill, delicate and graceful. (167) "Chips," by J. Linnell, with much that is very fine, is less satisfactory than his smaller work: the figures damage it. (248) "St. Anthony's Day in Rome," by G. H. Thomas, is more deserving of being on the line than some that are there. (278) a fish piece, by H. J. Rolfe, is perfect of its class. (320) "Columbus," by A. Colin (a French artist), displays that earnestness and thoughtfulness which are found in modern English works less often than we desire. (461) "The Ballad Singer," by R. Rothwell, has some charming qualities, but is marred by the distorted countenance of the chief figure.

There are not many architectural pictures, and none of them present any novelty of subject to the student or lover of this branch of art. The most important are a large interior of Westminster Abbey, by a Belgian painter, M. Genisson; and a long view, by Wingfield, of the Cartoon Gallery, Hampton Court.

Miss J. Macleod's "Village School" (8); (185) "Nature," by Rothwell; (176) "The Forest of Arden," by John Martin; (208) "The Harvest Field at Wargrave," by G. A. Williams; (277) "A Levantine Sunset," W. Linton; (313) "Il Rio del Carmine,"

by the same; (289) "*Une Granvilleoise*," by W. Fisher; (291) "Dressing for the Day," by George Cruikshank; (403) "*La Petite Dieppoise*," by A. Solomon; (301) "Dismasted Ship off the Welsh Coast," by S. P. Jackson; all deserve mention.

ON THE FORMATION OF A MÆDIEVAL MUSEUM.

THE formation of a Public Museum of Mædieval Art, accessible alike to architects, architectural students, sculptors, carvers, decorators, and all others engaged in the different branches of practical art, has long been a favourite project with me; but, though I once ventured to attempt an agitation on the subject, the scheme has, from the many difficulties which seemed to surround it, remained, with me, as with the many others who have thought of it—in *nubibus*.

I think that the desirableness of such a museum must be admitted by every one. Even to those who are not especially concerned in questions of art, or of antiquarian interest, it must be clear that, if we make costly collections of the works of the great nations of ancient days, as of Egypt, Assyria, Greece, and Rome, and treasure them, not only on the ground of their intrinsic worth as works of art, but as exponents of the history of the world, and as the footsteps of the mighty nations which have in turn taken the lead in power and civilisation, it is equally important that we should collect specimens of the work of our own and of kindred nations—works which, though they do not claim the interest which attaches to very high antiquity, are still especially interesting to ourselves as illustrating the history of our own civilisation, and as being more or less connected with our own religious and civil institutions and customs, and which belong to a style of art equally original, and are, at least, equally remarkable with any of those before alluded to.

To those, however, among us who are engaged in reviving this our native style of architecture, or rather of founding upon it as a basis a style of our own, such a collection is not only important but *absolutely necessary*.

I am as strongly opposed as most of your contributors to absolute copyism, and it is not for any such object that I would advocate the formation of a Mædieval Museum. I am, indeed, strongly of opinion that it would have a contrary tendency. A man who has only a particular and limited set of specimens of art to refer to, often copies them *ad nauseam*: you can detect his one or two types in every thing he touches; but give that man free and constant access to the inexhaustible treasures of art, and, if he have a spark of genius within him, he at once ceases to copy, his mind becomes expanded, every fresh specimen he studies enlarges his ideas, and he soon finds it easier to design than to imitate.

This is just what we want for our humbler class of artists, such as our carvers and decorators. They have not the means, nor even can they spare the time, for travelling and study: they have ability, but it wants cultivation and forcing. I have occasionally obtained funds to enable carvers to visit the best old examples, and the result has been most satisfactory, but employers generally say, "It is not our place to pay for these men learning their business." An architect certainly cannot afford to pay for this, and the men themselves have not the means, and the consequence is, that our buildings are spoiled through the want of knowledge and education on the part of our carvers. Had they means of constant reference to an extensive collection of casts of the finest specimens of art, the case would be wonderfully different: not only would their minds be continually freshened and elevated, by recurrence to the finest works of their predecessors in art, but I feel confident that their whole tone would be so enriched and fertilised that new phases of art would be constantly and spontaneously developing themselves, and architectural sculpture and decoration would once more become the living product of the present time, instead of the dead repetition of the past. I am the more convinced of this, as

I always find that the study of the finest specimens of mædieval art has a tendency to lead the mind back to nature, the true source of vitality, and suggests modes in which natural productions can best be used as the groundwork of our decorations.

The same arguments I have made use of as regards our subordinates or coadjutors in the carrying out of our designs, apply equally to ourselves. Our minds want constantly the refreshing influences which can only be gained by frequent reference to the finest specimens of art.

I need hardly say, that I have been led to trouble you on this subject by the offer about to be made to the public of the splendid collection made by the late Mr. Cottingham, and by the memorial which is about to be presented on the subject to Government by a large body of architects, artists, and other friends of art.

The subject is so important, and the opportunity so favourable, that I think our profession ought to rise *en masse*, and urge it by every argument upon the attention of the Legislature. Such an opportunity can scarcely ever recur, and, if lost, we may go on *ad infinitum* as we now are.

The great difficulty will, no doubt, be in providing a suitable building. Mr. Cottingham's collection can, of course, be only viewed as the nucleus of what we require, but *as a nucleus* it is invaluable. To it would probably soon be added the collection made by Mr. Barry for the Houses of Parliament, and additional specimens would be constantly flowing in from all quarters, so that the space required would be very extensive. To be useful it must also be *central*, a circumstance which again adds to the difficulty by adding to the cost. Against this we have only one set-off—that we do not need an architectural building. Any place which will protect the specimens and students from the weather would be sufficient. It has been suggested that the space between the approach to Waterloo-bridge and the unfinished end of Somerset-house would be suitable, and I think it would be particularly so, especially from the number of storeys which may be obtained both above and below the level of the roadway.

Supposing space to be provided, the next question would be as to the regulations under which it should be placed, and the means to be provided for the constant extension of the collection.

I suppose, to begin with, it must be placed under a committee or trustees, selected chiefly from among architects and antiquaries, who would be empowered to obtain contributions whether in money or specimens, and to dispose of such funds as they may receive either in this way or from Government. They should at once commence collecting casts of all the finest effigies and monuments which remain in our churches, &c. And I think they should have power to make grants in aid of architects who may wish, for their own purposes, to obtain casts of finer examples, whether at home or abroad. Thus, for instance, if an architect, travelling in France, see a fine work of mædieval art, which would be especially useful to him in some work on which he may be engaged, but which would be too costly for him to procure, and perhaps too bulky to be kept in his home, he might share the cost with the committee of the museum, and make it their property: thus the individual and the public will be at once benefited. This system I look forward to as the *one great* means of enriching the museum. I am sure that I could myself annually bring in, both from our own churches and from the continent, very valuable accessions, if the cost were to be partly met in this way. We should all be looking out on our journeys for specimens for our museum, and a feeling would be generated which would add a new pleasure to travel.

I must, however, say one word on the subject of *original* fragments. As a general rule, I think that the collection of them should be strongly discouraged. I strongly hold up local collections of this kind, as at St. Mary's Abbey, at York, where the fragments dug up from time to time are deposited in a building

on the site: there they retain all their value and interest, but once remove them, and half their value is gone. The great and only objection which I see to a mædieval museum is the risk of its affording a premium to spoliation, and I hold that at the very outset some stringent rules should be laid down as a safeguard against this danger; though it is obvious that many things are so entirely disconnected from the building to which they may have belonged, that it is quite desirable that they should be admitted into such a museum. Indeed the collection should contain manuscripts, illuminations, plate and metal work, and other moveables unconnected with any particular site. The remaining objects which would have to be considered would be the extent, and regulations of admission, and the means for keeping up a constant fund.

It is clear that the public must not be admitted freely, and every day, or there will be no chance for students. I am inclined to think that they should be admitted three days in the week, and then on payment of a shilling. I think architects, and others who can be expected to afford it, should pay a small annual sum, which would give them free admission, and enable them to give tickets to carvers and artificers, which would admit them freely for a certain time. Architects' pupils, &c., should pay some trifling sum, as 10s. for a yearly ticket, or, in the absence of such ticket, should pay 6d. for each admission. Artificers, without tickets from subscribers, might pay the same, or half that sum; but the great object should be to give every facility for their free admission, while at the same time means are taken for keeping up a constant fund for the extension of the collection.

I will not, however, trouble you further on the subject. I only wish to call attention to its importance, and there is no doubt that the details can readily be arranged.

GEO. GILBERT SCOTT.

. In our volumes for 1845 and 1846, at which time we were strongly urging the importance of establishing a *Museum of National Architecture*, will be found a number of communications on the subject. Mr. Godwin, in 1845, and again in December, 1846, addressed a letter on the subject to the late Marquis of Northampton, as one of the trustees of the British Museum,* who, in consequence, sketched a plan for a comprehensive museum of Fine Arts. This, it seems, Lord Northampton continued to entertain, as, only a few days before his lamented decease, he addressed a letter to Mr. Shaw, repeating the heads of this project.

A COURSE FOR AMATEUR ARCHITECTS.†

No one can fully enjoy travelling without such an insight into the principles of architecture as may enable him to appreciate the finest productions of the art; and whether the observer contemplate the remains of Grecian art as exhibited in the matchless Parthenon, or in specimens still existing on the shores of Ionia, Sicily, Attica, and the Peloponnesus,—whether he visit the seats of Roman building, the Coliseum, the Pantheon, the Aqueducts, or other works, which mark the greatness and the architectural skill of ancient Italian buildings,—whether, in the streets of Rome, Vincenzo, Genoa, Ancona, Turin, Florence, or other cities, he look out for the works of more modern Italian art by Giulio Romano, Michaelangelo, Palladio, Sansovino, San Michaeli, Scamozzi,—whether he pace the dim aisles of the magnificent cathedrals of the middle ages,—the Colognes and Strasburgs of Germany—the Rheims, Beauvais, and Rouens of France—the Seville and Cordovas of Spain—the Salisbury, Yorks, and Lincolns of our own land,—he should be able to discriminate between the respective styles, as one style differs from another, and as each style differs within itself,—he should so far know what constitutes the standard of excellence as to be able to say *why* this is pure and graceful, *why*

* The heads of this will be found in our fifth volume, p. 45.
† From a paper by the very Rev. E. B. Ramsay, read before the Architectural Institute of Scotland.

something else is faulty, and wherein it differs from what is good.

Now, if it be not an unwarrantable trespass, I would humbly propose to take a rapid sketch of the ground over which every one so qualified to appreciate architectural excellence should have passed,—of the architectural principles with which every one should be acquainted, and with which every one may easily be acquainted. I address myself, of course, to those who have paid little attention to their ideas on this subject. I beg the forbearance of those who know well all that I may be able to say. I hope, however, that truths, even the most elementary, never can, if fairly and clearly stated, be altogether uninteresting and tiresome, even to the most skilful and experienced.

In this endeavour to sketch out the ground over which the amateur student in architecture may be supposed to pass—the manner in which he should observe, as he goes along, and the objects he should keep before him, I need not now speak of Indian and Egyptian buildings. They are deeply interesting subjects; but they are not only too difficult for a sketch: they lie also removed from our present purpose. The student then begins, I suppose, with Grecian architecture. Whether it be derived at all from Egypt, or how far it arose from it, or copied it, is not now the question. It is a contested point. But we may take it as we find it; and the first step, I conceive, is to gain a thorough acquaintance with the details and effects—the spirit and the letter—of classical architecture, as developed in the three Greek orders, the Doric, the Ionic, and the Corinthian. To a certain extent this is easily attained: treatises abound. The articles in the "Encyclopædia Metropolitana" and "Encyclopædia Britannica" furnish very fair measures of information. The plates in the "Encyclopædia Metropolitana" are beautiful. The article is written by Mr. Narnen, of the Royal Military College.* The terms of art should be carefully studied, and well understood; but let it be remembered that it is not merely the power of knowing terms that the intelligent observer of classical models should possess, but also the power of appreciating their beauty—their fitness in their own position. It is not enough to talk of Architrave, Frieze, Cornice, Mutule, Modules, Propylæum, Prostulos, Cymatium, Pycnostylos, &c. &c. He must feel how they bear upon one another, and how they conjointly produce that effect which this style of architecture, and this alone, is calculated to produce upon the mind. The effect of Grecian architecture is not like effects in Gothic architecture—vast, complex, bewildering, infinite: it is one pure and harmonious whole. You cannot change the proportions—you cannot vary the outline—you cannot combine one order with another—you cannot make a new order intermediate between those already existing. There stand the three orders in their inimitable beauty—monuments of Grecian art—monuments of the perfect and graceful conceptions of the Grecian mind. Like reading the finest works of Greek authors, a contemplation of Greek temples conveys the idea of a production in itself perfect—should convey the idea of unbroken symmetry. Nor is there a want of variety in such effects. Each order has its peculiar character, and is entire in itself. The Doric is severe: grandeur and majesty are its distinguishing attributes. The Ionic is graceful, elegant, and, at the same time, simple, and free from elaborate detail. The Corinthian is full of ornament, rich in detail, and yet how simply beautiful in its effect—how commanding, we might say how dignified in its proportions! We can almost fancy an enthusiastic lover of Grecian art personifying the three orders, and able to realise, through the outlines of the stone, presiding minds and penetrating intelligence. But I must not indulge in these abstractions. Should any one be disposed to study the moral sentiment and the physical emotions that can be deduced from architecture, let him ponder over one of the most extraordinary productions of our day—a work by a graduate of Oxford, entitled "The

Seven Lamps of Architecture." On the question of beauty, as associated with Grecian architecture, I need hardly remind the student of Lord Aberdeen's small but admirable treatise.

But we suppose the student has now gained a fair knowledge of the parts and details and proportions of the three orders of Grecian architecture. He finds his next step is a modification of these orders in their character, and an increase in their number. The Romans altered—I do not know why we should say corrupted—Grecian architecture. They added—why should we say they interpolated—two orders, the Tuscan and the Composite; and they brought the art to bear upon the additional uses which they found for it. Let it not be forgotten, that pure and lovely as was the Grecian architecture, it was only applied to one object, the Temple. There was no habitable interior. The style was not used with them for domestic purposes at all. It is a mere exterior, so far as the spectator is concerned. The Greek sacred architecture was internally a simple cell of narrow dimensions to contain a single statue. But the Romans required more. They had to build bridges, baths, aqueducts, palaces; and accordingly they enlarge the sphere of their architectural elements. The great power which they possessed in marble and stone was, that they could turn the arch—they had the vaulted roof—they had the dome or cupola. Here, then, are new powers and new capacities for grand effect. Buildings gain height, and expand into great dimensions. The student examines that alteration of the severer features of Grecian art which renders it an adaptation for Roman purposes; new combinations of elements are to be considered—new embellishments—as for instance, the archivolts of the curvilinear part are to be ornamented. New resources are required for filling up the spaces of the extended fronts, and (in comparison of the severer Grecian colonnade and pediment) the elaborate and complex elevations of their buildings. Whilst going through the Roman style, the student observes its purity in the severer and earlier department immediately arising from the Hellenic. He then traces it on to a state of comparative corruption and debasement, and again marks its restoration in a magnificent and plastic form, under such minds as Giulio Romano, Michaelangelo, and Palladio—a form which was introduced and naturalized in this country, especially by Sir Christopher Wren and Inigo Jones.

But now the student is prepared for a new and a very different style of building—a style, on the history and the origin of which there has been controversy without end, and, I may add, a great deal of controversy without meaning. The name certainly is unfortunate—"Gothic,"—for it has as little to do with Goths as it has with Egypt; and I fear the name was given in scorn as equivalent to *barbarous*—being borrowed from the Italian writers of the fifteenth century, who contemptuously applied the term to all works of art in the middle ages. From them Wren is the first English writer who uses it. Still the term is there, and we must be satisfied to retain it. A name is difficult to alter, and if we know what it exactly means, it answers the purpose. Nor does it appear to me that the names proposed would be altogether suitable: for instance, "Pointed" architecture is not a correct term, for an essential part of it is circular: "Ecclesiastical" is not, because it is not confined to ecclesiastical purposes, and many ecclesiastical edifices do not adopt it: "Christian" is not, because in a great part of Christendom it is not used, and never was used. But to pass from the name to the thing. Out of the Roman architecture there arose two styles or orders of building, used especially for church building—the Lombard and the Norman. Of the former I have little to say. It is the ordinary type of churches in Italy. It has many enthusiastic admirers, and none more liberal and intelligent than the Honourable Sydney Herbert, who, at his own cost, and at a great expense, has built a complete—a beautiful—I may add, a gorgeous—church in

this character, at Wilton, near Salisbury. It is a fine edifice, rich and glowing with variety of colouring—agate, jasper, lapis lazuli, carving, gold stars, azure, and gilded vaults. It is impossible not to admire it as a more artistic production, but as a church edifice my associations do not go along with it. Of the Norman style we may simply say that at first it has the appearance of a debased and inferior Roman. The pillars are enormous, sometimes little more than a diameter in height; the arches ponderous and unadorned; the vaulting or groining mere massive ribs and cross-springers; the windows without tracery, and the capitals of the piers, instead of the fine delicate Ionic volutes, or rich Corinthian acanthus, are grotesque imitations, or sometimes cut plain off on four sides, making a square top,—as if the architect, in despair, had determined to adventure nothing: the doorways, even the earliest, are sometimes very rich, the whole carried round with profusion of ornament. The principal of these ornaments, and one very different from any in the previous styles, is the chevron or zigzag. I know it is said to have been traced to some ornament in the Church of St. John, built by Constantine outside the Roman walls. Still, how it came, and how it was used in such profusion, seems a mystery. These Norman doors abound with decorations of chevron, cable, billet, nail-head, beak-head, rose ornament, &c., as may be seen in great preservation at Durham, Malmesbury, Ilfey, Northampton, &c. It was worked to great nicety and perfection in Normandy, as at Caen, in several churches, and especially St. Stephens, where the true Norman style is executed with a rich and finished effect of which we have no example in this country—not there confined to doors or portions, but extending entirely through the whole building, interior and exterior. This, I suspect, was carried on there whilst the English architects were working at the more pointed forms of church architecture.

At this word Pointed architecture springs up the great contest—What is the origin of Pointed architecture? Where did it originate? Who first adopted it? It came from imitating trees in an avenue—it came from the intersection of arches at St. Cross—it came from the East—it came from the pointed timbers of Noah's Ark. With all this, except as matter of curiosity and matter of history, the student has no concern. He can trace the Pointed architecture growing out of that which went before it. Every step is so resolved back into some previous modification of Norman work: in fact, there exists a style of transition between the one and the other—between the Norman and the first Pointed—called by some architectural writers semi-Norman. What more can be required? You see the circular arch taking a sharper sweep—you see the heavy piers clustering into four smaller, or becoming one smaller, with many shafts set round—you see the windows becoming narrow as the arch becomes sharp, so as to make the lancet: the capitals are reduced, and foliage set round the former blank sections of the Norman: the chevron is raised forward, and brought to angular points, like a little pyramid, and, in fact, as I have said, the one style passes into the other, and even some time after it has been advanced (as at the north transept of York), retaining some circular character of the Norman from which it sprang. When we see the Pointed style gradually and imperceptibly growing out of the previous Norman, we require no other origin. It stands out before us, and we discern the steps by which the successive workmen had brought it to perfection. Most satisfactory specimens of this transition are found at Canterbury and at Romsey, in Hants. Sir Christopher Wren and other respectable names are quoted for the eastern origin of Pointed architecture. But they gave the opinion without study, and without consideration. Britton, and other more practical writers, have proved that at Acre, Jerusalem, and other places, the specimens of Pointed architecture referred to as being found in them at their capture had been built by Christians themselves—for Acre was not taken

* Mr. Crockerell's drawings and measurements of the Parthenon and other buildings are invaluable.

till 1290, and at that time, according to Gibbon, had 60,000 Christian inhabitants—and they have also proved that long after the Crusaders had returned, churches continued at home in the circular style. People forget that Norman work contains in itself abundantly the germs of a Pointed style. It is found in some of the oldest Norman churches, the crypt of St. Peter's, Northampton, and in places at Durham. Wherever there is groining over an oblong space, by means of ribs, and cross springers from corner to corner, the ribs *must* be pointed; they cannot be semicircular, or they would not reach high enough. This may be observed generally about Norman buildings. There is a perfect example at Jedburgh, in a kind of oblong side chapel entering from the garden of the manse. The clergyman showed it to me with much politeness. The truth is, Gothic Architecture, like the Grecian, had the same origin—the ever active intelligence of mind, and the eternal passions of the heart. It is the result of original power devoted to the attainment of excellence, receiving its *first* impulse and direction, possibly, but no more, from accident and circumstance.

In its first pointed form, as refined and matured in the reign of Richard I.—say the year 1190—we have the graceful and the perfect productions of Salisbury; transepts of York; parts of Beverley; Westminster Abbey; much of Lincoln; part of Wells; front of Peterborough; and many other exquisite examples in England. Of these, the only uniform building of the style is Salisbury, the erection of which extended from 1218, when the foundation stone was laid, to 1259, when the completion was celebrated. From east to west, with the exception of part of the spire, it is all the same. The effect is so light and so majestic—the unity of design and detail so happily preserved—that we would almost estimate a student's genuine taste for this style of architecture by his admiration of this building. To accommodate what Quintilian declared of Cicero—"Ita propositum sit nobis exemplum ille se proficisse sciat, cui Sarum valde placebit." After this, we follow the style into a more elaborate, more free, and more ornamental stage. After that, and out of that, arose a style peculiarly British—profuse in ornament—covered with minute panneling—the new arch struck by a combination of four arches from four centres—and still more marked by the lines of tracery running through, from top to bottom of a window or pannel, expressed by Rickman's happy epithet of "perpendicular tracery." The finest specimens of this style are St. George's Chapel, Windsor; the Beauchamp Chapel, Warwick; the Lady Chapel, Peterborough; Henry VII.'s Chapel, Westminster; and, above all, King's College Chapel, Cambridge. It is a style inferior in taste and effect to the two former; but still it has many striking points, when well executed. One part peculiar to itself is very beautiful,—the *fan* tracery, of which we find the germ in the cloisters of Gloucester—the perfection in King's College Chapel. Here the student then exercises himself in close examination of a most interesting and delightful branch of architecture. Unlike the Grecian and the Roman orders, its styles are not separate; but between the full formation of each there is a transition from the last gradually leading to it; and hence we have the terms "early" or "late." Early or late early English—Early or late decorated—early or late perpendicular. The curious part of the history is, that it was a *constantly* progressive style. The architect never went back upon a former style. When adding to an older building, he did it in the style of his own day. A curious example of this occurs at York. The architects, when building the nave, which is decorated, had to put in a pier to replace one in the transept, which is severe early English. But instead of putting in one of the older piers for uniformity, they put in their own style. In all the series, from the commencement of Norman building at the Conquest to the end of the reign of Henry VIII., the student has to mark these successive changes—I do not say improvements.

The style had its rise—its meridian—its decline—its fall. In grace and simplicity the perfection of the style was attained through the reigns of Richard I., John, Henry III., and Edward I. In rich and chaste adornment, perhaps through Edward II. and III. The fall is remarkable. The style from this time changed, but was still good, through Richard II., Henry IV., V., and VI., Edward IV. and V. Deterioration then became apparent. It commenced with the minute and over-strained embellishment of the perpendicular workmen of Henry VII. It soon passed into ineptitude. Let the student examine for this purpose the composition and detail of Bath Abbey, the last of the English line. There he will see their faults begun—their meagre mouldings—stiff panneling—hard, angular, ungraceful combinations,—and toward the east end (apparently the last portion finished), absolutely great *square* windows without arches at all. And then fast came on the age of a most tasteless and grotesque architecture, just as the light of science and religion were dawning on the world. The darker ages had hovered over the most beautiful and solemn and majestic buildings the world ever saw. But after that style had died out, for many years a perfect infatuation seemed to pervade the mind of English architects on the subject. The fine old churches and cathedrals went through a dreadful ordeal. The most horrid mutilations of the finest portions of work were made to let in monuments of the most barbarous character. Additions were made of Palladian work actually upon the Gothic, and when the friendly hand of restoration was held forth, the matter, as at Salisbury, was even still worse. But one need not be much surprised at the aberration of inferior minds, when he finds the error entertained and fostered by no less a name than Sir Christopher Wren. He could not discern any beauty in Gothic architecture. Nay, may we not tremble for the stability of national taste when we find such a man talking of our cathedrals as "mountains of stone"—"vast and gigantic buildings not worthy the name of architecture." He talked of them as "congregations of heavy, dark, melancholy, Moorish piles, without any just proportion, use, or beauty." In accordance with these sentiments he headed the two west towers to Westminster Abbey, which in detail are perfect failures—unworthy of Wren—unworthy of the building. But a better day for ecclesiastical building was to come. The subject was carefully and methodically examined. Half the clergymen in England got a Rickman, and talked of early English, decorated, and perpendicular churches. The better zeal for erecting additional places of worship for the increased and destitute population having arisen at the same time, churches sprang up by hundreds. Architects studied the practical development of the pure architectural spirit of the middle ages. The improved art of carving in stone and wood—of painting in glass—of making encaustic tiles—of casting bells and brass ornaments,—all seemed to grow up together. And what has been the consequence? a restoration of the style in its strictest features. Beautiful churches are multiplied through the land, combining in endless variety the examples of the twelfth, thirteenth, and fourteenth centuries. The student and admirer of Gothic architecture meets with them now at every turn.

INDIAN ARCHITECTURE.

THE TOOPARAMAYA DAGOBH.

THE eastern world presents to the traveller nothing more extraordinary than the ancient city of Annaradhapoor—a its sacred character, its great extent, and its wonderful ruins: for upwards of 1,300 years it was the seat of government, the capital of Ceylon; first known by that name 500 years before the Christian era, and where ninety kings are said to have reigned. Its walls were 64 miles in extent, enclosing 256 square miles; containing wide and spacious streets (one of which extended from the rocky mountain of Mehintalai, where 1,800 stone steps lead to its temples), palaces, gardens, tanks, water-courses, and paddy or rice fields.

It has dwindled into a poor village, containing a few native huts, a small bazaar, the cottage of Mr. Tronchill, the district judge, and a court-house. The surrounding country, which is generally flat, is dense forest and jungle, where, in every direction, for miles around, are temples, dagobahs, sculptured stones, and graceful columns of granite, with elaborate sculptured capitals, admirably executed. This part of the island is said to be very unhealthy, owing to the overflowing of the ruined tanks, to noxious swamps, and unwholesome jungle; the damp and excessive heat causing an exuberance of vegetation truly wonderful. Of its former greatness there can be no doubt, and numerous vestiges of bygone ages remain to vindicate its claim to this great antiquity. In the circuit of a few miles, in the midst of where once stood this ancient city, are six Dagobahs, the tombs of the sacred relics: they are brick structures, of a bell-like form, covered with a coating of chunam, which is the character of all Buddhistical monuments. These interesting remains are obscured by weeds and huge creeping plants: many of the buildings are covered with forest trees, from base to summit: wild beasts prowl among the ruins of the hallowed city, where the owl, peafowl, and jungle cock are found in abundance.

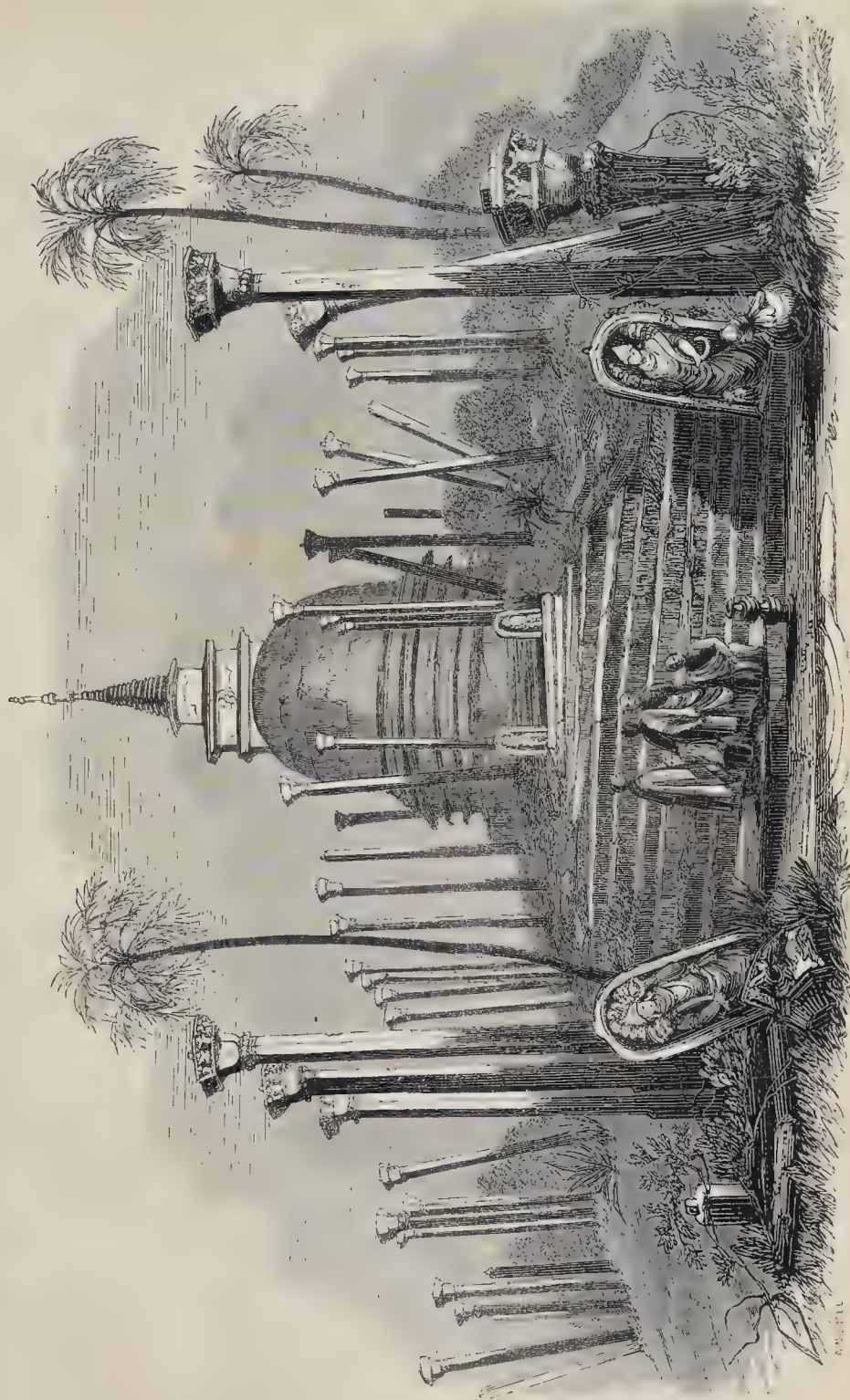
The Tooparamaya Dagobah, built over the collar-bone of Goutama Buddha, is encircled by 108 stone pillars, the shafts measuring 22 feet in length, and 14 inches in diameter, each one solid block of granite, the capitals being highly ornamented with figures, minutely finished and of excellent design. Beautiful fountains, huge stone lamps, stone coffins, and fragments of richly-sculptured stones, lie scattered about in every direction.

The view given is from a drawing made on the spot.

To the account of these ruins may be added a notice of another, of greater dimensions, covering a large extent of ground, called the Loma Maya Payu, or Great Brazen Palace, 270 feet square, 1,600 granite pillars of which are still remaining: on these were erected nine storeys, containing apartments for the accommodation of 900 priests; the roof being brass, from which circumstance the building took its name. The centre hall contained statues of lions, elephants, alligators, and other animals; terminating with a throne of carved ivory: on one side a golden emblem of the sun; on the other, a silver one of the moon. The pillars are about 11 feet in height, distant from each other about 3 feet; occupying a square of 40 feet on each side. This building was erected by King Dootogaimoonoo, 164 years before the Christian era. We quote from the *Colombo Journal*, 1831: "Amongst the ruins of this city, Annaradhapoor, the dagobahs, or monumental tombs of the relics of Buddha, the mode in which they are constructed, the object for which they are intended, and, above all, their magnitude, demand particular notice. The characteristic form of all these buildings is that of a bell-shaped tomb, surmounted by a spire, and is the same in all countries which have had Buddha for their prophet, law-giver, or god. Whether in the outline of the cumbersome mound, or in miniature within the laboured excavation, this peculiar shape (although variously modified) is general, and enables us to recognise the neglected and unhonoured shrines of Buddha, in countries where his religion no longer exists, and his very name is unknown. The gaudy Shoemadoo of Pegu; the elegant Tooparamaya of Annaradhapoor; the more modern masonry of Bora Budor, in Java, are but varieties of the same general form; and in the desolate caves of Carli, as in the gaudy excavations and busy scenes of Damboul, there is still extant the sign of Buddha—the tomb of his relics."

Mr. Nicholl, who has supplied us with this information, is, we are informed, the first artist who has sketched these antiquities.

A STATUE in bronze is about to be erected at Abbeville to the composer Leconteur. The municipal council of the town headed the subscription-list with the sum of 2,000*fr.* The artist chosen to execute the work is M. Louis Rochet.



THE TOOPARAMAYA DAGOBAH, CEYLON.

THE BUILDING IN HYDE-PARK AND THE PROFESSION.*

We are told that most important consequences will result from the elaboration of this great idea: the public are fairly roused in the eleventh hour, and will, in future, be regulated by *common sense* only: the lawyers are already setting their houses in order: architecture must follow: we shall get our *quietus* at last: the public will be imposed upon no longer: the Exhibition Building will be considered the *ne plus ultra* of art—the perfection of scientific combinations: iron and glass will be the only materials tolerated during the age of *common sense*: our temporary buildings will be permanent: our permanent buildings will be of temporary construction: we shall not spend 500,000*l.* on a work to last for centuries, but we shall spend 150,000*l.* on the freak of a year: the conservatories of Chatsworth and Kew will be the types for our museums of art: railway sheds will furnish the most appropriate models for our ecclesiastical structures: our senators, thoroughly imbued with principles of *common sense*, will reform their ways—restrict their acts and discussions within these limits, and regulate the affairs of the nation, ranged like flower-pots in a greenhouse: all flights of the imagination will be cooled down to the standard of *common sense*: Manchester cottons will occupy the places hitherto allotted to the canvas of Raffaele and Reynolds.

Let me say one word on an important part of Mr. Fergusson's letter, as affecting the profession, viz., the alleged incapacity for producing a work equal in construction and arrangement to Mr. Paxton's. If the public do not know, Mr. Fergusson assuredly *knows*, and the profession know it, too, that out of the 270 designs submitted to the committee, there were several (I will mention, among others, Messrs. Turner's, of Dublin), which closely resembled Mr. Paxton's in construction and general arrangement, and were, in fact, the same idea—a vast building of iron and glass, of simplest arrangement. You know, Mr. Editor, and we all know, for it was *notorious* at the time, that the committee, in deciding, selected those very designs which were *least* in accordance with their own instructions; and I might quote your own journal of that date to this effect. Had Mr. Paxton's design been submitted in competition, it would have been snubbed and scouted like the rest, merely because it was a *common sense* design, and adapted to its purpose. The committee, according to their own report, as quoted by Mr. Fergusson, were ransacking ancient and modern art for an idea, attempting, among a collection of permanent buildings, to find a model suited for a temporary purpose. At length they produced a design impracticable and unadvisable in every sense of the word. In a happy moment, in the eleventh hour, Mr. Paxton's design is placed before them: drowning men will catch at a straw. In spite of the barefaced injustice, first to competitors and then to contractors, and the stultifying their own proceedings, proclaiming their incapacity, the thing is adopted without further delay—the fact being, it let them out of a terrible dilemma: the committee were relieved from the consequences of their own absurd decision, and now seek, or certain parties seek for them, to throw the disgrace of their own mismanagement and incapacity on the shoulders of the profession at large.

I subscribe my name, that it may not be supposed that I am interested in any way, either in the competition or the building, but solely to defend the profession from a most ungrounded and unjust charge of incompetency.†

HENRY B. GARLING.

suggested by the models and plans submitted to the Royal Commissioners by Richard Turner, of Hammersmith Iron Works, Dublin, and Thomas Turner, architect, Belfast; and that theirs was the only design amongst the 245 which contemplated such an arrangement; likewise, that the same plans proposed a semi-circular roof over the transept, centre, and side aisles, but those over the transept and centre aisle were of much greater dimensions than that now being erected in Mr. Paxton's House. I would further beg to inform them that a 200-feet dome, resting on iron columns (but not on bricks and mortar) was proposed by the same persons, in a model submitted to the commissioners, months before the public were asked for suggestions.

Belfast.

THOMAS TURNER.

IPSWICH GRAMMAR SCHOOL COMPETITION.

THAT you may see the game out, I send you a note of the proceedings since my last communication. At a meeting of the Town Council of Ipswich, on Wednesday week, a report from the Grammar-school committee was read; and truly it was the coolest thing we have as yet had during this mild winter. After opening with the usual preface to such reports, they proceeded to state that the committee were of opinion that the plan bearing the motto "*Hope*" was entitled to the premium; but that the author of this plan, who was found to be Mr. Woolnough, candidly stated it would exceed the estimate; that "at a subsequent meeting the committee awarded the premium to a plan which was found to be the production of Mr. Barnes." When we recollect how these gentlemen canvassed the various merits of each plan by name, and voted openly by name for both of these designs, this finding out the name of the author of the chosen design is truly amusing. Let us proceed, however, to the choicest paragraph of this nice document, which says that "Since this decision the subject has assumed a new position. Among the original plans was one sent in by Mr. Fleury, of this town: it was accompanied by a statement that its cost would exceed 3,000*l.*; that he, therefore, did not affect to compete for the premium, but that if it were adopted certain individuals in the town would lend to the corporation 1,000*l.* The committee felt that they could not entertain the offer. The plan was accordingly laid aside in common with the others, which, for the reasons before mentioned, were found to be unsuitable. Since that time the same parties have offered to turn the proposed loan into a gift of 1,000*l.*, and in consequence of that offer, the committee have carefully examined Mr. Fleury's plan (which has undergone considerable improvements), and believing that it affords great additional and useful accommodation, they recommend the council to avail themselves of the offer, and to give the necessary authority for carrying the plan into execution without delay, provided the details (which are not in all respects satisfactory) can be made so, and a satisfactory guarantee be given that the total expenditure will not exceed 4,000*l.*"

Now, Mr. Fleury's plan is the one I referred to in my first communication, as having been allowed to be withdrawn and amended, and the fact is now affirmed by their own words. Mark them well, all ye fifty competitors,—"which has undergone considerable improvements."

But let us lay bare the real meaning of these words. They mean that Mr. Fleury was allowed to considerably alter his original plan, and that afterwards it was thrown aside as utterly worthless, and he has made an entirely fresh design! which, however, "is not," even now, "in all respects satisfactory." This latter statement is certainly rather surprising, for it is well known in Ipswich that most of the members of the committee—more especially one of the chief functionaries of the corporate body—have been for many hours daily at Mr. Fleury's office concocting this last design. The *Suffolk Chronicle*, in remarking upon the proceedings

generally, says—"There is one feature in the discussion on Wednesday which cannot fail to strike the most careless observer: it is the marked absence of any allusion to the charges of irregularity preferred against the committee by the correspondents of THE BUILDER. The conduct of the whole affair warrants us in again denouncing the present system of architectural competition."

One more extract on the matter, and I have done. Your correspondent, signing himself "Not one of the Committee," who stated things upon "*authority*," and who is well known to be a paid servant of the council, said, in his communication to you:—"that the committee were perfectly uncorrupt may be inferred from the fact, that one local design was rejected because it avowedly exceeded in cost the sum stated in their advertisement, although it was accompanied by an offer of pecuniary assistance to carry it out." (The italics are his.)

Comment on this would be useless. But the end is not yet.

UNDERMINING BY THE SAPPERS AND MINERS.

I AM pleased to find, from recent letters, that the land-surveyors are fully alive to the encroachments constantly made upon their occupation by the sappers and miners, which encroachments are rapidly increasing. But I would submit, that architects and civil engineers are equally interested in the subject, for they also have suffered, and are likely to suffer, by the usurpation of that body. The barracks, guard-houses, chapels, and other buildings connected with the military, and many of the improvements at the royal residences, are already carried out by them, and from the number of royal engineers upon Government Boards, which control works of construction, as prisons, railways, docks, harbours, navigation, &c. &c., the tendency appears to me to be ultimately to invest the execution of such works entirely in the sappers and miners.

It should never be lost sight of, that Mr. Chadwick, in his report of 1842 (the first of that series since issued, in the whole of which the professions have been systematically sneered at or maligned and abused), states, that the best and cheapest mode of managing the metropolitan buildings, water and gas service, sewers, paving, scavenging, &c., would be by the agency of a corps of sappers and miners, and he strives hard to show the superior efficiency which would be arrived at by such means, and from that period to the present he has laboured to carry his point, and the fruits of his perseverance have been first felt by the land-surveyors in the loss of the metropolitan survey.

The minute of the Board of Health of last July, which lays it down as imperative that all surveys made under the public Health Act must either be verified or taken by the Ordnance, shows the intention of that Government Board too plainly; and the employment of sappers and miners at the Exhibition building, and the appointment of one of the officers to a post under the Metropolitan Commission of sewers, with other signs equally significant, demonstrate what the professions may expect, if a check be not given.

If there be so numerous a force of sappers and miners that employment cannot be found for them within their own legitimate duties and practice, would it not be better that a portion of the corps should be disbanded at once, rather than they should be allowed to take the bread from the mouths of the civil surveyors, who (unfortunates) are compelled, in the shape of taxes, to contribute to the support of those who are daily depriving them more and more of the means of doing so.

I really think, Sir, it is high time that the professions took up the matter in earnest: the Institutes of Civil Engineers and Architects present the proper arena for the discussion and consideration as to the best means to be adopted, and I am sure your pages will be open for the public expression of opinion by your injured brethren.

C. E.

* Several communications on this subject are inadmissible, on account of the personalities in which they indulge. I have no argument.—Ed.

† The writer would, perhaps, wish us to state that the above is but a portion of his communication.—Ed.

CARVED BENCH ENDS.

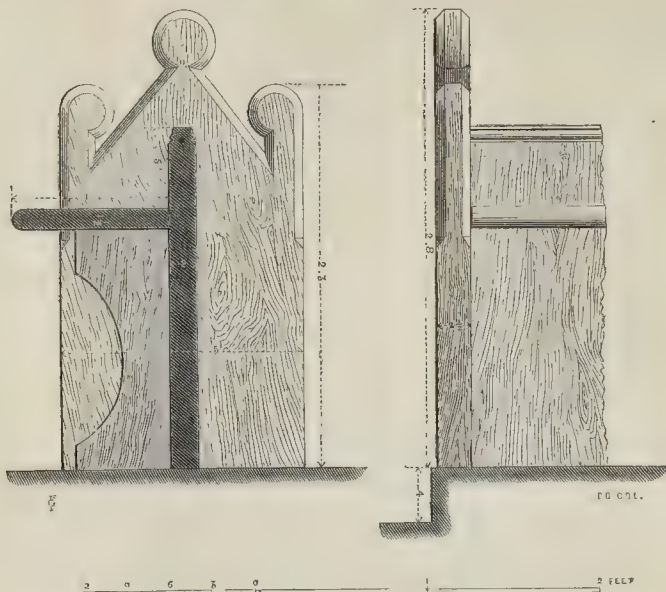


Fig. 1.



Fig. 2.

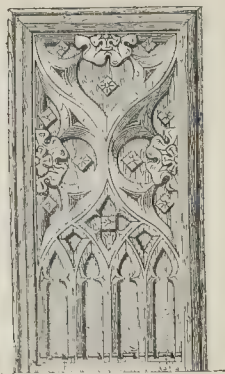


Fig. 3.

CARVED BENCH ENDS.

FIG. 1 is a good example of plain bench ends at Warndon Church, Worcestershire.

FIG. 2 is a paneled end from Tavistock Church; and FIG. 3, another example from the same neighbourhood.

THE IRON TRADE.—Tantalus's cup was surely made of iron. The "poor little" prospect of a returning flow of prosperity lately entertained for the thousandth time within the last few years, has again disappeared, and seems to be now as far off as ever it was. In place of the anticipated stir in the forthcoming spring trade, "an unexpected sluggishness has supervened." But not only is there no prospect of a rise in the price of the raw material, —in various branches of the manufacture connected with our home consumption there are also reports of a downward tendency.

MR. ALISON'S VIEWS ON MODERN ARCHITECTURE.

THE ARCHITECTURAL INSTITUTE OF SCOTLAND IN GLASGOW.

LAST week the Scottish Institute held a meeting in the Merchants' Hall, Glasgow, to hear an address from Mr. Sheriff Alison, who expatiated eloquently and impressively on the importance of the art, and the value of its monuments. In concluding, the speaker expressed his opinions as to modern architecture; and, as we have not space for the whole of the address, we will confine ourselves to that part of it. As an illustration, he said, that mere beauty of detail without generality of effect will not succeed in creating beauty in architecture, I appeal to the entire structure of the New Houses of Parliament at London. If we look at them in detail, it is impossible to imagine more exquisite beauty of detail than is to be found there; but when we go to a dis-

tance, we can never compare them with one of our old English cathedrals; and what is the reason?—the artist has attended only to speciality, and not to generality, of effect. There is another illustration—Donaldson's Hospital, Edinburgh, erected by my esteemed friend Mr. Playfair, second to none of the architects of his day. But although Donaldson's Hospital is a most beautiful edifice, yet no person who has seen it but must have lamented that, notwithstanding the elaborate details—as is felt when looking at the new Houses of Parliament—there is a want of projections, and a consequent want of light and shade to give effect to the edifice. There is plenty of speciality of effect, but there is a want of generality of effect. If any of you go along the Dean-bridge which goes to Queensferry, you will obtain a fine view of the Hospital. At the same time there is no structure which modern art has erected so honourable to the artist,

to the workman, or to Scotland. The object of the artist should be to combine the general effect of the whole edifice, viewed from a distance, with the most perfect harmony in all its parts, with the utmost minuteness in every part, and without so overloading the edifice with rich ornaments, as, on coming near it, would destroy the charming impression which the view at a distance inspired. I wish to impress on the practical gentlemen who hear me the importance of using in private edifices the *Palladian* style. I have never seen in Great Britain or north of the Alps this style faithfully exemplified. The only example we have, in this style, is Whitehall, London, and, to a certain degree, the east front of Holyrood House, in Edinburgh; and if any person will look at that building, he will see one of the most beautiful edifices in Great Britain. Reflect on George-street, Edinburgh, before it was decorated with shops. It might have been the most magnificent street in Europe, as it has size, breadth, and everything else; but, nevertheless, with an entire absence of ornament, and a meagre uniformity of style, it was one of the least impressive streets imaginable; and the reason was, that the roof bore such an enormous proportion to the other part of the buildings. Now, had the *Palladian* style been adopted, the effect would have been, I venture to say, that George-street would have been by far the most magnificent street in Europe. I have only another point to which I would call attention before concluding: it is the great danger to be guarded against by attempting to introduce novelty too much in architecture. Nothing is so dangerous, or tends more to degrade, fritter away, and ruin modern art, than the attempt to introduce innovations and new styles of architecture. If a new mode of architecture do arise, it will come through a wrench in the human mind, similar to that which it received from the conquests of the Goths and Saracens. It may arise in America, it may arise in New Zealand, it may arise in Australia; but it will not arise with us. Let us be thankful for what we have. We have got styles of architecture applicable to every important object of life, and which embrace every imaginable form of beauty. You know perfectly how many beautiful edifices exist in the country; but I believe, as a general opinion, you will agree with me in thinking that, for our climate and habits, the most suitable style is the *Elizabethan*. It has this advantage, that it admits of indefinite increase without alteration of the proportions of the whole. On all these accounts, I should submit to the consideration of the practical gentlemen who hear me, whether the Ionic is not the style best adapted for edifices intended to contain but a single room,—whether the style for houses in towns, where there are several stories, is not the *Palladian*, as evinced at Whitehall, and the Palace of St. Mark's, at Venice,—whether, for public monuments, commemorative of conquests and triumphs, the Doric style, such as is seen in the Brandenburg Gate at Berlin, and such as is seen in the fragments from the Parthenon on the Calton Hill of Edinburgh, is not the most suitable and the most likely to command the admiration of successive times,—whether the Gothic is not the appropriate one for religious structures,—and whether, for country mansions, the *Elizabethan* should not be preferred?

SALFORD PEEL MONUMENT COMPETITION.

At the moment before going to press we hear that the first premium of 50*l.* has been awarded to Mr. M. Noble, of London, for his model of a statue, to be erected in bronze: the second premium of 25*l.* was awarded to Mr. T. Worthington, of Manchester, for a design for a fountain; and the third, of 10*l.* to Mr. E. B. Stephens, of London, for his model of a statue.

NEW ROYAL ACADEMICIANS.—Mr. R. Redgrave, Sir J. W. Gordon, Mr. T. Criswick, and Mr. F. Grant, have been elected Academicians.

INSTITUTE OF BRITISH ARCHITECTS.

At an ordinary meeting, held on the 27th ult., Mr. Charles Fowler, V. P., in the chair, Mr. Arthur Ashpitel was elected fellow, and Messrs. C. Fowler, jun., E. Scott, and M. Warton, were elected associates.

The chairman announced, in feeling terms, the decease of the Marquis of Northampton, honorary fellow, who had ever manifested great interest in the welfare and progress of the arts and sciences, and the societies established for their encouragement.

Mr. Billings made some remarks on the ancient architecture of Scotland, in continuation of previous observations. In the course of them, he said the flying buttresses at Durham were unquestionably Norman, although it was generally said flying buttresses are unknown in Norman architecture. The Norman groining still remained, and without these buttresses it would inevitably have fallen.

Mr. l'Anson said, he did not know any instance of a Norman flying buttress, and he had a strong impression that the Norman architects did not employ it, as their roofs did not require its aid. It was important to know whether the buttresses at Durham Cathedral were really of the Norman era, as, at present, he could not feel convinced that the flying buttress was a feature of Norman architecture.

Mr. Scott said, that the fact of these buttresses existing at Durham only, was not a proof that they were not a Norman feature, inasmuch as Durham Cathedral was the only Norman church in which the construction of the vaulted roof (being finished) rendered flying buttresses necessary. He thought it would be found in general, that the Norman churches in England were not prepared for groining, but for some kind of flat roof. At Peterborough, for instance, the shafts, instead of stopping at the triforium, run up to the top of the wall, and, therefore, could not be intended to carry a groined roof; and the same was the case in many later buildings. At Rivaux Abbey, it was evident that the choir was prepared for groining, whereas the transept, though of the same date, was not.

Our notice of the meeting on the 10th inst. we must postpone for a week.

THE THEATRES AND SCENERY.

As managers and scene-painters seem to listen occasionally to *THE BUILDER*, I want to use its pages to give a hint or two to certain and sundry of them, and one for yourself also to begin with; which is, that you should not be afraid at times to treat of music and the drama: these belong to the arts, and should have your aid. Look to the foreign architectural and artistic publications, the *Revue des Beaux Arts*, of Paris, for example, conducted by an architect, and you will find that there all the theatres are regularly reviewed. However, what I want first to do is, to ask our rattling and clever friend, Charles Manby, who conducts the *Adelphi*, drills the "Engineers," and manages the *Haymarket* (vigorous Charles), to take away those cumbrous and dangerous iron turnstiles at the head of the new staircases, in the first-named theatre, the *Adelphi*, in the Strand,—the little house, as poor Yates used to say, where "everybody laughs and gets so hot." These fresh exits were provided at a time when *THE BUILDER* was pointing out the dreadful results which would inevitably follow an alarm of fire at some of the metropolitan theatres. The staircases are fire-proof, and should give assurance of safety to all the visitors, but are rendered useless by these awkward barriers. If an alarm of fire were by any accident to occur here,—if Mr. Wright were to make one of the gas-pipes burst (with laughing), or Miss Woolgar (one of the cleverest actresses now or ever on the stage) were to inflame to danger-point some susceptible young gentleman, these turnstiles would simply serve to iron and mangle some eight or ten unfortunate individuals, and render the staircase of no advantage whatever. Only a few weeks ago an alarm was raised in a church at Nimuegen, in Holland, that the edifice was falling, and a dreadful rush was made to the door, by which an immense pile

of bodies choked up the passage. Among them eleven were found dead, and a hundred so seriously injured that many of them will not recover. So, too, at Kegworth Church, Leicestershire, last Sunday, an alarm of fire sent the whole congregation *en masse* to the north door, and this opening inwards, a scene of confusion and danger was the result, not easily described.

Nothing of this sort is going to happen at the *Adelphi*; but having in their power such admirable means of clearing the house speedily and safely, the way should be made smooth without delay. As usual, the house is crowded every night to the ceiling.

Drury-lane Theatre greatly needs decoration, and a better management. Mr. Anderson is evidently wanting in liberality, right feeling, and knowledge, for his position. The narrow, chandler's-shop notions that prevail here are not at all likely to ensure success. Those who go to *Drury-lane* to get a knowledge of the state of our stage, will think it much worse than it really is.

At the *Haymarket* I would say that the opening scene of Mr. Stirling Coyne's clever comedy "Presented at Court" (excellently well played), a view of the Mall, in the Green-Park, is very effective. The dresses are good, and Mr. Secretary Pepsy is broadly coloured.

At the *Princess's Theatre*, too, the wood scenes in "As you like it" may be praised. There is an admirable working company here, equal to anything; and everything is artistically put upon the stage.

I will not, however, occupy more space now than to say that "King Charming," at the *Lyceum*, is made more charming than ever, and will serve to brighten the hopes of those who may be damped by the smudge and gloom of *Drury-lane*. VANBRUGH.

ABOLITION OF THE WINDOW TAX.

The movement is now culminating, and the result, so far as relates to the intentions of the Chancellor of the Exchequer, may be known ere this impression of our journal be in the hands of our readers; but, whatever that result may be, it is proper that we record some sort of abstract of recent proceedings towards the abolition of this impost of darkness, more especially as, failing its voluntary abolition by the budget arrangement, we have still to look forward to Lord Duncan's effort, and the vote of the Commons on his motion, which stands over till the 20th inst.

Since our last summary of progress, numerous respectable meetings have continued to be held in all parts of the country, at all of which petitions praying the repeal of this detested tax have been adopted. At Bridgnorth, Northampton, Newcastle, Clifton, and numerous other places as widely apart, this has been the case; but let us turn at once to the House of Commons, where the petitions are now falling on the table, thick as leaves in autumn: within the last few days, petitions have been presented, by various members, from Clitheroe, Derby, Newport, in Isle of Wight, Dartmouth, Devizes, York, Deal, Salisbury, Reading, Manchester, St. Mary Islington, St. Saviour Southwark, Richmond in Surrey, Hackney and Norton-folgate, Winchester, St. Sidwell and Holy Trinity Exeter, Exmouth, Cheltenham, Kendal, Westminster Reform Society, besides "petitions from various places," presented by Mr. Hume; "36 to same effect," by Mr. Jacob Bell; "50 from the metropolitan districts," by Lord Duncan; "89 from householders in Islington and its vicinity," by Mr. J. Bell; "41 to same effect," by Sir D. L. Evans; "33 from householders in Islington [Islington clearly stands high, in the light, amidst those fogs, and worse than fogs, in which the light-tax has so long enveloped our otherwise dark enough metropolis], also from Hornsey, Holloway, &c." All this, too, over and above "petitions" indefinitely presented without either name or number, and all within two or three days.

The deputation of delegates from the various metropolitan parishes, it seems, was rather a formidable display. They went in procession in fifty to sixty carriages, each with its official

insignia conspicuously displayed; and at the outset of the conference one of the delegates stated, that if Sir Charles would only say at once that he intended to repeal the window-tax, he would escape two hundred speeches. The implied threat, however, only seemed to determine the Chancellor all the more impetuously to hold out till the last—that is, “till the 14th,” as he told them, when the budget was to be opened. In the meantime, he declared it to be “impossible to give the deputation any intimation of what he intended to do,”—which may augur well enough for intricate or compensatory calculations of a debtor and creditor caste between window-tax abolition and substitute, but looked rather ominous in reference to a clean sweep of the obnoxious impost out of the budget-book at once and away.

ARCHITECTURAL COMPETITIONS.

Cambridge Lunatic Asylum.—A large number of designs has been received. The visitors met on Tuesday, in last week, to inspect the plans sent in, and twelve were selected and referred to a sub-committee appointed for that purpose. The estimates of the plans selected varied from 17,000*l.* to 25,000*l.*

Cockermouth Church Competition.—A correspondent informs us that thirty-nine architects competed for this restoration, and that the premium of 50 guineas has been awarded to Messrs. Hay, of Liverpool. The designs were referred by the committee to Mr. Atkinson, Architect, of York.

Markets at Bolton.—Twenty-five sets of plans have been received in competition. The corporation have appointed Mr. G. Godwin, Architect, to examine and report upon them.

RAILWAY JOTTINGS.

THE gross traffic since 1st January, on 6,254 miles, amounts to 1,090,823*l.*, which gives an average of 174*l.* 8*s.* 4*d.* per mile. The corresponding period of last year, on 5,485 miles, produced 939,985*l.*, being equal to 171*l.* 7*s.* 5*d.* per mile.—The London and North-Western Company, in consequence of competition with the Shrewsbury, has again reduced the fares between Wolverhampton and Shrewsbury. The distance *via* the Shropshire Union is forty-five miles, and the fare, first class, 1*s.*; second class, 9*d.*; third class, 6*d.*—At Lincoln County Court a verdict of 5*l.* damages and costs was lately given against the Great Northern, for having started a passenger train before the advertised time for departure.—Mr. Peto has commenced operations on the Birmingham and Oxford. He is under contract to finish the line by this time twelvemonth.—The great bridge in connection with the South Wales line at Chepstow, over the Wye, is being rapidly pushed on; and it is anticipated that one of the tubes will be fixed, and the rails laid, so as to be ready for the transit of trains by July or beginning of August next. The works are rapidly progressing from Swansea to Carmarthen, and it is said, that in the course of the summer the works from Carmarthen to Pembroke will be resumed.—By last accounts from the Isthmus of Panama we learn that materials for the railroad, in large quantity, had arrived at Chagres. About 600 men were on the work, and 400 or 500 more were expected in a few days; 250 from New Orleans. A large portion of the men were engaged on the line from Navy Bay to Gatun, the first station on the river. The pile-drivers were at work at Navy Bay, and the superintendent at Gatun says that he will soon have one mile of road ready for the iron.

DECORATION OF A HOUSE.—Some thousands of bells, intended for the outward decoration of a house of a Malay prince, were made in Birmingham some months ago.

PROPERTY INSURED IN LONDON.—By a recent return from the various fire insurance companies of the amount of property in the metropolis insured by them, we find it exceeds the enormous amount of one hundred and sixteen millions sterling.

TRACERY ON GEOMETRIC PRINCIPLES.

ARCHITECTURAL ASSOCIATION.

ON the 31st ult. Mr. Billings described a variety of combinations of tracery produced upon the geometric principle advocated by him at the Institute some time ago, and mentioned by us at the time. In touching on the origin of tracery, the lecturer opposed the notion that windows approached nearer and nearer until piers were left merely as mullions, and thus required upper panel work or tracery. His theory was, on the contrary, that early single windows being very small, gradually became larger, and at length required a framework to support the glass.

He then proceeded to his proofs of the existence of a geometric system in old tracery, and said that, whether in the largest window or smallest panel, the same diagram lines were used, varied of course according to the nature of the composition: the equilateral triangle was the parent of a considerable number of designs, but the square of many more.

The great mass of minute tracery was all formed upon the lines of squares; and he took the credit of being the first modern to declare “That however different in its forms, the centres of the curves, composing the great mass of tracery, were upon one and the same series of lines.” The lecturer then exemplified what he had produced upon the same principle in original designs, and which we have elsewhere mentioned.

A discussion took place after the lecture, in which Mr. J. K. Colling, Mr. T. Willson, and others expressed their doubts as to the extension of the principle beyond the figures he had chosen (the square and the circle), and, if applicable to the generality of minute tracery, whether it could be considered so to many ancient windows, of which we have examples.

Mr. Creeke said, he could not concur in its value as a general principle of design. He considered that a design was formed in the mind without reference to arbitrary and occult geometric principles, and he doubted if these principles would be an adequate means of developing such mentally conceived designs; but, on the contrary, he thought they would be liable to operate as trammels, leading the designer he knew not whither.

Books.

The Year-Book of Facts in Science and Art, exhibiting the most important discoveries and improvements of the past year. By JOHN TIMBS, Editor of “The Arcana of Science and Art.” London: Bogue, Fleet-street, 1851.

SUCH a mighty host of “original” books, which have only old materials and ideas hashed up anew into “original” forms, now issue from the press, that it is really refreshing to find a little work like this, which only pretends to be a compilation—no, not even anything so “original” as that, but simply a judicious selection—thrust into one’s hand, in which may be seen, as through a focus, much that has been of sterling interest in the progress made in art and science during the past year, passing in review just as it issued fresh from the brains whence it was originally eliminated. Judgment and ability in the present literary age, we think, may be well employed in winnowing the chaff and collecting the grain thus otherwise lost to all in the midst of matter of less permanent or sterling interest. We have ever regarded this editor’s periodical efforts with favour, and we see no reason in the present instance to withdraw, or even diminish, that favour. Indeed, it would not only be ungrateful, but self-stultifying in us to do so, considering the honourable position which *THE BUILDER* itself holds in these pages amongst the best of its contemporaries.

The only reference to the contents which we shall at present make relates to a suggestion of our own, as to the connection of the actinic ray of the solar light with negative electricity. In this last year-book we see two facts recorded, which seem further, at least indirectly, to support this idea, namely, that “light (that is, not the luminous ray to the exclusion of the

chemical, but light, synthetically speaking, at least with reference to the actinic principle) is developed in virtue of some peculiar function of the negative pole of the battery,” and, on the other hand, that electricity itself, the antithesis of the actinic force, as we have regarded it, has been found to exercise a singular power of condensing smoke or vapour. In the former case, however, while light, as the more radiant principle, manifests itself at the negative pole, heat, as the less radiant, appears at the positive. We expect shortly to have a new and practically important fact to add to these.

The Literature of Working Men; being the Supplementary Numbers of “The Working Man’s Friend,” from March, 1850, to February, 1851, inclusive, with Introductory Essay by BENJAMIN PARSONS. London: John Cassell, Strand.

DOUBTLESS much of this remarkable volume is little more than compilation, though even in this respect it will stand a fair comparison with compilations by hands as skilled in that as these are in their own more “lawful calling,” such as tailoring and shoemaking. There is internal evidence, however, of much more than mere compilation here, and although that gives no surprise to us, this little volume, as a whole, will certainly astonish many who have made a less accurate and just estimate of the calibre of the working man’s mental abilities and acquirements. Next to the great exhibition of his physical and mechanical talents, now about to open on the eye of the world, perhaps there is no more remarkable sign of the times than this first miscellaneous exhibition of what he can do in a sphere of industry and workmanship in which it has hitherto been believed that he would be entirely “out of his element.” Many real “gems of literature” we might readily point to or extract from this latter exhibition of the workman’s industry.

Remarks on the Amendment of the Law of Patents for Inventions. By T. TURNER, Esq., Middle Temple, Barrister-at-Law. Elmslow, Chancery-lane, 1851.

THE remarks offered in this small pamphlet are worthy of consideration at the present moment, when the patent law is likely to be more completely revolutionized than the author seems to desire. Being a lawyer himself, he has a natural affection for a law, which every one else almost wishes to get rid of, and therefore speaks up for it, so far, manfully, admitting, of course, as an affectionate friend would, some of its little faults and peccadilloes, and willing to help in amending them, but most unwilling to send the offender “out of the country” altogether. It is Mr. Turner’s opinion that the best course with the patent law probably lies at some point between the “Conservative” and “legal” view taken by Mr. Webster and the “revolutionary” “lay-manifesto” issued by the committee of the Society of Arts.

The Mahogany Tree; with Notices of the projected Inter-Oceanic Communication of Panama, Nicaragua, and Tehuantepec, in relation to their Productions and the Supply of fine Timber, &c. Liverpool: Rockliff and Son.

THIS is, properly speaking, a trade book, got up by those spirited Liverpool mahogany and timber brokers, Messrs. Chaloner and Fleming, whose trade circulars are occasionally quoted in our columns. It contains, however, a *bonâ fide* compendium of the history and botanical characters, qualities, and uses of the mahogany tree, with practical suggestions for selecting and cutting it in the regions of its growth in the West Indies and central America. In an appendix is a series of documents presented to the Lloyd’s Committee of Registry, in favour of its use for the building of first-class vessels. There are also some lithographed illustrations.

The following quotation may be interesting to our readers:—

“The mahogany tree, from an early period, was used by the Spaniards for shipbuilding.

The first mention of it occurs shortly after the discovery of the New World, when Cortez and his companions, between the years 1521 and 1540, employed it in the construction of the ships which they built for prosecuting their voyages of discovery, after their conquest of Mexico.—See the *Letters of Cortez to the Emperor Charles V.*

In 1597, it was used in the repairs of Sir Walter Raleigh's ships, in the West Indies; and Capt. Dampier, in one of his voyages, in 1681, speaking of mahogany, or, as it was then called, cedrela, or cedar, says, "it was concluded to go with all our ships to St. Andreas, near the Isle of Providence, and besides, at this island, we might build canoes, it being plentifully stored with large cedars; and for this reason, the Jamaica men come hither frequently to build sloops,—cedar being very fit for building. We reckon the peraguos and canoes, which are built of cedar, the best of any."

Mahogany was first imported into England in its unmanufactured state, in 1724, and it will, perhaps, be interesting to mention the account of its introduction given in Lunan's "Hortus Jamaicensis." A few planks, it is related, were sent to Dr. Gibbons, of London, by a brother, who was a West India captain. The doctor was erecting a house in King-street, Covent Garden, and gave the planks to the workmen, who rejected them as being too hard. The doctor's cabinet-maker, named Wollaston, was then employed to make a candle-box of them, but as he was sawing up the planks, he also complained of the hardness of the timber; but when the candle-box was finished, it outshone in beauty all the doctor's other furniture, and became an object of curiosity and exhibition. The wood was then taken into favour. Dr. Gibbons had a bureau made of it, and the Duchess of Buckingham another; and the espiced mahogany now became an article of luxury, and at the same time raised the fortune of the cabinet-maker by whom it had at first been so little regarded."

The Family Almanack and Educational Register for 1851. J. H. Parker, 377, Strand. THE peculiarity and at the same time the value of this almanack, consists in its giving a list of the foundation and grammar schools in England and Wales, with an account of the scholarships and exhibitions attached to them. It is a noble list, filling 150 pages, certainly the most complete yet published, and will be found valuable in pointing out to parents and others where education may best be obtained for their children, according to their locality.

There are some omissions, of course, which may be supplied next year. Amongst the proprietary schools, for example, we do not find either the Western Grammar School, at Brompton, or the Kensington Grammar School, both of good standing.

Horæ Vacæ: a Thought-Book of the Wise Spirits of all Ages and all Countries, fit for all Men and all Hours: collected, arranged, and edited by JAMES ELMES, Author of "Memoirs of Sir C. Wren," &c. Longman and Co., 1851.

THE history of this little compilation is rather a sad one, as some of our readers may readily anticipate. The editor of it, having been deprived of sight for more than four years, by the assistance of an affectionate daughter had previously published his brief "History of Architecture in Great Britain," but, lately, a slight return of vision in one eye, enabled him, with the aid of a magnifying glass, to read, at short intervals, various bold types in English black letter, German, and Hebrew, as well as the Roman of our early folios, and, by habit, to make extracts that he sometimes could not read himself. The result has been the present little pocket companion, which the publishers have appropriately done up somewhat in the olden style, and in a bold type, which, we hope, the afflicted editor will himself have the satisfaction of being able to peruse: for this is a book not for mere hasty perusal and flit, but for frequent recurrence to, as a solace and companion, especially in affliction, or

where long or continuous reading cannot be enjoyed.

Besides the works already named, Mr. Elmes is the author of "Lectures on Architecture," "Architectural Jurisprudence," "Dictionary of Fine Arts," &c., and editor of "Sir William Jones's Discourses," "Pearls of Great Price," &c.

Miscellanea.

THE FIRE AT THE HOUSE OF LORDS.—In reply to some questions by Mr. Lawless in the Commons the other day, Lord Seymour said, that the origin of the fire was still uncertain; that besides low-pressure tanks, there were four high-pressure service tanks already supplied to the premises, but that the supply of water to them was not in order on the recent occurrence of the fire. Each item of his lordship's intimations was received with laughter, every successive peal louder than its predecessor: a friend who was present complains that he did not get a share of the fun, as he could not see or hear anything capable of tickling the fancy at all in the matter, unless it were the laughter itself. The turncocks, spite of their presumed neglect of duty, must have felt honoured by being found worthy of ministering so much, even as laughing-stocks, to the amusement of the collective wisdom of the nation. Mr. Barry, his lordship added, thought it might be advisable to have reservoirs of water at a distance, or more tanks in the building, for further security in case of any being out of order for the future.

ARCHITECTURAL SOCIETY OF ARCHDEACONRY OF NORTHAMPTON.—At a committee-meeting held on Monday in last week, Hon. and Rev. P. A. Irby in the chair, several new members were elected, and it was announced that the list of architects and church artificers employed by members of the society would shortly be circulated. The following societies, in addition to those previously in union, were received into union with the society, for interchange of reports, correspondence, &c.:—The Norfolk and Norwich Architectural Society, the Lichfield Architectural Society, the Bristol and West of England Architectural Society, St. Patrick's Society for the study of Ecclesiology, the Durham Architectural Society, the Warwickshire Archaeological Society, the Somersetshire Archaeological and Natural History Society, the Cambridge Architectural Society, the Bury and West Suffolk Archaeological Institute, and the Sussex Archaeological Society. The report of the sub-committee on the Wellingborough Church plans was read, and the plans exhibited. They embrace the entire re-seating of the chancel and chancel aisles, in oak. The plans are by Mr. Law; and Messrs. Cooper, of Derby, have contracted for the woodwork. Plans by Mr. Law for a new school at East Haddon, about to be built by H. B. Sawbridge, Esq., were submitted to the committee, to be reported on. The plans for the schools now being erected at Little Brington, by Mr. Hardwick, jun., for Earl Spencer, were exhibited. The great loss the society has met with by the death of Lord Northampton was most generally and deeply expressed.

EXPIRY OF METROPOLITAN SEWERS COMMISSION.—A deputation from the various metropolitan parishes waited on the Home Secretary on Saturday last, for the purpose of laying before him certain statements in reference to the mismanagement of the present Metropolitan Sewers Commission, and the necessity, now that the term of office of that commission is near expiring, that any new measure introduced to Parliament upon the subject should be founded on the basis of the representative principle, and no other. Lord Dudley Stuart and Sir Benjamin Hall were with the deputation. Mr. Nicholay having addressed the Secretary at some length, Mr. Toulmin Smith concluded a few remarks by submitting the heads of the bill they proposed to carry out the objects sought. The Secretary, Sir G. Grey, said, so far as the commission was concerned, the appointment was merely nominal in his hands, but with regard to the

auditor it was a different thing. For that appointment he was quite responsible, and he would tell them how he made it. He sent down to the Board of Audit, and asked them to recommend a gentleman who would be suitable to the office. They did so, and he appointed the gentleman recommended. The Government were in no way to blame that the various boroughs of the metropolis have not municipal rights. The fault rested entirely in the apathy of the inhabitants themselves in not applying for a charter of incorporation. Mr. Healey, from St. Pancras, intimated to Sir George that if he did not bring forward such a bill as that proposed, they had given instructions to the metropolitan members to bring in such a bill. The reply was that of course that will be at the discretion of the members.

INSTITUTION OF CIVIL ENGINEERS.—On the 4th inst., Mr. William Cubitt, president, in the chair, the paper read was "An Inquiry into the Nature of Patent Law Protection, with a view to the better Appreciation and Security of the Rights of Inventors," by Mr. A. V. Newton. The policy of granting any patents at all was discussed, with the view of ascertaining whether, under certain circumstances, such protection to inventors had not proved detrimental to the interests of the manufacturers; and in considering this point, it was necessary to examine the relation of inventions to other creations of the mind,—as literary and artistic productions, whose right to protection had been universally admitted. If, then, it was argued, a literary composition, a picture, a statue, a decoration, or an invention, be equally the production of the exertion of human intellect, all must be equally entitled to protection. The Copyright Act had secured to the literary man, the artist, and the designer the benefits resulting from their mental labours, and the Patent Law should be rendered so simple as to afford similar protection to the *bona fide* inventor.

PROPOSED NEW HOSPITAL AT BRISTOL.—The spirited citizens of Bristol are busy in promoting the erection and endowment of an additional hospital. At a meeting of influential inhabitants, held on 28th ult., it was unanimously resolved to take immediate steps to complete a subscription of 10,000*l.* at least, so as to secure the sum of 5,000*l.*, munificently offered by Mr. Joseph Eaton on condition of 10,000*l.* being otherwise raised. Of this latter sum upwards of 8,000*l.* are already announced, and it is expected that within a week the whole sum will be subscribed. A workingmen's society has been formed to assist the building committee of the General Hospital, by raising a fund for the erection of a casualty ward. These are noble objects, and are being as nobly carried out.

THE ROYAL INSTITUTION, ALBEMARLE-STREET.—The attractive evening lectures at this popular institution have been resumed. Professor Faraday's important magnetic discoveries formed the subject of the first lecture, which was an animated one in every sense of the term, as the subject of it was that *vital* element oxygen, which even the ancient chemists can be proved to have recognised as "the soul of the world." This element Dr. Faraday has discovered to be a sort of aerial iron, in so far as regards magnetism amongst the gaseous diamagnets. The next lecture was one by Professor Brande, "On Peat and its Products," a subject in which we have more than once manifested our interest. Professor Owen next delivered a lecture "On Metamorphosis and Metagenesis." The audiences at the Royal Institution are as crowded and respectable as heretofore.

THE FIRE ANNIHILATOR.—Long ago, while admitting the merits of this invention, we took repeated occasion to complain, that while demonstrations were ever and anon being made of its capabilities, none of the machines were to be had, and the patent was virtually useless; so that we got tired of noticing it. We are glad to observe, however, that a company has at length been formed, and we doubt not that in cases where it can be early brought to bear with effect, it will be found to be a valuable means of security.

The Builder.

No. CCCCXX.

SATURDAY, FEBRUARY 22, 1851.

THE responsibility of those who design without knowledge, and build without care, has been made obvious in Ireland, to those who needed practical illustration, by the verdict of the coroner's jury, touching the death of sixteen individuals, unfortunately caused by the fall of a mill at Beers' Bridge, Belfast, on the 10th of January last, and briefly mentioned in our columns at the time. The interior of the mill, to make it fire-proof, was formed by iron columns and brick arches,—a dangerous mode of construction in ignorant hands,—and was on the point of being slated, when it fell. It was about 84 feet long, 47 feet wide, and 42 feet high. The roof was in one span, and each rafter about 27 feet long. There were three stories and an attic. The walls were 2 feet thick at bottom, and 1 foot 3 inches in the upper floor.

The cause of the failure occupied the jury from the 11th of January, by adjournment, up to Saturday, the 8th of February, during which time a great number of professional and other witnesses were examined. It appeared that a mechanical engineer, not practically acquainted with building, had been consulted with regard to how far an old mill, formerly in use for the scutching of flax, could be most economically converted into a fire-proof mill for preparing flax for spinning by machinery. And with him it was arranged to take down the old walls to within about 3 feet from the ground, and to commence the new structure upon the old foundations. Down the centre nearly of the building was to be a row of nine cast-iron columns, 8 inches in diameter, and 11 feet 8 inches long, for which new foundations had to be built. The side wall was to have been 36 feet high; but after the plan had been drawn, it was resolved to put an additional floor, making three stories and the attic. It was alleged to the contractor, that this augmentation would only add 3 feet to the height of the building; but it turned out that it added at least 5 feet. It was stated, that the practical engineer had sanctioned this increase of height and weight on the building, without making any inspection to enable him to judge of the character of either work or materials; both of which, it was asserted, were bad. There was a mixture of new and old bricks; and many of the latter were thicker than the new, and in the proportion of about three to one, or at least two to one; a large number of them being moreover bats.

The iron columns were placed 22 feet from one side wall, and 22 feet 10 inches from the other, and supported iron girders meeting on the columns, with collar flanges secured by screws and nuts, and projecting snugs, upon which malleable bands, or rings, were to be introduced hot. From girder to girder brick arches were thrown, resting the skew-back on the flange on the bottom of the girder. On the wall ends of the upper, or third girder, there were attached vertical cast-

ings, having a shoe on the top to receive the end of the timber principal. There was a collar brace dovetailed on these at about 7 feet from the top, opposite to which the upper purlin was fixed, at about 9 feet 6 inches from the ridge, on the back of the principal.

After the building had progressed, so as to have the roof nearly slated, an excavation was made for a sewer, along the sides of the rubble masonry: the centre of this was 6 feet from the centre of the columns at the south end, and 3 feet 6 inches at the north.

One of the witnesses examined thought the mill fell through the dampness of the atmosphere acting on the mortar, it not being made of hydraulic lime; a second, because of the unequal sizes of the bricks; and a third, Mr. M'Henry, an architect, through the bad foundation under the columns, and the weakness caused by the excavation just mentioned. Some said the work was hurried (it occupied from Oct. 1 to Jan. 10) and negligently done; others that it was sufficient.

One of the opposing solicitors, to show the responsibility of the owner of the mill (Mr. Boyd), quoted a *nisi prius* case of a man who had employed an architect to build a house. The architect employed a carpenter to do the work. The latter employed a bricklayer, who again employed a lime-burner to supply him with lime. The lime was so improperly placed on the road, that a carriage, with a lady and gentleman, passing by, the horse was tripped up and fell, and the lady and gentleman were flung out. An action was brought against the owner of the house, and damages given by the jury.

Mr. Garrett, solicitor for Mr. Boyd, after contending that there had been no neglect, that full time had been allowed for the work, that the materials were sufficient, that the bricklayer employed (Magee) was competent, and that, even supposing there had been neglect on the part of Magee, there was no testimony to show that Mr. Boyd was criminally responsible,—said, that as to the appointment of an architect, or clerk of works, it was not necessary to tell the jury that it was quite unusual, in Belfast, to employ either one or other; and respectable witnesses had shown them that the workmen might "scamp" their work, even with a clerk over them. One had told them that he always recommended the employment of an architect, when giving plans for a fire-proof building, not because he had apprehended loss of life, but merely that it enabled him to fit up the machinery more easily. And that gentleman had even stated, that he had himself built two mills without the aid of any architect. The jury knew that such was the general practice. And he scouted the notion that any charge of criminal neglect, amounting to manslaughter, could be brought against his client.

Mr. Rea, on the part of the relatives of the deceased, and in support of charges against Mr. Boyd and Mr. Magee, as owner and contractor, said,—In *The King v. Nancy Simpson*, reported in "*Wilcock on the Laws relating to the Medical Profession*," Justice Bailey said he took it to be quite clear, that, "if a person not of medical education, in a case where professional aid might be procured, undertook to administer medicine which might have an injurious effect, and thereby occasion death, such person was guilty of manslaughter. He may have no evil intention,

and may have a good one, but he has no right to hazard consequences. If he do so, it is at his own peril; and, whether he prepared the medicine himself, or got it from another, the prisoner should be convicted." That was a case ruled by Mr. Justice Bailey: and, six months hence, might they not, he asked, see in the Irish law reports, the case of *The Queen v. Robert Boyd and John Magee*, in which it would be ruled by Mr. Justice Perrin, at the Downpatrick Assizes, on the same principle as in the case he had just quoted, that, "if a person not of architectural education, in a case where the service of architects could be procured, undertook to erect a huge edifice, such as a fire-proof mill, composed of ponderous materials, which may fall, and that the building does fall, and thereby causes death, such person is guilty of manslaughter. He may have no evil intention, and may have a good one, but he has no right to hazard the consequences in a case where architectural assistance may be obtained. If he do so, it is at his own peril, and the prisoner must be convicted." He maintained that, if ever there were a proper case cited by lawyer in a court of justice, this was a case in point. Mr. McHenry had said that if the mill were standing at the present moment, no human being could tell at what moment it would fall to the ground; and that it was only by the mercy of Providence that five hundred individuals, instead of sixteen, had not lost their lives. Was a course which might entail such a result as that to be permitted with impunity?

The coroner having summed up, the jury were closeted for five hours, and then gave the following verdict as the opinion of the majority:—

"We find that James Greer, &c., &c., came by their deaths in consequence of a newly-built mill, at Beers'-bridge, having fallen on them, whilst they were working therein, on the morning of the 10th of January, 1851, and we are of opinion that the falling of the said mill was caused by its having been hastily and improperly built, both with regard to the material used, and the manner of its erection; and we are of opinion that Robert Boyd and John Magee are wilfully and feloniously guilty of the improper construction and erection of the said mill."*

The solicitor of Mr. Boyd entered a caveat against the verdict, denying that the "improper construction and erection of a mill could be considered a criminal offence," and warning the coroner not to issue a warrant on the requisition.

We give publicity to these proceedings with the earnest hope that some, in England as well as Ireland, may thereby be led to reflect on the possible consequences of their own acts. We express no opinion as to the insufficiency or otherwise of the work done at the mill in question: the point to be condemned here is the non-employment of a properly qualified architect. On all sides of us, however, houses are being carried up in the most insufficient manner,—on a bad system, with bad materials, and worse workmanship. The wonder is that they can be kept up: both theory and practice would say they must fall;

* Ten of the jurors handed the coroner the following:—"We find that James Greer, &c., came by their deaths in consequence of a newly-built mill, at Beers'-bridge, having fallen on them, whilst they were working therein, on the morning of the 10th of January, 1851, and although we consider the falling of the said mill an accidental circumstance, we cannot avoid recording our opinion that sufficient care was not taken in its erection, although we do not consider that that neglect amounts to criminality."

and they do fall constantly, but little is said about it, except the accident be attended with loss of life, as in the case before us, and a coroner's inquest bring the matter before the public. A correspondent, who appears to be well informed on the occurrence we have set forth, says: "There is a class of small builders in Belfast who, in order to secure employment, will get the architect's plans and specification to prepare tenders from, when the chances are, that the next day the architect is informed by the proprietor that, on consideration, he will not do any thing more at present, as it would involve him in too much cost. But mark what follows: in five or six weeks we find the same contractor who borrowed the documents actually at work without overseer, clerk of works, or architect, and making his unfortunate employer believe he is about saving him one-half the entire cost."

Belfast is not the only place in the world where such conduct, which would, of course, be scouted by any respectable builder, is practised. Proprietors about to build might ask themselves, if men who can be guilty of it are likely to exhibit the integrity and honourable feeling they would like to find in those they employ.

THE UNITY OF ART.

THAT Art is *one*—is a proposition which, amongst its followers, appears not to receive that recognition to which a due consideration of its possible consequences would seem to entitle it. Familiar with, and by long habit accustomed to, the manipulations (if I may so term them) of his own peculiar branch of art, the professor sees, if the subject occupy his attention at all, but a dim and shadowy resemblance between it and others, which, if pursued, is in most cases soon entirely lost sight of in that sea of technicalities which every aspirant must pass through ere he reach the mastery he aims at; and thus, though the painter or architect may love the voice of music, the musician revel in the poet's rhyme, and the poet gaze with delight on pictures or on palaces, yet shall each be unable truly to appreciate or detect those excellences or errors which, in his own department, he lights on as by intuition; and the eye that, almost at a glance, can disentangle the intricacies of the palette, finds itself blind to those of the music score; and the mind that can bring forth verse worthy to be sung by angels, is incapable of wedding it to aught of music that might elude the scorn of men.

To alleviate these inconsistencies, as far as my humble endeavours may, to show the proper unity of art to both its professors and admirers, and by so doing to add to the productive power of the one and the perceptive power of the other, is the object of the following observations. I shall, in the first place, endeavour to define the unity of art,—to show in what way art is one; and, secondly, to exhibit the consequences of this unity, or the use of the doctrine.

In defining the unity of art, I observe, in the first place, that art is one in its origin. Art is a spiritual apprehension of nature: the followers of its different branches are alike votaries of the beautiful: the painter, and sculptor, and architect are priests of the mystery of form, as the musician is of the mystery of sound, and through their different vehicles they communicate their secrets to mankind. Each of the arts is properly the result of the highest application of the loftiest faculties of the human mind, and is but a different mode or mean "by which human nature's mysteries are reflected or illuminated." The arts are not, however, derived from their parent source in exactly the same manner: the architect does not literally copy nature: "the image he carries away with him," as Mr. Ruskin truly remarks, "represents

what we can only perceive in her by direct intellectual exertion, and demands from us, wherever it appears, an intellectual exertion of a similar kind in order to understand and feel it." The business of the architect is to produce an edifice with all the grace of which its essential forms are susceptible; in doing which he cannot directly imitate nature, except in those parts which are properly called decorations: he will listen to her precepts and follow her in spirit throughout; but direct imitation, in the general and structural forms, is not a principle of architecture; and in this respect (viz. its non-imitation) it is inferior to the other arts of form: doors, windows, columns, entablatures, however imposing in their symmetrical and geometrical grace, must be subordinate, in sensuous beauty and interest, to the human and other figures and objects that enter into the compositions of the painter or sculptor. Architecture is, however, as much the offspring of nature as the rest: her beauty is the muse of the architect as well as of the painter and sculptor. From the unbounded variety of design and form which is exhibited in the wide domain of nature, was evolved the true principles of ancient architecture, and every meritorious trait which subsequent styles have developed, may be traced to the same source.

As to poetry and music, though differing widely from the three former arts in their outward manifestations, they are equally the offspring of the common mother: both have their natural archetypes. I do not mean that they are literal imitations of nature—(a flute-player does not imitate the lark, but he puts the same feeling, or inflection of feeling, into his flute that the lark puts into his throat)—they are the reproduction of the utterances of nature as interpreted by the human heart. "A particular picture or copy of verses," writes an eloquent author, "if it do not awaken the same train of images, will yet induce the same sentiment as some wild mountain walk." "Vocal music is a harmonious expression of the passions which find utterance in the voice." Music is more abstract than the other arts, not excepting architecture: it is least of all a direct imitation of nature: it is the least material—the most spiritual; and might be imagined or conceived as the harmonious spirit of the rest. It does not, like poetry, and painting, and sculpture, give us a train of images: it does not present objects or actions either to our mental or bodily eye; but it awakens the emotions which certain objects or actions, bearing analogous resemblance to them, would themselves have excited. Music is as perfectly systematised as the rest: different chords predominate in susceptibility in different breasts; but every one, not physically deficient, is affected with substantially the same emotions that were felt by the author in composing, and which he communicated to the piece.

To this identity of origin, each department of art bears testimony in many ways; in none, perhaps, more strongly, than in the similarity of use or office of the model, theme, subject, or whatever the ground-work may be called on which the material expressions of genius are founded. In the figure,—the musical phrase,—the place, person, or action,—the painter or sculptor, the musician or the poet, alike see but the dead body, as it were, which it is their province to vivify with that portion of infinite beauty and truth which has been revealed to them; or the germ from which it is their task to evolve those trains of lasting consequence which their gifted penetration has foreseen. It is here lies the difference between the mind of the artist and that of the ordinary spectator. In the circus, the theatre, at their solemn games and festivals, doubtless the Greeks of old gazed (and admiringly) on many a noble naked form, and haply among them, on the model of the Belvidere Apollo; but to the sculptor Agasius only was it given, through the perishable pride of manhood, to see the unfolding and majestic beauty of the immortal. Others saw in his model but, though finely formed and noble looking, a man even as themselves; but it was not so with the sculptor: he looked not only on, but through, and whilst with bodily eye he gazed on the man,

"With an eagle's flight
His proud soul mounted through the fields of light,
View'd the bright conclave of heaven's blest abode,
And the cold marble leapt to life a god."

Nor are the other arts behindhand in bearing similar testimony to their common source: the productions of the musician and the poet tell the same tale to the soul as those of the painter or sculptor, and through their respective media evidence the forehearing and the forethought of the artist, as the picture or statue does his foresight; all alike showing the same informing and evolving power, derived from communion with the infinite, which enables them, from subjects (viewed abstractedly) inconsiderable as the first faint streaks of the morning, to bring forth a beauty and a truth refulgent as the noonday sun.

I observe, in the second place, that art is one in its end. The use or office of every great man is to enlarge the sphere of human intellect, to push its boundaries farther into chaos, and invade the dark unknown; and the artist goes abreast of the poet in this work,—in threading the labyrinth of life,—in decyphering the handwriting "upon our cell." And the value to us of his productions, as of the poet's, lies in their depth and truth. As in dramatic poetry, the source of the charm is the same, whether we turn to tragedy or comedy, viz., truthful representation; so in the arts, however different, however contrasting in their material manifestation, genius is not to amuse, but to refine, to elevate and advance us, by trimming the great lamp of the soul—truth,—and leading us

"On to truth's eternal source."

The object of each of the arts is to show us *what is really in nature and life*,—to develop the finer spirit of things,—to seek after the true and the beautiful, and to reveal it to mankind, and let in light upon the higher and subtler truths of existence. Fiction makes a romance of history,—art a romance of nature,—a poetic delineation of her features. Here is the superiority of art to nature,—the landscape artist unfolds to us a fairer creation than we know; he conveys to his canvas "the gloom of gloom and the sunshine of sunshine;" he will seize the life and expression,—the quintessence of nature, not nature herself,—the poetry, not the prose,—and communicates, through his work to the spectator, his own sense of the power and beauty and harmony of the universe. It is the same with portraiture: the daguerreotype process will produce a portrait mechanically perfect: the painter cannot do that, but he can do more—he can study the character of his sitter, and *portray the soul*. Notwithstanding the mechanical correctness of the daguerreotype, it is never equal as a likeness to the painted picture—what might easily have been predicted of it; the former is the production of a sunbeam; the latter, of a human agent, a higher source, and consequently the parent of a higher issue.

It is not because of any deficiency or weakness of nature that the ministry of art was instituted. Nature, we should remember, is but another name for infinity. Art is but the ministrant of nature,—the priestess to her divinity, to lead us to the footsteps of her throne. Our perceptive organs and faculties must be educated before the varied excellence of works of art will be unfolded to the intellect; but the ultimate end of art itself is to educate the eye to a true perception and just appreciation of nature, and awaken us to the enchantment that surrounds us. Without education in art, nature is partly a sealed book: the eye cannot discern that beauty for the contemplation of which it was created. Whilst ignorant of the wonders of art we cannot duly appreciate the capabilities of nature to affect the soul: to do justice to her grandeur and sublimity, and guess her full significance, we must trace her features and principles through the mind of the artist to their new development or higher and spiritualized form in the realm of art. The object of landscape painting is to open the eyes to the eternal and ever-changing picture of earth and sky; of portraiture, to the beauty of the human form and face; and of all art, by initiating us into the

mystery of form, and colour, and sound, to lead us to feel, more deeply than we could otherwise do, the wisdom, and goodness, and power of the supreme artist.

I observe in the third place that art is one in its ruling principles: its various streams flow in obedience to and by virtue of one law; and the painter, the musician, the architect, and the poet, if they have proposed to themselves the same end of design in their respective productions, must, to effect it, use their differing materials after the same manner, and each, in the peculiar vehicle of his art, travel the same road. In other words,—in the expression of the same quality or feeling, the same law of means obtains in all the arts, i. e., the elements must be used upon the same principle: for example,—let the expression sought be grandeur or sublimity: to ensure it, are required the four following qualities or properties, viz., magnitude, breadth, simplicity, power. 1st. The scale must be large. We cannot paint a grand miniature, or write a grand ballad, or perform a grand symphony on the flute, or build a grand cottage. 2ndly. The masses must be broad. We must have broad lights and shadows, broad harmonies and instrumentations, with the judicious use of the unison, and ideas comprehensive and not too precise in definition. 3rdly. The unity of expression must predominate over elaboration of detail. There must be no miniature handling, no curious intricacy of accompaniment, no million-wrinkled draperies, no nigglements and fritterings of expression. 4thly. There must be the full body of colour, tone, relief, and language.

The same law holds rule over any other design of expression, whether direct or modified. Is, for instance, the grand to be expressed through the medium of the awful? Straightway the picture darkens,—all minute ornament is veiled, the clear decided outline is lost, and faint streaks and glimmerings of light serve but to indicate forms, whose undefined magnitude the imagination can but fill up with dread: from the orchestra the melody loses its continuity and appears but at intervals, as the lurid gleam of the setting sun through the thunder cloud, amid the gloomy and undefined roll of wild discordant sequences, which tell to the ear what the shadows of the picture tell to the eye: in the temple recesses, whose limits are buried in darkness as of the grave, and long drawn aisle the termination of which is lost in the duskiness of "dim religious light," are conveyed in like manner to the mind, the same dread certainty of the uncertain; and the poem, in the absence of all minuteness of description, in its ambiguous language, in its thoughts,

"Shrouded and folded up,
In their own formless barrier,"

darkly embodies a definition of the undefinable.

Is the gayful, the elegant, the graceful, the cheery? Straightway light sparkles over the canvas like springtide raindrops in the sunbeam: the scale is smaller, the outline involved, flowing and returning on itself, the colouring prismatic in its hues and tones, and the whole is evidenced, not so much by balance of proportion as by the absolute unanimity of the parts: from the orchestra in like manner, the melody sallies out in undulating flow, sparkling with every grace, and turn, and trill that music gives, and with its sportive catches of counterpoint and imitation, with the elegance and the mirth that rings from every note of every part, translates the brilliant hues and forms of the picture into kindred sounds and harmonies: in architecture the fluted Corinthian column, with its floral capital, the light, carved-moulded, and modillioned cornice, sculptured frieze, delicate festoon, wreath, or other emblem of pleasure, convey the same impression; and in the poet's rhyme we

"Wander, not unseen
By hedge-row elms and billocks green;"

Or, listen as

"The merry bells ring round,
And the joyful rebeck's sound."

We gaze

"On many a youth and many a maid
Dancing in the chequered shade;
And young and old come forth to play
On a sunny holiday."

Nor is it in generalities alone that this unity exhibits itself: if we descend to particulars, we find it still manifested; and the small single touch of light, shade, or colour in the picture,—the single bar or note amid an ocean of rests in the orchestral part; the small and delicate enrichment in panel or cornice, in the building; the slight, but felicitous touch of thought, by means of metaphor or compound epithet, in the poem: all these, so chancelike in themselves, yet so nicely fitted to their respective subjects, that come upon us so unexpectedly, yet so suitably, are but the workings of one purpose, by one law—the expression of one idea through different materials.

The grand aim of each of the arts is to arrange its varied elements as to procure unity of result. These elements are as follow:—

Poetry	Idea	Design	Feeling	on Diction or
Painting	Line	Form	Sentiment	style
Sculpture	Line	Form	Chiaroscuro	Colour
Architecture	Line	Form	Relievo	Projection
			and Reces-	Decoration
			sion of the	(including
			parts	colour)
Music	Melody	Mode or key	Harmony	Instrumentation

And a comparison of these elements will show wherein the arts are alike, and have common bearings, and in what respects they differ. Line and form in painting and sculpture, which include grouping and composition, beauty, and grace, expression and action, answer to line and form in architecture, in which the relative magnitude and arrangement of the parts and masses answer to the grouping of the painter and sculptor; and what the background is in painting, as Sir J. Reynolds has remarked, in architecture is the real ground on which the building is erected. Chiaroscuro in painting answers to relievo in sculpture, and to the recession and projection of the parts in architecture; whilst the single element of colour in painting answers to the two elements of colour and decoration in architecture. Texture in architecture, which is not properly an element of art, may answer to handling in sculpture and painting. Poetry and music are equally connected in this way with each other and with the rest; melody in music answering to idea in poetry, and to outline in painting and sculpture, and architecture; and so of the rest.

I am borne out in one of these parallels by the casual observations of more than one writer of celebrity. I have made, as may be observed, diction or style in poetry to correspond with colour in painting; and Washington Irving, in his "Life of Goldsmith," commenting on the friendship between the poet and Sir Joshua Reynolds, remarks,—"they were men of kindred genius, excelling in corresponding qualities of their several arts, for style in writing is what colour is in painting; both are innate endowments, and equally magical in their effects: certain graces and harmonies of both may be acquired by diligent study and imitation, but only in a limited degree; whereas, by their natural possessors, they are exercised spontaneously—almost unconsciously—and with ever-varying fascination." Pope, in his preface to "Homer," makes a similar comparison; and Dryden, in his parallel between poetry and painting, observes, "It is the versification, tropes, figures, and other elegancies of language and expression, the colouring of poetry, that charm the reader, and beautify the fable or design." The arts being different in their scope, there will be minor laws peculiar to some; but they are still based on the great central principles—natural consequences of them, and they as naturally arise out of the peculiarity of their respective vehicles.

In a finished work of art, in any of its branches, whether it be a poem, a symphony, a statue, or a palace, the elements should be distinct in their variety, being neither confused by the harmony nor by the manner of the contrast, breaking the unity; and this result is obtained in each of the arts in precisely the

same way, viz., by making each separate element subject to the law of the whole, as, *per exemplum*, in music the melody should possess to the extent of its elementary capabilities, variety of phrase and accent, harmonised to an unity of idea—to a commensurate extent with the piece when fully harmonised, and should, like the outline of the picture, be the primary key or germ of the finished design.

Art requiring distinctiveness in the variety of its elements, calls for contrast, which is the essence of variety, in its works,—as of light and shade, of colour, of form, of tone, of harmony, of magnitude, of feeling, of expression; and the stronger the contrast, the more perfect the variety.—as the opposition, in painting, of the highest light and deepest shade; in music, of dissonant chords with consonant ones; in sculpture, of opposed attitudes and forms; in architecture, of opposed magnitudes—i. e. the portico, or tower, or centre mass, as opposed to contiguous inferior elevations; in poetry, of contrast of sentiment or expression. But that this contrast may not run to the extreme of contradiction, and thereby destroy the unity of effect, art also requires, by its law of harmony, that these contrasts, even at their strongest, should be connected with the mass of their similar elements. Hence, in painting, the highest light and deepest shadow must not appear as isolated spots, but must, however strong their opposition, maintain a connection with their principal masses,—as in music the discord must have its opposition to the consonance harmonised by its preparation and resolution.

The arts are all liable to the same adverse influences, and subject to the same diseases. Conventionality and copyism, affectation and whim are as prejudicial—as fatal—to one as to another. There are fixed and invariable laws, referring both to design and execution, which no fashion must set aside or modify: and, as in poetry, we have to do not only with the excellence of the ideas embodied, but with the manner in which they are embodied; so in music, in painting, and in all the arts, no one department can be sacrificed or slighted without injury to the other. The great qualities desirable in one art are invariably desirable in all the others, and in the same degree: the important quality of unity, for example, which it is the aim of all alike to produce, is equally indispensable in all, but only to the same extent; for the works of the architect, of the sculptor, and of the painter, require their episodes as well as the heroic poem.

The unity of art is further apparent when we consider how often, unconsciously as it were, the arts will stray into the province, and take the place, of each other,—how eminently one art will assist and elucidate another,—blending and concentrating their lights to the illustration of some important truth, and affecting us so similarly that we cannot separate their results in our minds. Great works of architecture (not monumental ones only), as well as those of sculpture and painting, are sometimes virtually poetry, and record the deeds, and reflect the virtues, of their hero, or sing the glories of a nation. How often do they fill up a hiatus in some historical record. Kings and priests—classes and communities—have written the history of their struggles, and recorded their triumphs, in stone. Their epics strew the breadth of Europe, and wherever, in the east or in the west, civilization has but dawned. A spell to open all hearts may be lodged in even the accessories of a picture. "Vandyke," says Sir Lytton Bulwer, in reference to his management of a celebrated portrait, "was a greater sophist than Hume." "Should we be so apt," writes he, "to compassionate the misfortunes, and forgive the insincerity, of Charles the First, if his pictures had presented him in a bob-wig and pigtail?" History, on the other hand, is painting: heroes are the sitters or models of the epic poet; and, by the way, I would observe, all great actions are poems and pictures, though not written or painted. Glowing words and noble deeds are but varied workings and expressions of the divine afflatus.

All the arts, as we have seen, start from

the same point, move upon the same principles, to the same goal. I believe the painter and sculptor, though they may generally find, and do find, fitting subjects, or outlines of subjects, in history, poetry, or tradition, may claim the same privilege as the poet, and invent a story or fable for themselves: there is, however, so much scope for merit in the execution of painting and sculpture, that the artist may well be content so far to forego the honours of invention, as to take his subject from poetry, or other department of literature. Both painter and poet may deviate from individual forms, and from literal fact; both must raise and idealise their models, avoid accidental imperfections, and give us what *might* be, not what is,—the possible, not the actual. But, however these arts resemble one another, each has characteristics essentially its own, arising from the diversity of the avenues of sense by which they enter the mind, viz., ear and eye; and it is necessary, to a right understanding of the unity of art, that these differences be recognised and considered. Actions, or successional objects, are the constituents of poetry; bodies, or co-existent objects, of painting: the former occupies and operates in time,—the latter in space: the force of poetry is continuous and increasing; painting presents a momentary state, and is instantaneous in its effect. We must patiently follow the poet step by step, and be led by him with slowly increasing interest to the final catastrophe, up to which memory must be in full exercise, and indeed is indispensable to the intended result; whilst the painter, choosing that instant of action which is most important, and most suggestive of past and future actions and incidents, reserves all to the last, and depends entirely on the effect of a moment. Both, however, it should be observed, aim at unity of effect: to preserve the unity of his action the poet (and the novelist is often his imitator) frequently departs from the chronological order of events, and "hastens into the midst of things;" interweaving into the subsequent parts of the poem, in the form of episodes, an account of what had preceded in the order of time. I need not say that this was done by Homer in the *Iliad*, or that Virgil and Milton have followed his example.

In one or other of the two ways I have mentioned, all the arts produce their effect: music participates with poetry in the first, and sculpture and architecture with painting in the second. Each of them has its advantages and disadvantages, according to the subject: sometimes more is given in a dozen lines of poetry than as many pictures could contain; while at others one picture would communicate more than a hundred verses. Flaxman has given us at a glance, in his shield of Achilles, the sum total of many brilliant and widespread descriptions in the verse of Homer. Painting and sculpture, as far as they go, are a more complete execution or embodiment of a conception of material beauty than poetry: "in them," as Von Schelling says, "doubts of a perfection above the common measure, that might otherwise be heard, are met by the fulfilment; as that which in the idea could not be conceived, here steps embodied before our eyes."* S. H.

LOCOMOTIVE ENGINES.—M. E. G. Leroy, of Paris, has just patented some improvements in locomotive engines, and in the means and apparatus to be employed for generating and condensing the steam to be employed therein. For condensing steam, it is proposed to employ a tube similar to that of the atmospheric railway, but of smaller dimensions, into which the waste pipe of the engine should lead, and thus effect the desired object. The water of condensation would require to be occasionally drawn off. *Claims.*—1. Generating steam in locomotive engines by the combustion of gases generated or produced in suitable apparatus detached from the engine, and supplied to the engine by pipes or otherwise. 2. The method described of condensing steam.—*Mechanics' Magazine.*

* To be continued.

THE DECORATIONS OF MUNICH.*

I PROPOSE to describe the decorations of some of the principal buildings of Munich, more especially those parts of them connected with colour and ornament, which were the objects of my particular study.

Though a city of inconsiderable size, Munich has risen into importance almost entirely through the genius of its artists, fostered and encouraged by a prince enthusiastic in his love for art.

It is a glorious instance of what may be accomplished by the enterprise, perseverance, fine taste, and good judgment of an individual who has thus founded a series of monuments of so high a standard in art as to establish a renown familiar to all Europe.

In conceiving these grand works, the King, after arranging the plans with his architect, was accustomed to summon to his presence the sculptor, the historic painter, the builder, and the decorator, and then and there every one was made familiar with the task he would have to perform. The works show with what success.

The buildings most worthy of notice for their decorations are—the Church of St. Ludwig, the Allerheiligen Capelle, and the Basilica of St. Bonifacius, the Royal Library, the Hofgarten, the Glyptothek, the Pinakothek, the König's-bau, and the Festsaalbau.

In speaking of these I do not propose to describe any architectural peculiarities further than to make their decoration understood. It was with the view of improving myself in that branch of art that I went to Munich and made sketches; and I owe a grateful acknowledgment to Mr. Donaldson, the hon. foreign secretary of the Institute, for a letter he gave me to Professor Gartner, which much facilitated the object I had in view.

I shall commence with the

GLYPTOTHEK.

The Glyptothek, or Museum of Statues, was built for the ex-King Louis, when Crown Prince, by Leo Von Klenze. It is situated on the outskirts of the city, in the midst of a garden, which greatly enhances the effect of its architecture,—familiar, doubtless, to most of you. By the plan you will perceive that it is built in the form of a square. Entering by a portico of twelve Ionic columns, you arrive at a vestibule of chaste and simple character. The walls are in imitation of grey granite. On the frieze opposite the entrance is an inscription, that the "collection was formed and the building erected by King Louis." Over the door, on the left, is another to the honour of Von Klenze, the architect; on the right, another to the honour of Cornelius, the painter.

Passing to the left, you enter the halls devoted to the earlier specimens of sculptured art. The first of these is

The Egyptian Hall.—The walls here are stuccoed in imitation of deep yellow marble. The ceiling is ornamented with panellings containing enrichments in the Greek style, partly gilt, and relieved with rich colouring, the ground being principally white.

Only one part associates itself in style with the name of the hall, namely, the beautiful basso-relievo in a semicircular panel over the door—Isis discovering the body of her husband Osiris enclosed in a column,—symbolical of the birth of Art among the Egyptians,—and most beautifully rendered by Schwanthaler.

The Etruscan Hall is the next. Here the walls are stuccoed a deep red. The ceiling is a dome, with coffered panels richly ornamented, the ground being coloured, and the enrichments gilt. The floor in this and all the halls is formed of inlaid marble. Leading from this, you enter successively

The Halls of Ægina, Apollo, and Bacchus.—The walls of these three halls are all stuccoed in imitation of verd antique marble. The ceilings are tastefully ornamented with plastic enrichments, finished in white and gold, relieved in parts with colour. These ornaments are made to illustrate appropriately the name of each hall: in that of Apollo are the symbols of the four cities of Greece most renowned

for art,—the Owl of Athens, the Pegasus of Corinth, the Sphinx of Sicily, and the Wolf of Argos.

The Hall of Niobe is the last of the series on this side of the building. The walls are polished stucco, in imitation of giallo-antico marble,—the ceiling white and gold.

We now arrive at the *Fest-saals*, or banqueting rooms—two noble apartments, intersected by a vestibule. They are not intended to receive works of sculpture, but rather assembly rooms, grandly and ably illustrating all that inspired ancient artists, and originated their works,—rooms where the mind may be instructed and led to appreciate the relics of ancient art.

The first of these is called

The Hall of the Gods.—Here the painter, Cornelius, is the presiding genius: here he and his assistants have covered the ceilings and walls with a series of magnificent frescoes, illustrating the mythology and the heroes of Greece. Besides the pictures, are arabesques, combining with the subjects in delineating the seasons, elements, hours, arts, passions, &c., which it will be impossible for me to describe to you in detail.

The vestibule is painted with subjects of Prometheus and Pandora, showing their influence on mankind. From hence we pass to

The Hall of the Trojans—similar in size to that of the gods. Here the events of the Trojan war form the subjects of the grand frescoes, also painted by Cornelius, Zimmerman, and others: the arabesques, painted principally by Neureuther, assist in the illustration of the more important subjects. Leaving these magnificent apartments, we enter a series of halls containing specimens of sculpture of more recent date. First,—

The Hall of Heroes.—The walls are of greyish-coloured stucco; the ceiling being coffered, and finished white and gold, with blue in the grounds of panels. The next is

The Hall of the Romans.—This is the most richly ornamented of all the galleries containing sculpture. The walls are of stucco, in imitation of purple-coloured marble. The ceiling is arranged in three domes, separated by soffits, having octagon-shaped coffered panels, in which are gilt flowers on a red ground. The rest of the ceiling is elaborately ornamented with arabesque enrichments in relief, finished in white and gold. The arched tympanums of the walls are also illustrated with bold arabesque ornaments.

The Hall of Sculpture, in coloured marble, and **The Hall of Modern Sculpture**, conclude this grand series of galleries. Here the walls of the first are light yellow stucco; of the last, light green. The ceilings of both are white and gold.

I have not dared to distract attention by alluding to the glorious works of sculptured art contained in these galleries; but I will call to notice the reasons of the architect, Von Klenze, for thus adopting the vivid colouring of the walls. He says, "Too great simplicity has prevailed in Italy and other countries in the treatment of museums, and the dull stony hue adopted does not at all suit ancient monuments: a certain richness of decoration is necessary, and deep colours should be used on the walls to make these antique statues appear to advantage."

THE PINAKOTHEK.

The pinakothek, or picture-gallery, is a long range of building, also designed by Von Klenze: it is of brick, with stone dressings in the form of the letter **H** laid horizontally. There is a colonnade on the south front, surmounted by a balustrade, on which is a series of statues of the most celebrated painters, by Schwanthaler.

The principal entrance is at the east end of the building: entering a vestibule of quiet style, you pass to the left up a handsome staircase, which leads to the Hall of the Founders, the first of the series of nine grand rooms, leading in perspective through the whole length of the building. These contain the larger paintings of this grand collection. They are all lighted from above, and are each 50 feet high and 40 feet wide, varying in

* Read at meeting of the Institute of Architects, Feb. 19.

length from 50 to 80 feet. The walls are hung with deep red or green silk, and the vaulted ceilings are highly enriched with ornaments in relief, finished in white and gold. The series of cabinets or small rooms on the north side correspond in style with the larger ones, and contain the smaller pictures. On the south is the grand corridor or gallery, so celebrated for its decorations, designed by Cornelius, assisted by Zimmerman, and painted by the best artists of Munich. This corridor runs the whole length of the principal suite of rooms, with all of which it communicates. It is divided into twenty-five compartments, and each of them is elaborately decorated with arabesques and paintings, illustrating the life of some eminent painter, or a particular period of art. The windows range on one side of the corridor, and on the opposite walls the panels are decorated. In the centre are painted the arms of cities celebrated for their encouragement of art, and I regret to say none of England are in the list: in the lunettes over these panels are painted the pictures containing the main subjects—to which the smaller pieces on the ceilings and sides bear reference: each ceiling is a dome, with four spandrels, and the linings of the arches between these domes are also filled with highly finished ornamental arabesques. The principal painting in the first compartment is King Louis, surrounded by the most eminent artists of Germany and Italy, and the other subjects illustrate the connection of the arts with religion. In the second is Giovanni Pisano, showing the design for the Campo-Santo at Pisa. On the ceiling are subjects from the crusades. On the third compartment is represented Cimabue's picture of the Madonna carried through the streets of Florence. On the fourth are incidents in the life of Giotto; and so on through the twenty-five compartments, which, while giving subjects in the lives of the most celebrated painters, illustrate the progress of the art itself.

The pictures in these ceilings are, I believe, painted in fresco, the ornaments in encaustic: the colouring is harmonious, rich, and beautifully contrasted.

I thought the decorations of the arches and the pilasters by no means equal in effect to the ceilings. The grounds are too bright, or at any rate the colouring of the arabesques have a washy appearance far from satisfactory. The designs, too, of the pilasters are somewhat clumsy.

LUDWIG'S KIRCHE,

or church of St. Louis, erected about twelve years ago, is in the Romanesque style, from the designs of Professor Von Gartner. It has a nave, aisles, transept, and choir; is of considerable size, and of elegant proportion.

The decoration of this church is different from any I have seen, from the neutral quality of the colouring employed. The grand fresco by Cornelius of the "Last Judgment" fills the entire wall at the end of the choir, being upwards of 60 feet high. The colours of this fine painting partake very much of ochery red and yellow, and it seemed to me that the decoration of the church had been calculated with reference to this fresco.

The general tone of the walls is a neutral fawn colour, and in the arches this with dull lilac are the principal tints employed, relieved by small portions of red. The arches near the wall have stronger colouring: here a geometrical pattern of green and red marks distinctly the form of arch, and on the face is an agreeable arrangement of white ornament on a chocolate ground bordered by green, separated by interlacings of blue and red. In the south transept, the arch is subdivided into compartments: in the principal one is a fine fresco of the crucifixion by Hesse; on the side panels are arabesques of a subdued character, and above are figures on a gold ground. The lower parts of the walls are mostly stencilled in geometrical patterns. The ceiling is vaulted and divided by intersecting rib mouldings, painted red, violet, and gold, with side margins in the neutral lilac and fawn. The ground of the ceiling is blue, studded with gold stars.

The most beautiful parts of the decoration of this church are the dome ceilings of the aisles:

there are three of these on each side, and though perhaps to be criticised as to the particular style, yet they are very curious and elegant specimens of polychromy.

The floor of this church is laid with marble.

THE ALLER-HEILIGEN CAPELLE, or Chapel of All Saints, is a building in the Byzantine style, by Leo Von Klenze.

The interior is magnificent; the whole of the ceiling and upper part of the wall being gilt, and almost covered with paintings. The general effect reminded me of the Duomo, at Venice. Though gorgeous, it has an air of solemnity and grandeur.

The ceiling is divided into two parts, in each of which rises a grand dome: in the one are painted subjects from the Old Testament, the Creator being in the centre; in the other is the Redeemer, surrounded by angels and the twelve apostles. In the spandrels of the arches are figures of the four patriarchs and the four Evangelists. The arch between the domes contains subjects connected with the Nativity, &c.: that over the altar has paintings representing the seven sacraments, surrounded by beautiful arabesques on a gold ground; and in that over the music gallery at the west end, are subjects of St. Cecilia, David, Isaiah, St. Luke, &c., also surrounded by ornaments.

The walls on the side have an arched form, and are painted with subjects of the sacrifice of Isaac, the crucifixion, &c. The choir terminates in an apse, on which is painted the figure of Christ surrounded by angels, and surmounted by the Father and the Holy Spirit: below is the blessed Virgin on a throne: beside her are St. Peter and St. Paul, Moses and Isaiah.

All these paintings are by Professor Hesse and his assistants, and are too well known to require from me any eulogy upon them. Framing these noble paintings, and forming the lining of the arches, is the ornament shown in my sketch: it is repeated as a bordering on every arch, and is the principal decorative ornament on the upper part of the chapel. It has a very beautiful effect, and contrasts and harmonises well with the gold grounds. The panels of the piers which support the arches are filled with rich mosaic, which is introduced also in other parts unoccupied by paintings.

The columns supporting the galleries on each side of the chapel are of red marble, the capitals being gilt: the ground above these arches is covered with painted arabesque on a gold ground. The circles are the only ornaments in relief: the mouldings of the arches, and the cornice above, owe their effect simply to the contrasts of colour.

The floor of this beautiful chapel is inlaid with marble of various colours.*

JOHN G. CRACE.

PAINE'S WATER-GAS FOR LIGHT, HEAT, AND OPERATIVE FORCE.

SINCE Franklin drew the lightning down from the thunder clouds of heaven, as a virtual initiative to all those scientific wonders of which electricity has since been the fruitful source, no subsequent discovery can boast of the importance that must now be conceded to that of another American, should the result of his present pretensions prove to be as well founded as they now appear to be. Foreseeing the probability of such a result, in July last, while venturing to anticipate a fact not then revealed, and offering a few hints to experimental electricians, the precision and importance of which the upshot, as we shall show, now singularly elucidates, we remarked that "a word to the wise in time may save us, at least, if not the Americans, from the private appropriation of so great and universal an idea under patent lock and key." These hints we hope the wise have not deemed themselves too wise to act upon; for the subject of them has already proved itself to be possessed of too tenacious and unephemeral a vitality to have been nothing more than a mere "nine days' wonder." Mr. Paine's main interest in his American patent has been sold, it is alleged, for more than a million sterling (?); the shares

of the company to whom it was sold are at a high premium; the States are rapidly purchasing licenses to begin; and, lastly, the dreaded patent to prevent us from having the free use of a power which has such highly feasible pretensions to be one of immense and universal interest and importance, not only in the production of light and heat, but of motive power inclusive,—has already been secured,—at least until disputed, if it effectually can be so; and, considering the profit already derived by the original patentee, and the fair field already occupied in America by his assignees, we can see no injustice in an earnest hope that they may have their patent here effectually disputed. Failing any successful attempt amongst our own more able electricians, however, to forestall such a patent, it may be a question whether the date or circumstances of an alleged realisation of the same idea in France before the British patent was secured, can be brought successfully to bear upon the latter.

The evidence in favour of Mr. Paine's pretensions is now very strong. The editor of the *Boston Chronotype* says:—

"What we have seen enables us to state, not only that Mr. Paine has extorted from nature the secret of the artificial production of light at a nominal cost, but that he has got hold of the key which unlocks and enables him to command a new force of nature, which is soon to supersede most of the forces now employed—something which is destined to work a revolution both in science and art."

And, in allusion to the report by certain engineers, which was believed, both here and in America (but not by us,—see vol. viii., pp. 440 and 586,—though just as wide awake to Yankee long bows as our neighbours), to have completely extinguished these pretensions, the editor adds:—

"We have seen for ourselves, and find that we have done Mr. Paine very great, though not intentional, injustice. And we can hardly find words to express our surprise at the scientific report which was partly the cause of our doing so. The demonstration which Mr. Paine then presented could not have been of a doubtful character to chemical eyes. These gentlemen must have understood and believed more than they reported."

According to the Patent Journal,

"Mr. Paine claims, among other things, to have discovered a means of increasing the power of a magneto-electric machine to such an extent that he can decompose water rapidly with it; that he can take a jar of water, and, by means of the electricity induced by this machine, can convert the whole of it into hydrogen gas, without the production of any oxygen whatever. He claims, also, that by changing the electrical poles he can convert the whole of the jar of water into oxygen gas, without producing any hydrogen; that, after producing the hydrogen, as above, and passing it through spirits of turpentine, it becomes catalized, and then will burn with a clear and brilliant flame, and this, too, without any loss to the turpentine by the passage of the gas through it. In regard to LIGHT, independent of the other applications of the power, Mr. Paine claims to have discovered a means of producing it from water, by electricity, at a cost infinitely less than any mode now in operation."

As to this "changing the electrical poles," we must here further explain that it now appears that when hydrogen is wanted the negative wire must be made continuous and free to act, while the positive is interrupted by means of a small glass of water, into which the broken or separate sections of that wire are dipped without contact. On the contrary, when oxygen alone is required, the positive wire must be continuous, and the negative interrupted. When both oxygen and hydrogen are to be eliminated, as in the ordinary magneto-electric machine, both wires must be continuous or neither interrupted.

"I asked Mr. Paine," says the writer of the article just quoted, "why he interrupted the positive pole by the glass of water?—why he cut this wire in two, and placed the ends in the glass of water? He said that, unless this were done, both hydrogen and oxygen would be generated in the bell glass; but that by this means he only obtained the hydrogen. There appeared to be no oxygen generated by the operation." "According to Mr. Paine," says Dr. Foster, in the *Scientific American*, "oxygen is composed of one gas and positive electricity, and the

* To be continued.

same gas is hydrogen when combined with negative electricity.*

Now, although it is not our practice to "halloo before we are out of the wood," so impressed are we with a persuasion that Mr. Paine's pretensions are well founded, that we think it worth while, as a mere act of justice to our own penetration, and as a corroboration of the probabilities in favour of these very pretensions, to revert to what we anticipated on these same points in July last, when the whole subject was designedly enveloped in mere mysterious hints and indefinite obscurity:—

"We will venture to anticipate that if Mr. Paine have really tested and proved the truth of Macvicar's idea of the constitution of water, as resolvable into hydrogen, it must be by negative electricity (the singular affinity of which to the radiant actinism of the solar ray we have already noted in the *THE BUILDER*) that he eliminates the hydrogen. A word to the wise in time may save us, at least, if not the Americans, from the private appropriation of so great and universal an idea under patent lock and key. And to this end we would further hint that by connecting the whole series of zinc plates in a galvanic battery with a separate and isolated trough containing sulphur, a high electro-negative, we long ago obtained decided manifestations of electrical action in the clustering of the sulphur round the single pole or wire communicating with the series of zinc plates while the ordinary galvanic circle was closed and the trough in action. Other pursuits prevented, as they still do, any further investigation of this peculiar train of experiment, but it seems to bear on the subject."

Here we not only distinctly anticipated the precise agency, namely, the negative force of electricity, employed by Mr. Paine in the elimination of hydrogen from water, but made a bold dash at the *modus operandi*, by showing how we had, on one occasion, endeavoured to obtain the operation of the negative so far separated from the usual circuit.†

Moreover, in another passage (vol. viii. p. 357) we further remarked that "it will probably be

* In order to make this intelligible to readers who may not have perceived what we have already said on the subject in former numbers of this journal, we must here quote from a note by us at page 327, vol. viii. (18th July, 1850):—"We have learned that Mr. Paine, the alleged discoverer or inventor of this process, holds some peculiar ideas of the constitution of water. If we understand it aright, he regards water as an element, at least as much as the hydrogen, eliminated from it, and alleges that either oxygen or hydrogen may be so eliminated, as either may be desired, by special electrical action. If such be Mr. Paine's idea, and if so wonderful a result have really been obtained by acting on such an idea, we must claim the original merit of that idea for a fellow countryman, Mr. J. C. Andrews, who, at least twenty years since, wrote a curious treatise on chemistry, based on this and other original principles. Hydrogen, according to Macvicar, is the most elementary of all substances except 'radiant matter' (and in this, indeed, Davy himself appears to have to some extent concurred). The form of its atoms or particles is the most elementary or simplest as well as most active of all possible corporeal forms, namely, the tetradron. Oxygen, water, and all other substances are composed of these tetradra united by electrical affinity in various modes and numbers, constituting compounds or quasi-elementary atoms or molecules. Water, then, being solely hydrogen (when entirely resolved into an partly oxygen (when some of these hydrogenous atoms remain in the closer conjunction constituting the oxygenous nature). Guided as such ideas may appear to a mere exoteric chemist, we have heard Macvicar spoken of most respectfully by a chemist of celebrity in his day, and himself a respected correspondent of Davy and Faraday, namely, Kämpf. We may hereafter take an opportunity of quoting Macvicar himself on this point.

† We are perfectly aware of the doubts entertained by some of the soundest and most able electricians, whether it be at all possible, by any means whatever, so to separate the negative from the positive, or in any way to obtain the paramount operation of the one, even with the crippled or diminished operation of the other. The great importance of the question, however, is admitted on all hands, as will appear from the following remarks on this subject by Dr. Faraday himself, the prince of electricians—who thinks it 'impossible to assume a current of positive or a current of negative force alone.' [note here, however, that in Mr. Paine's break of the circuit we cannot be said to have either force alone, but only either paramount,—a modification of Dr. Faraday's impossibility which would have reconciled it to us for with Mr. Paine's alleged fact, had not the doctor established of our own the truth, if, as I think (he says), it is the truth, or, on the other hand, the disproof of it, is of the greatest consequence."—("Experimental Researches in Electricity," p. 518). "If, as a first principle," he adds, "we can establish the centres of the two forces, or, if we can establish the distance of them, or if we can establish the distance, or at all events not further than the space between two contiguous particles, or if we can establish the contrary conclusion, how much clearer is our view of what lies before us, and how much less embarrassing the ground over which we have to pass in attaining to it, than it is when we have to pass two opposite opinions. And if with that feeling we rigidly test every experiment which bears upon the point as far as our prejudices will let us, instead of permuting them, with a theoretical expression, to pass too easily away, are we not much more likely to attain to the real truth, and

found that not only the electric force, but the magnetic also, is at work in the composition of both oxygen and water, and that hence the diamagnetic force no less than the actinic or at least electro-negative must be brought into play in their demolecularisation or decomposition." And we are now confirmed in that opinion by the nature of Mr. Paine's machine.

On the principles or leading ideas whence we derived the possibility of anticipating such discoveries, and which ideas, by virtue of such possibilities, become themselves of practical importance, we may have something further to say; but in the meantime we must conclude our account of Mr. Paine's invention. This we will do as briefly as possible in the words of those who have witnessed its alleged astonishing operation.

"The apparatus consists of four pieces, all placed upon a pine table or shelf, and in no ways connected with anything else.

First—A common magneto-electric machine, consisting of two permanent horse-shoe magnets, about twelve inches long: these were placed horizontally on a mahogany frame, about four inches apart, one being placed above the other. Between the ends of these magnets were a pair of helices, and these so attached to a wheel above that they could be set into a rapid rotary motion. The peculiar construction of these helices, from which the immensely-increased power is said to be obtained, I will hereafter describe.

Second—A large open-mouthed glass jar, capable of holding twelve quarts: this was a little more than half filled with water. (We tasted the water, to satisfy ourselves that it was water.) Within this jar was placed a common bell glass, open at the bottom, and reaching within four inches of the bottom of the large jar. The top of the bell glass was closed tightly with a brass cap, which extended over it, so as to rest upon the sides of the outer jar. Passing through the cap of the bell glass were two wires, which extended nearly down to the bottom of the bell glass, and these terminated in a circular metallic box, 1½ inch long, and 1 inch in diameter: this box was hollow, and perforated with small holes in the upper part. The electrodes, or points of connection between the poles, were in this box. The water in the jar and bell glass reached some 6 inches above the electrodes.

Third—A quart glass jar, half filled with spirits of turpentine: a tube or gaspipe passed from the top of the bell glass above-mentioned, and into this jar of turpentine, terminating at the bottom of the turpentine. From the cap which covered the jar of turpentine, another tube or gaspipe passed to a jet or burner about 12 inches from the jar.

Fourth—A common glass tumbler, half filled with water. The above comprised all the apparatus used by Mr. Paine, with the exception of three wires, or rather flat strips of copper, by which he connected the magneto-electric machine with the jar of water."

The use of the glass of water, and the arrangement of the wires, we have already indicated. In respect to the helices, it is said—

from that proceed with safety to what is at present unknown? I say these things not, I hope, to advocate a particular view, but to draw the strict attention of those who are able to investigate and judge of the matter to what must be a turning point in the theory of electricity, to a separation of two roads, one only of which can be right. . . . 'If a singular body could exist, i.e. one that could conduct the one electricity and not the other, what very new characters we should have a right to expect in the currents of single electricity passing through them! and how greatly ought they to differ not only from the common current which is supposed to have both electricities travelling in opposite directions in equal amount at the same time, but also from each other!' Is it not to be deeply regretted, whatever be the merits of Mr. Paine's discovery, that such a man as Faraday should have seen reason to withhold in the *very negative* conclusion that such a power of using at least a predominance of the one force was impossible?

In respect to these, and once for all to the operative result of the whole, we may here quote from the *Boston Chronotype*:—"The power of this simple arrangement to evolve electricity is tremendous. The electrical force communicated by the mechanical cause is like that of the rush of water which carries the wheel of a great cotton factory compared with the effort of a child who may hoist the gale. At each discharge of the helices, and there are many in a second, according to the rapidity, an abundant crop of gas bubbles is produced; and this, owing partly to the peculiar construction of the electrode, or form of the poles where presented in proximity to each other in the water of the jar. This electrode is of great interest, and it is here that the difficulty of the discovery lies. It is a small, potentially commanded and propelled by helices, may prove too big for its business, and show its relationship to the favorite weapon of lore. Here, in the tremendous difficulty which has tasked the courage and inventive genius of Mr. Paine—a difficulty of which the public could not be aware, except seems to account for much delay. He has named the thunderbolt in this delicate and mysterious device, to ensure perfect safety with due care. Other safeguards may yet be added. However, it is but right to say, that it would not be strange if carelessness and temerity should hereafter meet with a fate here that will be a caution to all."

"Mr. Payne claims that by an improved construction of the helices in the magneto-electric machine he has improved the power of that instrument infinitely, say *ten thousandfold*, sufficient to produce the wonderful results above described. The peculiar construction of these helices was shown to us, and explained. Before describing them I should make a remark respecting the ordinary helices of a magneto-electric machine. It is well known that the power of a magneto-electric machine, with the ordinary helices, up to a certain point, depends upon the amount of surface of insulated copper wire in the helices. It is only upon the surface of this wire that the electricity can be conducted. Mr. Paine's helices differ from the above in this, that the wire which forms the coil is made hollow, being formed by twisting or winding very thin strips of copper, forming it into a tube. This wire or tube is then covered with India-rubber or gutta percha, to insulate it, and then filled with water. This water within the wire, forming the helices, is so arranged as to be brought in contact with the current of electricity induced from the magnets—in the same manner as the wire that surrounds it. Faraday has established the fact that a very small quantity of water is capable of containing a vast amount of electricity—I think he says that a single drop of water will contain as much electricity as a thunder-cloud—sufficient to burst off the gable end of a house. Just in proportion as the power of the helices is increased to induce or receive the electric current, so is its power increased to give it off. . . . The experiments which we saw, and in which I think we could not be mistaken, would go to show the claim of Mr. Paine to be well founded."

PROFESSOR COCKERELL'S FIFTH LECTURE ON ARCHITECTURE.

The great architects of Greece, great as they were in the practice of the art, were not content without a knowledge of the theoretical laws. The Italians, who followed, were satisfied with practice and precepts, without theory. Through Vitruvius we learn that the Greeks well understood the utility of this course of study, particularly of symmetry, notwithstanding the confusion of his uneducated mind, where he sometimes appears as if in borrowed plumes. Dr. Johnson is not very clear in his definition of symmetry. According to the Greeks it had a double signification; firstly, like the proportionate size of the arms and legs to the human body; and, secondly, commensuration—a principle, by the bye, no less remarkable in Greek art than in Gothic. Commensuration is the great feature of the building for the Exhibition in Hyde Park: we all know that every proportion in it is a multiple of eight. The profession, said he, had the opportunity the day before this lecture of being present in the interior of the so-called Crystal Palace, when the noble, the wealthy, and the learned of the United Kingdom—the members of both Houses of Parliament—were present. Their admiration of the symmetrical was great, indeed: it was the commensuration of great numbers of similar forms that gave delight (and he mentioned this with the highest respect) to their common eyes! William Wykeham especially formed his designs for the ground plans of the edifices he erected upon the equality of spaces, or multiples of them, as he exhibited diagrams illustrated.

Eurythmia, the good rhythm, or harmonious proportion, was the next great element of architectural design to be studied. Symmetry may be defined as the parity of parts; commensuration, the exact proportion of parts to each other, or symmetry of quantities. Eurythmia, or proportion, is evident, especially in the Greek profiles of entablatures, as the examples exhibited proved, where the elegant and chaste union of curvilinear with straight lines was productive of the greatest beauty. The human form was the finest example in nature for commensuration, a man with his arms extended being exactly the same in width as his height. Vitruvius, in his third book, says, the human form divine is all perfection. In the lower animals there is no such proportion, as may be observed in the baboon. There may be cited three kinds of form in man, as the tall, the robust, and the middling, each of which possessed a peculiar beauty in itself, and in all ages, these three types have been admirably employed in ancient art to a suitable indication—but now a day, we cannot

have any figures from the pencil of our historical painters, unless they are six feet in height. The bull, the horse, and the antelope, presented three varying types of animals, each admirably adapted to its habits. This conception of the tall, the robust, and the middling, was eminently important in architectural forms, as adapted for proportion or eurythmia. The Italian architects never discussed this view, but they verified it in practice, as may be particularly observed in the works of the great master Palladio.

The different dimensions of apertures regulated by the five orders, as seen in the diagrams, were worthy of the student's attention, although seldom discussed. In these five openings were the sentiment of the tall, the middling, and the robust. The arches of the Coliseum were singularly wide, but the great length of the building diminished what would have been ugly and offensive in a narrow edifice, to a great beauty of proportion. The building at the corner of Moorgate street and London-wall was remarkable. In the quadrangle form of the elevation a very tall and narrow doorway was placed, displaying an utter want of proportion and loss of dignity. Nottingham Castle, although a low building, possessed great dignity from the quadrangle form of the spaces and windows. James Wyatt has given a good example of this effect in the powder magazine on the banks of the Serpentine, in Hyde-park. Tall lancet examples done in little is a departure from this principle: you cannot have dignity with the tall form in little, it must be quadrate to produce it. In porticoes Vitruvius gives the dimensions dogmatically, solely from practice, without any theory. The Italian scholiasts, as we may call them, have left us works every way useful to be quoted, as those by Raffaele, Peruzzi, Vignola, and others. It would be a desirable study to discover, if possible, the secrets of their proportions—secrets only to be acquired by the study of their logical deductions: it is these secrets which are the wonders of Greek architecture. The secrets of Palladio's lightness, grace, and naturalness, appear to be the union of an inferior or lesser order with a larger one, the proportion of the lesser one being two-thirds that of the larger. This is the great feature of Palladio, a name profound and prodigious in architecture. Vignola's secret depends less on a collateral gradation than in the gradation of windows, which are mostly small in comparison to his masses, as much as one to three or four. He employed larger entablatures than any previous master, and gave to all his buildings an appearance of massiveness and strength. The works of Raffaele are distinguished for order essentially, and for great energy. He often placed the orders on pedestals, both in his buildings and in his pictures. In apartments where columns are employed they very appropriately stand on pedestals, as when filled with company the columns are seen with their bases complete. Sansovino is a master greatly to be respected: we always must admire his *chef d'œuvre*, the library at Venice, where his secret appears to be his having placed an entablature above the second order, making the frieze enormous. The study of all these will expand our ideas and enrich our works. It is only a recent discovery that the Greeks did not place the axis of the columns perpendicular: by the slightest inclination inwards they form a natural buttress. In all architecture this system must be observed.

According to Aristotle, magnitude and grandeur are the chief ends of architecture. This does not consist in dimension: for example, in St. Peter's, at Rome, the cherubs sustaining the piscina appear but of the natural size: when you come near them, you discover their colossal magnitude, weighing many tons. Is not this labour thrown away, without producing any result? The same applies to every part of St. Peter's: if the interior had been smaller, it would have augmented the dignity: it is so lofty that it becomes small, though really vast. Longinus says, the worth of art is its skill in proportion. Therefore we are not to be discouraged by small buildings, for

we may achieve great triumphs in art on a small scale. In conclusion, I impress upon you that when you hear of a great reputation in art or science, you should put faith therein: seek for their secrets, and the labour will reward you.

DOCTORING DAMP WALLS.

THIS task seems to have sorely puzzled many of your readers, and I must confess that the receipts given to remove the evil are not satisfactory to my mind. Superficial linings, washes, coatings of "grease butter," cement, or asphalt, cannot fully answer the required purpose, because they are laid direct upon the wall or walls which are acknowledged damp.* To line or cover one side of a wall in the way named, is only to place it in a condition to become permanently more damp; as the wet which "sweats" at the exposed surface, and is evaporated, is retained beneath the impervious surface laid on, having no means of escape. In "this mottie, misty clime" of England, damp walls are very common, and as is well known, they are not merely disagreeable, but they are positively dangerous to health, and most destructive to fittings and furniture. To "batten" walls with timber, the usual practice in all good houses, is to make the best possible arrangement for rot and decay. Hollow walls, formed out of ordinary stone or brick, also in a measure fail, although a well-constructed hollow brick wall is in every respect to be preferred before timber battens. But to cure existing walls by means of a lining wall of common bricks, leaving an inner air space betwixt the old and new work, would be not only most costly, but in many instances destructive of small rooms. The remedy I have to propose is a lining of hollow tiles or bricks, which need not occupy more than three inches in thickness of space, and yet when completed secure a dry inner surface. The tiles or bricks may be made by any ordinary field-tile machine, and they may be burned in any tile-kiln. The tiles need not be more than one quarter of an inch thick. The machine will make them of any sectional form. They would probably work best 12 inches long by 6 inches wide, and 3 inches deep, with one partition down the middle. Tiles or bricks of this kind may be made for 20s. or 25s. per 1,000, and 1,000 would cover 500 square feet of wall. They may be set in cement either vertically or in horizontal courses, and, where necessary, they may be secured to the solid wall by iron cramps or "hold-fasts." With good cement these, however, will not be required. The inner face of the hollow tile may be plastered as on ordinary brickwork. The "die" in the machine may, however, be made to score or groove the external surfaces of the hollow tiles so as to afford better hold to the cement and plaster.

The plan of doctoring damp walls now proposed is certainly as old as the Romans, and therefore, has "precedent" in its favour. The Rev. J. C. Bruce, in his great work, just published, upon the "Barrier of the Lower Isthmus," the Roman wall, which extended from the Tyne to the Solway,—at page 77, states:—

"Pipes of lead are occasionally met with in the ruins of the stations, and pipes of burnt clay are of very frequent occurrence. . . . They are not found in the wall, but on the site of the stations. One use to which the tiles have been put, has been the transmission of warm air throughout an apartment: the walls of one of the chambers of the 'baths,' at Hunn, were lined with them."

Now that the duty on bricks has been removed, we may surely emulate the Romans in the use of hollow bricks and tiles for purposes of dryness, ventilation, warmth, and endurance. Partitions, floors, and ceilings, may be constructed of hollow bricks, perfectly fire-proof, free from liability to rot, or to decay by worms, and be as light as if made of timber in the ordinary way, or even lighter. Where

* By reference, our correspondent will find that the scope of our own extra-professional article, "on doctoring damp walls," was expressly restricted, with a reservation in favour of more thorough measures, and also with a reference to these as having been already professionally discussed in our columns.

there is a subsoil naturally damp, hollow bricks may be laid beneath the floor, so as to secure perfect dryness; and means may also be taken to prevent annoyance from insects.

ROBERT RAWLINSON.

THE WINDOW-TAX AND TIMBER DUTIES.

THE removal of the tax on light and air, as proposed by Sir Charles Wood, will, in a sanitary point of view, do good, though fiscally he is merely taking it off one shoulder to lay it on to another by the imposition of a house tax, to which, moreover, we have other objections, as our readers are aware. The window tax will be totally repealed, but on the following erroneous compensatory conditions:—All houses not now paying window-tax, but of the annual value of 20*l.* or upwards, to pay two-thirds of the lowest window-tax, viz., 12*s.* All of the annual value of 20*l.* and upwards, now paying window-tax, to pay two-thirds of the amount now paid for window-tax. New houses to pay at the rate of 1*s.* in the pound on their annual value; but if they be occupied as shops, public-houses, or farm-houses, 9*d.* in the pound only. Should this arrangement be insisted on, all the old houses will soon be tenanted.—It is further proposed to reduce the duty upon foreign timber to one-half the present duty. At present the duty on sawn timber is 20*s.*, and on hewn timber 15*s.*; the Chancellor therefore proposes to reduce the first duty to 10*s.*, and the latter to 7*s.* 6*d.*

DURABILITY OF DRAIN PIPES.

HAVING recently seen in THE BUILDER some remarks on the efficiency and durability of tubular drains, will you allow the following remarks a corner in your valuable paper? First, their durability; and this will in some measure involve their efficiency. In deep drainage I need not say both should be made a matter of certainty on account of the expense incurred, more than when they lie nearer the surface. I am led to this remark by having been recently called upon to examine part of a deep drain which had become inefficient from some cause, when I found, on removing the ground, the pipes were fractured the whole length of the shaft, namely, 12 feet. I mention the shaft because being a long drain, part was tunneled, and I have no doubt, had the whole been opened, it would have been found the same throughout, that is, in the different shafts: this leads me to doubt their durability, and also their efficiency in their present form; and if I am asked why, I answer,—their form is one objection, they have one end, namely the socket, sufficiently strong in appearance and in fact, so if some mode were contrived to make the other equally so, and the middle strengthened by a band or hoop so as to resist pressure, this would cost a little more, but I think the advantage would be more than commensurate to the cost. Why may they not be so formed as to drop into each other, so as not to disturb more than the one broken. The manufacturers should see to this. Cheap things in name are not always so in fact.—A CLERK OF WORKS.

THE GREAT HOSPITAL, MILAN.

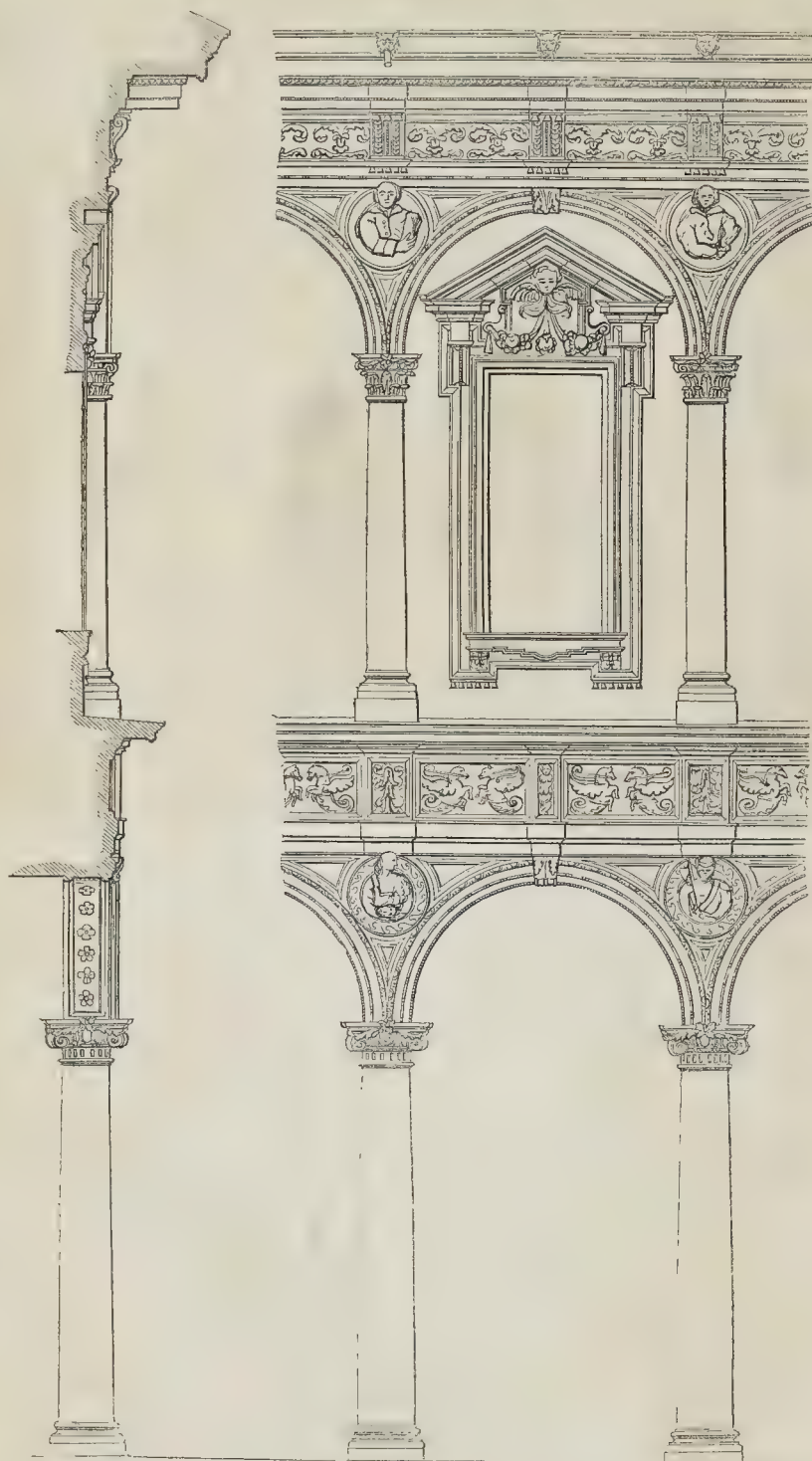
THE engraving (p. 122) represents one bay of the arcade surrounding the large centre court of the Great Hospital at Milan. The columns are of stone, but the entablatures and the arches, with the enrichments, are in terra cotta. The half-figures in the medallions over the columns are all illustrative of Scriptural history: the female figure in the lower medallion to the right is intended to represent the daughter of Herodias, with the head of John the Baptist in a charger. The whole of the figures and enrichments are beautifully modelled, and in excellent preservation.

This part of the hospital was built from the designs of Ricchini.

The window in the upper story is comparatively modern, and is of stone, the blank wall being of brick stuccoed. The harmony of the colours is most pleasing, the stone being of a warm gray, the stucco raw Sienna, and the brickwork a quiet unobtrusive red.

J. T. W.

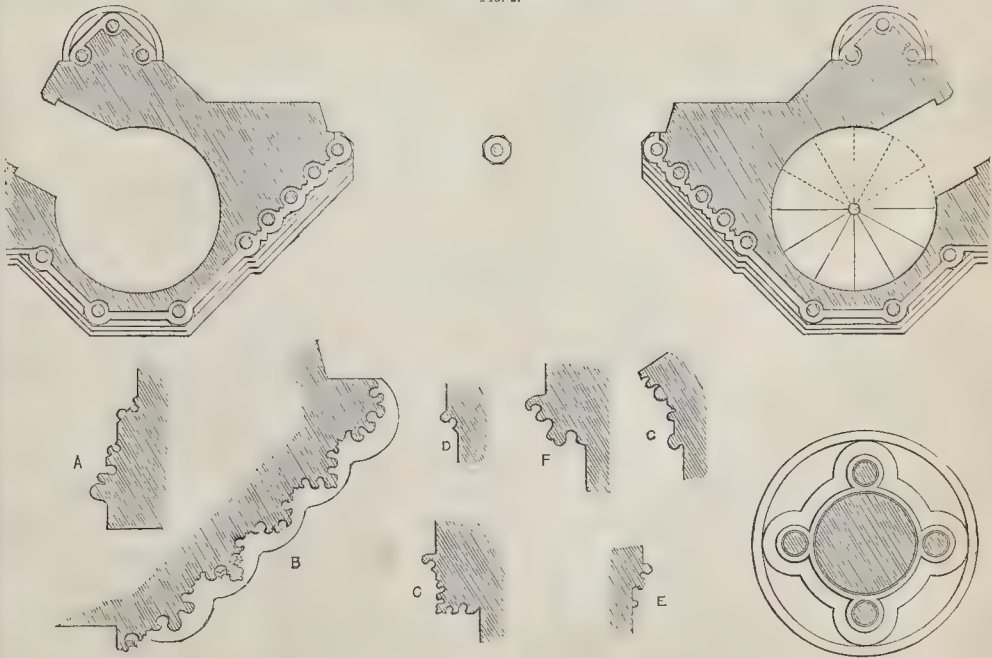
THE GREAT HOSPITAL, MILAN.



EARLY ENGLISH DOORWAY, WEST WALTON CHURCH, NORFOLK.



FIG. 2.



EARLY ENGLISH DOORWAY, WEST WALTON CHURCH, NORFOLK.

In the flat district between Lynn and Wisbech are situated several villages, which have remarkably fine churches of various characters and ages. The lover of ecclesiology will find a rich treat in the examination of them. They are very large, and present in their varied forms much that is very admirable.

Walshen is a fine specimen of Norman Transition; West Walton, a magnificent Early English church, with detached campanile; Torrington St. Clements, a large cross church, decorated, with very extensive perpendicular alterations, and a detached tower at the west end; and, lastly, Walpole St. Peter's, a most elegant Perpendicular church, remarkable for its beauty, and the elevation of its altar on nine steps. The particular object, however, of this letter is to explain the drawing that accompanies it of a door of extraordinary beauty, and which may be called a discovery of the rector of West Walton church, three miles from Wisbech. It is the western door. It seems originally to have been admirably designed, and carried out with all the care and cost that has often been expended upon our larger churches. The western end of the church consisted formerly of this fine door, and probably a large window of two divisions, and a quatre-foil in the head of it, over it, and between two octagonal towers, ornamented with arcades, and finished with spires. At either side were small low aisles, which, having been much raised and extended, have much injured the general effect, and totally destroyed the architect's design. The angular turrets seem to have sunk westward; and two very large buttresses, 4 feet thick and 10 feet deep, were placed against them to prevent their falling. This, a sufficiently miserable expedient to save rebuilding, led to other and worse consequences: a lean-to roof was placed over the door, and the ends of the buttresses bricked up, and thus a wretched damp room was created in the place of the splendid portal. A ceiling being added internally, cut off much of the upper portion of the arch: the piers at the sides were bricked round; the centre was deprived of its shaft and arches: the whole was bricked up from the church: the pavement was raised; and, lastly, the parish children were placed in it, and it was used as a school for years. Fresh injuries took place in consequence. One buttress was hollowed out for a coal-hole, another pierced for a chimney, and thus the very safeguards of the edifice were endangered. Much of this has already been restored by the munificence of a gentleman in the neighbourhood (D. Gurney, Esq., of Runcion Hall, Lynn), and this exquisite design once more brought to light. The accompanying drawing (p. 123) will, I trust, plead my apology for seeking to place it in a work where it will be appreciated, and induce your readers to visit a church most worthy, in every part, of the study of the lover of English Church Architecture.*

Fig. 2 shows the plan of the porch: A, is the base moulding; B, the arch-mould; C, D, &c., other details. W. L.

THE MARBLE ARCH; AND A FEW QUESTIONS.

SIR,—So far from agreeing with you as to the propriety of now dropping the subject of the "Marble Arch," I think it is what ought to be kept forcibly in view. If the time for remonstrance be past, not so that for reproach; and although reproach cannot undo the mischief which is now being committed, it may deter from similar offences in future, by convincing people in office that official power does not secure them impunity for their errors or their obstinacy.

It is not particularly surprising that matters of the kind should be managed in the arbitrary and irresponsible manner, and with the indecent precipitation, they now frequently are, when the animadversion they incur is so short-lived that it amounts to no more than a little

* The centre column should be a quatrefoil, and not a single column, as represented. It has been restored with a single column through want of information at the time, but is evidently not correct.

"flash-in-the-pan" grumbling. If public opinion in such matters would be respected and treated with deference, it should show itself more firm and energetic, and take things far less quietly than it now does.

With regard to the "Marble Arch," one or two questions arise, to answer which at all satisfactorily would, perhaps, perplex the noble lord who has the credit of having fixed upon the new site for it. Had he duly taken into consideration the various suggestions made from time to time for other sites, almost any one of which would have been greatly preferable to the one now actually pitched upon? If he really did do so, why have we not been apprised to that effect, and informed on what grounds every one of them was objected to? Or are we to suppose that neither his lordship himself, nor any one about him, was at all aware that any suggestions of the kind had been made, not having even so much as inquired whether such were the case or not? Another somewhat disagreeable question is: was the site after all—after the length of time that the removal of the arch from the front of the palace was foreseen as indispensable—determined upon only at the very last moment, and in such a hurry that it was utterly impossible to give us other warning of it than that afforded by the preparations for re-erecting the structure? If such were really the case, the precipitation may very well account for the blundering; but what is to account for the precipitation? Not at all more satisfactory is it, if we suppose that the choice of actual site was not a hurried one, but on the contrary, the result of deliberate and careful consideration; for the question then is, wherefore have we not been properly assured that such has been the case? and why should there be so much of suspicious mystery kept up in matters of art and taste, when those of far greater importance to the country at large are freely disclosed—perhaps more compulsorily than voluntarily—as well as reported and commented upon? With this last question as my final one, I am, Sir, yours, &c. ZETA.

NOTES OF ARCHITECTURE IN IRELAND.

THE Board of Guardians of the Granard Union have decided upon erecting an additional building to the male side of the workhouse, and are prepared to receive tenders for the execution of the works, according to the plans prepared by the Poor Law Commissioners. Architect, Mr. Wilkin-on.

A new Roman Catholic church is being erected at Ennis, and funds being required for the completion of the work, a subscription list has been opened.

The Drainage Commissioners have sent down a presentment for Ennis Assizes of 138l., the amount required for the reconstruction of four bridges in that locality.

A presentment of 1,400l. will also be made at the Ennis Assizes for the enclosure of the new court-house.

A new Roman Catholic church is about being erected at Irishtown, county Dublin, and plans have been prepared for same.

The works at the Mullingar Lunatic Asylum, which is now being erected by the Commissioners of Public Works,—Mr. Mulvany, architect,—are progressing. The corridor and cell walls of west wing are raised some feet above the level of first story, and the plinth course is set on front of centre or entrance building, which contains the master's and matron's apartments, offices, &c. Mr. John Smith is the contractor.

The Midland Great Western Railway Company intend erecting the following stations on the extension line to Galway:—Castletown, Moate, Woodlawn, Athenry, and Oramore, each of which will contain the necessary booking offices, waiting-rooms, and station-master's apartments, and the probable cost of their erection will be 600l. each.

A new station is also to be erected at Ballinasloe by the same company, and the accommodation will be more extensive than in those above specified. The total length will be about 84 ft. 6 in., and the principal story will con-

tain the following apartments:—A porch, 11 ft. by 9 ft., communicating with ticket-office, 14 ft. 10 in. by 9 ft.; first and second-class waiting-room, 16 ft. 10 in. by 13 ft., which is entered from platform by doors 4 ft. 6 in. wide; third-class waiting-room, 20 ft. by 13 ft.; ladies' room, 13 ft. by 11 ft.; porters' and master's entrances, urinals, &c. The basement story contains apartments for the station-master, consisting of a parlour, bed-room, and kitchen, 15 ft. by 9 ft. 10 in. each; also a porters' day-room of same dimensions, tank-man's rooms, lamp-room, stores, &c. The front elevation consists of a central porch, with flat arched opening, 7 ft. wide by 3 ft. 9 in. high, surmounted by a gable, with oriel window in centre, which lights porters' bed-room. At either side of this porch are diverging passages (4 ft. 6 in. wide, leading to waiting-rooms), with windows therein 3 ft. 6 in. wide, and 4 ft. 3 in. high, divided into two compartments. The waiting-rooms are lighted by windows 5 ft. 3 in. wide, by 5 ft. 6 in. high, divided into three bays: a balustrade, 3 ft. 6 in. high, encloses front and sides. The cost of erecting this station will be about 1,500l. Messrs. Cockburn and Son, of Dublin, are the builders. Mr. Dargan, the contractor for the works on the extension line, has entered into an agreement with the company to have the line open to Galway on the 1st of August, and the works are being executed with all possible expedition.

A new town-hall is to be erected at Cork, and tenders are being received for a suitable site.

MR. MARSHALL'S DIORAMA OF A TOUR THROUGH EUROPE.

THE diorama, painted by Mr. Charles Marshall, assisted by Messrs. J. M. Wright, Dukes, Keese, and Andrews, and which has been opened at her Majesty's Concert-room, Haymarket, represents an enormous extent of country—Hamburg, Berlin, Vienna, Pesth, Constantinople; then Rome, Venice, Milan, and the Rhine country, are all included and made prominent resting-places. Without, perhaps, fully equalling the expectations we had formed, from knowledge of Mr. Marshall's fine efforts on the stage of her Majesty's theatre, it is a beautiful and interesting work, and should be visited by all. The Walhalla by moonlight, the Ducal Palace and Library at Venice, the Snow Storm, the gradual appearance of Mont Blanc, the *Mer de Glace*, and the Pfalz, on the Rhine, may be more especially praised. We would suggest the introduction of means to prevent the necessity for drawing the curtain so often, and increased attention to the lighting, on which much depends. It is a work of immense labour, and eminently deserves,—what we have no doubt will be given to it—the crowding support of the public.

RAILWAYS IN EGYPT.

MR. Aston Key has published "A few Suggestions on the Formation of Railways in Egypt." He says,—“The idea of establishing a line of railway communication in Egypt is by no means novel. Some years ago, with a view to facilitate the transit through that country, the route now used by the overland passengers to India, between Cairo and Suez, was adopted; and the scheme was so far carried out, that the rails were actually imported, and still lie unused. For here the project dropped: the French had sufficient influence in Egypt to persuade the then Pasha that such a line was only for the interest of the English, and the furtherance of their designs in the East. That such a man as the late Viceroy of Egypt, Mubammed Ali, should have been so influenced, is indeed surprising; but Moslem prejudice assisted French intrigue. While, however, a project (which implied a passage through Egypt independent of the local government) was necessarily obnoxious, not only to these rulers, but also to the French interest, the undertaking which it is the object of these pages to promote, is one which, while it offers mercantile advantages to the European, infinitely superior to any the Cairo and Suez line possesses, is yet sufficiently under the control of the Egyptian Government to render any

political apprehensions groundless. This lies between Alexandria and Cairo."

The route to be taken on starting from Alexandria is parallel to the Mahmoudieh Canal, along the embankment which separates Mareutis from Lake Madieh, as far as the point where the canal bends to the east; and then, avoiding the more cultivated districts, the line should skirt the desert, east of the Naron lakes, and finally terminate at the village of Ghazeh, opposite old Cairo.

His summary is to the effect, "First.—That the present means of transit are deficient in the important points of convenience and regularity.

Secondly.—That these deficiencies would but be remedied by the formation of a railway in the direction mentioned.

Thirdly.—That there are no insurmountable physical obstacles to the construction of the line. And

Fourthly.—That it could be efficiently constructed at such a reasonable cost as would give sufficient guarantee of remuneration to the undertakers."

IMITATION *versus* DECEPTION.

Our friend, the defender of imitations (as he calls them) thinks I might have dispensed with applying the "ridiculous term blasphemy" to the expression that "all nature was deception."—(in other words, the Author of nature a deceiver.) If I now dispense with it, I only do so because he has not repeated this position; and by his not repeating it, I conclude that, whether ridiculous or no, the term has not been used in vain, and that he has had the good sense to see the monstrous nature of the expression into which, in his eagerness to find a support for a favourite opinion, he had inadvertently been led. Even less things have doubtless led us all occasionally into positions involving blasphemy.

The ridiculous use of the term appears to me its application to a style of ornament. It is not I who so applied it; nor should I think of applying it, as Mr. Ballantine suggests, to the practice of men calling one another creators, though I object to that perversion of language, as well as he. I call it ill taste,—falseness,—presumption, if you will, but cannot consider the term blasphemy "fitter" or nearly so fit for this, as for the expression to which I have applied it, and to which, if repeated, I will still apply it.

A further reference to Dr. Johnson, however, was to enable me to see the term "deception" in such a light as to alter all this. Unfortunately my edition of the dictionary does not give either "counterfeiting" or "imitating" as synonyms of deception; and the use of these three terms as equivalents is a piece of information entirely new to me. Imitation and deception have always, to my mind, been totally distinct ideas,—things which might exist together, but were more frequently separate;—as, for instance, imitation without deception, in a pupil imitating a master, and in the whole circle of works of true art, which all imitate nature;—and, on the other hand, deception without imitation, in proceedings with which the London shopkeepers have more acquaintance than they desire,—which, though deceptive, are so far from copyism, that their originality shows a fertility of invention truly creditable to the genius of this country, and disproving (if nothing else will) Mr. Ballantine's singular opinion that "man is not an inventor."

Again, the term *counterfeiting* has always, to me, conveyed both ideas together,—has implied the union of both deception and imitation,—and, therefore, has not been equivalent to either, but only to one species of each, viz., to that species of *imitation* which does, may, or would, *deceive*, and to that species of *deception* which is effected by, or depends on, *imitation*.

Now, till Mr. Ballantine has shown us some authority, besides his own, for confounding these three terms together, I shall take the liberty of adhering to my accustomed use of them as all distinct; and shall consider that there may often be imitation without deception,—just as frequently deception without imitation,—that there may be either without

counterfeiting,—and that there cannot be a counterfeit without both.

This terminology will enable me, I hope, to make clear to Mr. Ballantine, the very important point on which he has applied to me for information,—an information really of the utmost importance to an artist. He asks, "if the arts wherein imitation [counterfeiting] is practised, be set aside, where professors of the fine and decorative arts are to find materials whereon to exercise their faculties." If arts wherein *imitation* (as I use the term) is practised were set aside, there could be no professors of fine or decorative arts, for these arts are all essentially imitative. It is plain, therefore, that by imitation, our friend here means only that species of it which I distinguish by the term *counterfeiting*. My answer, then, is, "you will find your materials *precisely where you found them before*,"—in the works of nature, and in artistic precedent. Your materials will remain precisely the same, but the faculties you exercise on them will be slightly different,—you will still *imitate*, but *without counterfeiting*; you will imitate more closely,—more truly. Instead of natural appearances, you will imitate natural realities. Instead of the peculiarities of natural things, you will extract and imitate their generalities. Instead of that which distinguishes one thing from another, you will imitate that in which many or all things are alike. You are not imitating nature now, for how can that be nature in which no two things are alike? You are not copying deviations from nature, you are copying the works of chance, instead of those of creation,—for everything in nature contains both, and you just extract the wrong portion. Imitate, not what you see, but the method of what you see done. Imitate (both in nature and in preceding art) not the appearance, but the work, or rather as Quatremere de Quincy says, in the introduction to his essay on Egyptian art) not the work but the workman,—not as a copyist imitates a pattern, but as a pupil does a master,—"*qui fait, non ce qu'il voit, mais comme il voit faire*." Imitate the ancients: *à. e.*, imitate not what they have done, but as they have done. Imitate natural and artificial precedents as they were imitated "when the Memnonium was in all its glory," and when the Parthenon was in all its glory. Ah! counterfeitor, where are the counterfeits here? Is this monstrous artificial creation? Did the artists of this abbey "fancy themselves creators?"—and yet show me the counterfeits in it. There are none, for they have not even copied a single plant, leaf, or flower. Have they been in want of "materials on which to exercise their faculties?"

But, in this truer and more exact kind of imitation, you will also be always *inventing*, as well as always *imitating*. Therefore, if you persist in the maxim, that "man is neither a creator nor an inventor," I can help you no further. I still think with the majority, that man in general is an inventor. Most men think themselves so, and would consider a man who thinks the contrary, and professes a fine or decorative art, to have mistaken his calling.

Mr. Ballantine remarks that I have not said "that the concavity of heaven and the rainbow are what they appear to the eye." After saying that "there is no false appearance in nature," and much more to the same effect, I could not possibly guess that this statement was required; but to satisfy him, I now add, that these and all natural phenomena are what they appear to the eye. It may assist him to add, that I deny things to appear to the eye at all. Perspective forms and colour appear to the eye. Things appear to the mind only. I must only remind him that there is all the difference possible between things *appearing* correctly and *being seen* correctly; a difference which he seems to have overlooked.

And having now given him the information he desired, I must disclaim all the merit of his ingenious plan for converting works of false art into true, by turning them inside outward. His gold picture-frame stuccoed over

is all his own, and not deducible from anything I said. I told him all works of true art were more than they at first appear. I never told him all things that are more than they at first appear are true art. That is entirely his own addition. I suppose it was in this way that, when he found in Johnson that every counterfeit was a deception, he concluded that every deception was a counterfeit. I suppose, too, when he found that counterfeiting was imitation, he concluded that imitation is always counterfeiting; and hence, again, that imitation and deception were the same. Some very curious discoveries may be made by this kind of reasoning.

I have little doubt Mr. Ballantine "always thought, that, even in works of high art, the more complete the deception, the greater their excellence." That he always thought right, does not follow. Many of your readers have doubtless always thought the same; and yet, on reading any foreign work on art, or the "Oxford Graduate" on painting, or the chapter on "Truth," in his far less admirable "Lamps of Architecture," may possibly be led to think quite differently; or at least not always the same.

That marbling, &c. were used in Egypt 3,000 years ago, requires proof, which I will thank Mr. Ballantine to produce. Whether they were or not, I have (to borrow his concluding expression) no hesitation in saying such arts flourish best in a country like Britain, where the paltry pretences arising from worship of wealth afford the surest guarantee for progress in all that ministers to man's intellectual and physical abasement and brutalization;—in a society that, to keep up hollow counterfeits of wealth, can starve its labourers, and suck the life-blood of God's poor;—in a country brought down to the most desperate extremities, even to that which is really mentioned in Holy Writ as *the comb of douleur*, not that which Blondel (as quoted by Mr. Cockrell the other night) so calls, but that which is denounced against the utmost sins, viz., for the land to "eque out" her inhabitants;—a country that has been civilized, has had its days of progress and improvement, has been young and now is old,—very old and very ugly,—very pinched and wan, and very thickly painted too;—a country that, with all this, I love too well to join the sycophants that, finding her name a substitute for their own, puff her up with lying flatteries.

And now, if I do not, as Mr. Ballantine wishes, attach to this any other name than before, I beg to assure him I have no wish to take advantage of his promise, in that case, to leave me "the field." I know of no field. I am not attacking a person, but a thing. I am not writing for Mr. Ballantine, but for such of your readers as are undecided on a question to be settled by arguments, not names. We do not argue to convince each other, but lookers on; for it is notorious that arguments only strengthen each arguer in his own opinion. We do not appear as combatants in the lists, but as pleaders before a jury, consisting of you and your readers. The question is not who can wield his weapons best, but who is on the right side. I hope, therefore, my friend will not be deterred, by what he has said, from addressing you again; and if he has any more questions to put, I will again endeavour to answer them; if not, he is quite welcome to the last word; and when he has said it, I hope he will shake hands with "Calotect," and not break the fellowship proper between those pursuing one common object—the discovery of truth.

CALOTECT.

BLACKFRIARS BRIDGE.—At a recent meeting of the committee appointed to manage and control the Bridge House Estates connected with the corporation of the city, it was decided unanimously that the centre of the fifth arch of Blackfriars Bridge, nearest the Middlesex shore, should be securely propped without delay, and that every possible measure should be taken to make the piers secure, and to protect the public from any apprehended danger.

* The expression occurs in Leviticus xviii. 26 and 28; also xx. 22.

ARCHITECTURE BETTER THAN "NAVY WORK."

TOWN HALL, HEMEL HEMPSTEAD.

MISTER BILDER.—If so be I am not makin to bould, for I like to be at top on t tree—tho Bill Sykes t Bricklayer ses he thowt I ud be offendin ye, bud Ise heerd a different tail, not that, so to cum at point. I read in your paper on t 15th on this munt a advertisement cald competitors to architects, Builders, and Others. This I thowt wor kindly ment, so as I nowd that mony girt Ingeneers had worked in Coil pits or at pudlin furness, and sum like John Car o York in stein pits and quarries, and that brindly wor nowt bud a navy lik mesen, and I can chalk out scratches as weel as sum o yawr carpenter lads, it south as Ise seed, I tuk it upon me to indite a letter to they chaps at Hemel Hempstead, and when I wrote it Bill ses nay, thous dun it so weel that thou mun send t copy out; an its ony to shew thous gettin a bit o pluck in thee. So here it is, and happen ye'll approve on it.

Copy.

Mister Roberts, Lord Mayor of Hemel Hamstead, Sir,

I send a kindly advertisement to architect, bilders, and others in t' Bilder paper of Setterday last when I wor up in London to see t girt glas house, and as I am one o tothers, I tak liberty of asking you for the further partiklers, as I got a notion that I can make plans for t new town hall as is to be stuk upon columns or piers if ye be so good as send me t size on them piers, and say wether ye wad like town hall to be of stein or brik or wood or lats and compo, and I sal be sewer and send in time, becoss the chance of making more nor fifteen shillin a week on t railways, costes nowt but a bit of labour for a chap out of work, as a friend that I told on my skeme has gid me t paper and pencil. Direct for me by t name of Jonas Warton, at Matty Grogans, friday market, York. I thowt Ide just send summatt sort to Mr. George Piggott, Esq., of Bolton, but Ide just bide a bit till Ise done this, and then for t church edicationals.

PATENT RIGHTS AND LAW FOR PATENTEES.

A CASE was set down for trial on Tuesday, the 11th inst., in the Common Pleas, and as it involves some matter that may prove important to inventors,—being, moreover, in the building line,—I send you the fullest report that has appeared.

DENLEY v. BLORE.

This was an action by the plaintiff, a builder at Pimlico, and a patentee of an invention for the construction of tubular flues for chimneys, against the defendant, who is the well known architect, for an infringement of his patent. The defendant pleaded not guilty.

In 1842 the plaintiff took out a patent for the application of tubular pipes, composed of baked terra cotta, or potter's clay, to chimneys, by means of which, and the mode in which they were to be fixed in buildings, air was excluded from the chimney, heat and flame confined to it, and the whole mass of the building was considerably strengthened. When the defendant commenced the recent alterations at Buckingham-palace the plaintiff sent a specimen of his invention to the defendant, hoping that he would adopt it at the palace—or, as the learned counsel termed it,—“that splendid building, got up with more than Aladdin-like alacrity,” at Pimlico! but upon making inquiries some time afterwards he found, to his surprise, that an exact imitation of his patent was being used there, without his permission, and without his deriving any profit from it. The plaintiff remonstrated, but without effect, and he therefore commenced the present action.

Before the case had proceeded far. The Lord Chief Justice said—Have you not got the wrong defendant here? Should you not sue the contractor instead of the architect? If I employ an architect, and in his specification he says he will supply me with patent chimneys, does that make him liable if the contractor infringe a patent?

Mr. Serjeant Allen.—Not if he be merely an architect, and do not authorize, or approve of, or benefit by the infringement.

The Lord Chief Justice.—Well, what is the case here, Brother Byles?

Mr. Serjeant Byles.—My lord, the defendant in this case is the architect merely; and whether this

patent have been infringed or not,—which is a question,—has had nothing whatever to do with it.

Mr. Serjeant Allen.—I was afraid it would turn out to be so, my lord. We will, therefore, withdraw for the present, and come again, if advised to do so, against the right party.

Plaintiff non-suited.

It appears that the patentee had his tubular flues (in terra cotta) manufactured at Burslem, and that he opened a wharf for the sale thereof in 1843, which sale he continued for two years, until finding that sale unremunerative, he closed that establishment. He had, however, sold some quantities to various builders, and amongst others to Messrs. Bird, of Hammer-smith, who used them in the Consumption Hospital, and also some (chiefly as samples) to Mr. Harrison, who had them taken to Buckingham Palace, in the old portion of which building he used a small quantity.

In the year 1848, the patentee found that his flues had come into general use, and that the whole new additions to Buckingham Palace were fitted up with his plan of chimney-flue: when he applied to the architect of that building, as well as to those of other large edifices in London, for compensation in the shape of license fees, that demand was resisted, and he therefore instituted an action at law first against the royal architect.

A postponement of that trial was applied for on the ground that the defendant's principal witness was dangerously ill, and such application was allowed by the Court; therefore the case was deferred until Tuesday last, and when the plaintiff (a poor working bricklayer) came forward with about nineteen witnesses to support his rights, a new form of delay (or in this instance of defeat) was resorted to, which, if it were known to the defendant on the former postponement, would seem to have been an equally valid reply to the action then as now.

In fact, it was agreed that the defendant in this cause was the wrong man, and that the right man was the builder, and not the architect, of Buckingham Palace!

So it was ruled by the Court, and counsel for the plaintiff had no alternative but to withdraw the record, and the unfortunate patentee no other resort but to commence *de novo* against the builder, as he could not very loyally sue her Majesty, whose Royal sign manual was inscribed on his patent, for an infringement of that document.

Thus, having lost seven years (one-half) of his privilege, the breveted inventor has to enter a new suit, wait three months longer, collect, if he can, his score of witnesses, get up the funds, and keep up his spirits, on the hope of bringing his cause before a jury, under the possible contingency that he may acquire some reward for his ingenuity, and some return for 157l. the expense paid on taking out his Royal License!

The wasting anxieties of delay, with the necessity of litigating a patent right, are trying enough to the spirit of a man in competency, but the expenses of repeated law-suits on a poor man are hard to bear. And now, whilst sympathizing societies are struggling to enfranchise poor inventors from extra extortion, it would be well if they would take a hint from this case, and try to establish the validity in evidence of the original patent, the original specification, and the original drawings (as before exorbitantly paid for), in order that there should be primary evidence on trials in court.

In the case of Denley v. Blore, although these documents bore the attesting signatures of officials, they were not admissible as evidence; and although the plaintiff had them in possession, he was obliged to pay 3l. odd shillings for new and other copies in order to produce in Court!

If claims of this kind be surreptitious, they ought to be met in a straightforward way; but if they be valid, and fair letters patent be worth anything, then they ought to be admitted.

THE EXCHANGE AT ANTWERP is about to be covered with a roof of iron and glass.

THE ARMY AND NAVY CLUB, PALM-MALL, has been opened for the use of the members.

DESIGN FOR ENLARGING SMITHFIELD MARKET.

THE Markets' Improvement Committee of the Corporation of London have issued a very good isometrical view, ground plan, and elevation of the improvements in the neighbourhood of Smithfield, designed by Mr. Bunning, and proposed to be carried out by the Corporation. The proposition is to clear a large site to the west of the old market, with a frontage in Victoria-street (the new continuation of Farringdon-street), and to form thereon the dead-meat market next the street, and the cattle-markets behind. On the site of the old markets Mr. Bunning proposes to erect a large establishment of baths and washhouses, a handsome fountain for the use of the market (the lower basin supported by sculptured or metal bulls), and a pile of lodging-houses for the poor. These last would be in Long-lane, and, if we understand the plan correctly, would be somewhat hemmed in by other buildings.

The plan would have the effect of sweeping away a neighbourhood at present a great nuisance, and would give accommodation for 5,000 beasts and 36,000 sheep, instead of, as now, 2,750 of the first and 30,000 of the latter. Fine as the intention is, however, and great as the improvement upon the present arrangement would be, we should deplore the success of the scheme as tending to perpetuate, in the heart of the City, this mighty nuisance. A traffic of seven millions per annum necessarily involves the interests of a large number of persons, and the removal of it must be dealt with liberally and cautiously; but, apart from this, there is nothing to be advanced in support of the retention of the live-meat market there: the enormous cost of such a scheme in such a place, the insufficiency of the thoroughfares, the demoralising influence of a cattle market, and the long train of other evils which follow, all array themselves against the endeavour to retain and increase Smithfield-market.

WATER IN DERBY.—CONSTANT SUPPLY.

WITH reference to a recent note in our provincial news as to the charge for water to the poor by the Derby Waterworks Company, Mr. Hawksley, the engineer, writes us, that the humbler classes are supplied by this company (whose works have only been six weeks in operation) at rates of charge very much less than we were informed was the case. He says the company's scale of charges is as follows:—

When the annual rent amounts to	And does not amount to	s.	d.
£2	£3	0	9 per qr.
3	4	1	0
4	5	1	3
5	6	1	6
6	7	1	9
7	8	2	0

with from 12½ to 20 per cent. discount on the above charges for payment from the landlord.

Mr. Hawksley continues,—“I believe I may claim for myself an experience in the construction and management of works on the system of ‘constant supply’ as extensive as that possessed by any other engineer. Amongst numerous other advantageous results of the application of that system has been the discovery of the important fact that, with properly constructed works, a ‘constant supply’ can be afforded with less cost and less wear and tear than an ‘intermittent supply.’”

THE WOODS AND FORESTS.—In reply to a question by Lord Duncan in the Commons, Lord John Russell has intimated that it is the intention of the Government to bring in a Bill this session to make better provision for the management of the woods, forests, and land revenues of the Crown, and for the direction of public works and buildings.

STATUE OF WALLACE.—This colossal work by Mr. Patrick Park is now completed, and has been removed for exhibition to a wooden building at Bellevue, Edinburgh. On Thursday week the uncovering of the statue took place in presence of a large party of Mr. Park's friends.

SAPPING AND MINING AT DERBY.

THE influence of the Central Board of Health on local boards, in inducing, or rather compelling them to employ the sappers and miners in making surveys and sewerage maps, &c. of the towns under their sanitary guardianship, has been rather too successfully exerted, it would appear, in various instances; but recent doings at Derby are at length likely, if we mistake not, to bring this influence to such an issue as will at least limit its undue exercise, whatever force the order of the Central Board to employ the Ordnance in *attesting* surveys already made may still continue to exert upon the local boards. The Derby Council constituting the Board of Health for that city, have appealed to counsel for advice on the subject, and it is the decided opinion of Mr. Peacock, who was consulted, that "the local board cannot legally enter into any engagement with the Board of Ordnance." It remains to be seen what the Central Board will say to this. The opinion of the eminent counsel consulted in this case is to be communicated to the board for their opinion or decision on the point. As remarked by the *Derby Mercury*, which is warmly espousing the cause of the general profession of civilian surveyors, and of the local members of that profession in particular in the present instance, "the Boards of Health in many towns have at once tamely submitted to the dictation of the General Board in London, for fear of 'getting into difficulties;' but the most difficult part of the business now may be to get clear of their engagements with the Ordnance." There is but too good reason for the surveying interest throughout the country to be on the alert, however, and to take instant advantage of the present posture of affairs if they can; for it is feared that "as an engagement cannot legally be made with the Board of Ordnance, some individual may be put forward on its behalf as a scape-goat."

NOTES IN THE PROVINCES.

THE bells of Wilburton Church, in the Isle of Ely, have been recast and rehung on a new principle, with new frame-work, &c., at the expense of Lady Pell. Mr. G. Benstead was the contractor, and Messrs. Taylor and Son, of Loughborough, the bell-founders. A new engine and engine-house have lately been erected at Flood's Ferry, Doddington, for the drainage of the Ransmoor district in that parish. The building, with a shaft 70 feet in height, was erected by Mr. Richard Freeman, of Ely, builder; and the surveyor employed by the Commissioners was Mr. George Allen, of St. Ives, architect. The engine is a forty-horsepower expansive condensing engine, with a scoop-wheel 34 feet in diameter, and 24 inches blade, with two boilers, and many of the modern improvements lately introduced into drainage engines. The engine was designed, erected, and fixed by Messrs. Beecroft, Butler, and Co., of Kirkstall Forge, near Leeds, engineers. A dispute between the Directors of the Albert Pier Company, Portsea, and Mr. Rolt, has been brought to a conclusion. For work not in the contract, it appears Mr. Rolt claimed 4,000*l.* After repeated attempts at arrangement it was referred to arbitration, and after a very lengthened investigation, it has been decided that Mr. Rolt shall receive 1,000*l.*, each party to pay their own expenses, which will be very considerable. The erection of a chapel at Winchester, for the accommodation of the troops in the garrison there, it is expected, will be commenced early in the spring. The extreme length will be 132 feet. It is also intended to erect a house for the military schoolmaster. The Sherborne vestry have resolved to apply to the Commissioners of Public Works for a loan of 2,000*l.* of the sum (4,000*l.*) necessary for the repair of the central tower and its piers and arches, and of the north transept of the church. A protest has also been made against the resolution. The Plymouth baths and wash-houses, which have been in operation twelve months, have succeeded beyond the most sanguine expectations of the promoters. The governors of the Free Grammar School, Birmingham, have presented a site for the erection

of a new church in the vicinity of Ladywood. The North and South Wales Bank, according to the *Liverpool Albion*, have determined to build four villas in Birkenhead-park, as an experiment, with a view, we presume, to the erection of more if successful. It is understood that Mr. Arthur Holme is to be the architect, and Messrs. J. and W. Walker, of Birkenhead, the builders. The Unitarians, it is said, are about to erect a chapel in the vicinity of Grange-lane, Birkenhead. The foot-walk from the north gate of George's Dock, at Liverpool, to the Landing-stage-bridge, is now nearly completed. It is formed of Scotch granite sets, according to the local *Times*, the sets being laid upon a bed of macadam, upon which grout is plentifully poured. The interstices of the sets are then filled up with grout, and after some time has been allowed for the mass to harden, the whole surface is carefully examined, in order that cavities which the grout has imperfectly reached may be filled up. A dividend of 10 per cent. has been recently declared by the gas company at Blackburn, Lancashire, and the accounts show that, in January last, there was a balance in the bankers' hands of 1,037*l.* 16*s.* 11*d.*, and that during 1850, 4,100*l.* 14*s.* 2*d.* had been expended in putting down a telescope gas holder, cast-iron tank, new tar-pits, coals, &c. The old shambles in the market-place at Middleton, Rochdale, have been pulled down. It is conjectured that Messrs. Peto and Betts, the owners of the estate, are intending to erect a new market. Preparations are being made for more buildings than have been erected for many years past, both in Tonge and Middleton. The new Catholic School at Lancaster is now completed. It is in the Early English style. The largest cotton-mill in Lancashire ever built at one time, it is said, has recently been erected by Mr. John Mayal, of Bottoms, Mossley. It is 137 yards long by 26½ wide, inside measure. It will give employment to many hundred hands. The mill is 43 windows in length, and six storeys high. The engine is upwards of 100-horsepower. The estimated cost of repairing the Barrow monument, at Ulverstone, is 140*l.*, of which more than one-half is still to be subscribed for.

WATER SUPPLY.

ENORMOUS sums of money have been disbursed by the great community of Great Britain in the construction of public works: those of the metropolis have been large—the bridges almost incalculable—the Houses of Parliament, museums, columns, and other non-utilitarian monuments beyond conjecture; and throughout the country, within twenty years, the expenditure on the media of commercial intercommunication—railroads—has exhausted millions! Many of these great works were, in our age of improvement, indispensable; none of them without their utility in the expansion of wealth and science; but it is hardly reconcilable to the understanding that whilst the ornamentation of the capital, or the utilizing of increased ways, demanded and obtained so large an outlay, yet that the greatest want, the most vital necessity of a populous city (the most populous and richest in the world) should have been all this time unimproved, if not wholly neglected.

The water supply for two breathing millions is yet, as to quality, no better than it was 100 years ago: nay, it is rather worse, for any additional sources have been deduced from the Thames within the reach of sewage discharges, and that supply is now less pure than formerly, when the taint of impurity resulted from a civic and rural population of not more than one-fourth of that now existing, which defiles the stream whilst it calls for more.

For the consummation of any magnificent structure funds are never wanting: a colossal design, the triumph of engineering, is planned to connect Anglesea with the main land—the object is but to save half an hour in the transit of mails or passengers, but to connect the magic rails of flying transit, and straightway from 200,000*l.* to 300,000*l.* sterling are subscribed to effluetuate the stately conception. And yet with such facts before us it is quite incom-

prehensible wherefore, in cases of crying necessity,—cases wherein the health, comfort, and prosperity of two millions of souls packed densely within a circuit of a nine-mile traverse are at stake,—a less sum than was required for the completion of the Houses of Parliament should not have been funded for the perfection of this great city in the essential particulars of *water supply and sewage*.

Two years have elapsed since the cry of suffering humanity proclaimed to the Legislature that the pipe water-mains not only conveyed an inadequate quantity, but that the quality of the element was of a vitiated nature; that instead of healing, it bore disease into the heart of society, and was in itself *pestiferous*. Two years since, the ravages of disease carried off by thousands the dwellers in the vicinity of undrained swamps; for the mortality of cholera was not only traceable through the filaments of foul water-pipes, but was also demarcated by the stagnant ditches, the feculent water-courses, and the lay-stalls where putrescence was suffered to accumulate in poor, disregarded neighbourhoods.

Prayers for deliverance were then offered up at the altars of religion, but the energies of man have not as yet been applied to the redress of these evils; and we are little less exposed than ever to another visitation from the same uncorrected causes.

In New York, a population of 200,000 has disbursed as many pounds sterling to convey into that city a limpid and all-sufficient flood of living water. Liverpool, Manchester, and Plymouth, and others of our towns, have taken the start of London, and conveyed incessant rills to the house-tops of their limits: still London continues inert, and the echo of voices so lately clamouring for *water! water!* is not responded to.

Plans have been suggested (and many that are most feasible),—commissions have been formed, and corporate councils held; still we are as in the beginning, debating, complaining, and planning. Yet no measures have been carried into effect, nor (as far as the public is informed) has any particular system been adopted for either of these purposes.

Is not one warning enough, or do we await another plague?

One of THE BUILDER'S correspondents propounded some months back a bold and grand project, which contemplated to supply not only London, but several towns on the line, with a copious flow of *pure soft water*. His gathering grounds were those constructed by nature—the Welch mountains, and his fountain, the exhaustless Lake of Bala.

By natural gravitation, and, therefore, without the aid of machinery, all London might receive a bounteous tribute to its highest culminating points,—the ball of St. Paul's, or the, as yet, undefined pinnacles of the Victoria Tower, every habitation, however majestic or humble, might draw incessant fountains of that element which nature distributed freely for the use of all.

The gathering grounds of these waters are the lofty reaches of slate formations in the Welch mountains,—high in the winter's snows and summer's rain: rills blanched and weather-beaten pour a never-failing torrent into the lake.

It may appear difficult or costly to conduct a stream some 140 miles; yet if aqueducts can be formed twenty miles or more, why not ten times twenty? Cylindrical ducts in iron, cased, if necessary, in gutta percha (so as to be secured from rust or waste), might be laid six or more feet underground, traversing the country direct, or by the most convenient ranges; these need not interfere with any superficial interests: laid under a plough-land, the team would pass harmless over,—the same through a pasture-field or through a hamlet—the line being demarcated, as are parochial bounds, by stones or posts. For this mode of practication the cost would be but trifling: in fact, the valuation of damage would amount to no more than the temporary suspension of agriculture whilst the pipe-laying was in progress. Two four-foot pipes would convey at high-pressure more than all Middlesex covered with houses and population might

require; and, if that were not enough, a third pipe might minister to intermediate towns (such as Cheltenham, now badly watered), and also to fountains,—a luxury and ornament to which the British people are little accustomed.

QUONDAM.

FOREIGN INTELLIGENCE.

Extensive Town Improvements, Paris.—The municipal council has, in its last sittings, exhibited great energy in carrying out vast improvements, as it is also fully acknowledged on the banks of the Seine, that structural improvements cause improvements of the people. The prefect having proposed to grant the public lavatoires a reduction in the price of water, the council have assented to it at once. Next, the enlargement of the Rue Montmartre was entered upon, which will be effected, beginning from the Rue Tiquetonne up to the passage du Saumon. On this occasion, the statistics of the late improvements have been laid before the municipality, from which we gather the following. During the years 1849 and 1850 the number of houses demolished in the different districts of Paris for the sake of improvement amounts to 323, of which the approaches to the Hotel de Ville comprise 88; those to the Louvre 98. The average price paid by the city to the owner was 415 francs for one metre: the total outlay amounted to 28,999,000 francs. The houses thus pulled down had formed about 4,845 abodes or lodgings, occupied, at an average, by three persons each. This amounts, therefore, to an expulsion of 15,000 people from their dwellings. The French press justly alludes to the necessity of providing the people, thus removed from their abodes, with others of an improved character. It justly reproves the present custom of replacing houses of an inferior character by mansions and luxurious shops, and appropriately hints at an improved system of co-operative buildings for the industrious classes.

Munich New Society for the Improvement of Trades and Industry.—The chief purpose of this new establishment in the Bavarian capital is—to impart (*zuwenden*) the innate force of art and its improvements to those branches of trade and industry which stand in connection with the putting forth of tasteful and beautiful forms; to make them follow those principles independent of any transitory or foreign fashion; and to achieve, as well, solidity and moderate prices. To dilate on the utility of a connection between art and trades would be needless; but the Munich society has effectively organised, in Germany, this long-felt desideratum, by furnishing manufacturers with suitable designs for any given purpose, by exhibiting articles appertaining to its competency, by purchasing such for the distribution of prizes, and by publishing an illustrated periodical. A new feature also has been given to this society by its decidedly national and German character, because, as long as the art-forms of any people be entirely determined and ruled by any foreign patterns, he they even those of Rome, Athens, or Pompeii, they will still lack of an independent, creative power. That these ideas begin to be rather prevalent in Munich, may be gathered from the festival on the installation of the Bavaria, where all ornamentation belonged to the old German art-sphere, as was also the case in the album and bureau of the tradesmen, presented to King Ludwig.

COFFEE-SHOPS OF LONDON.

You will perhaps allow me to express my concurrence with the remarks of "A District Surveyor" (p. 64), respecting the coffee-shops of London. Those who know anything of foreigners on the Continent will perceive the necessity of providing them with viands suitable to their tastes. The beef, pork, and mutton dishes which are so dear to Englishmen, will not only be dear, but indigestible to nine-tenths of our visitors this year. The general construction and management of the greater number of our coffee-shops are also very faulty, compared with the *cafés* of France and Germany. Whatever opinions we may have

respecting the personal habits of foreigners, their *cafés* are generally noted for cleanliness and comfort, while their coffee and other beverages are no less famed.

With a few exceptions here and there, the coffee-shop keepers of London pay little or no attention to cleanliness, neatness, or snugness. Some coffee houses, indeed, are so objectional in these points as to prevent decently-attired persons from frequenting them. The place is often dirty, and the attendants slovenly. These remarks apply with still greater force to cooks' shops. A very bad custom, prevalent in all coffee-shops, cooks' shops, &c., is that of allowing persons to exchange papers with one another, instead of the exchanges being made through the attendants. It leads to much confusion and rude obtrusion, by persons going about the room in quest of papers. Hence the privacy and comfort so desirable at meals are destroyed. There is, on the whole, much room for improvement in the construction of the compartments, or "boxes," as well as the general management, of coffee-shops and cooks' shops; and very fairly the discussion of this subject comes very fairly within your province.

P. F. K.

NOISOME REEK OF THE THAMES.

Nor many years back the river that bore the commerce of the globe to London, adorned, expurgated, and supplied the inhabitants: only little way above Vauxhall-bridge the mercantile marine was used to take in water, and from the same source was derived the aliment for household use. It is scarce twenty summers since a row from Westminster to London-bridge in a wherry was an agreeable passage, for the tidal returns carried off with them the sewage from a mass of habitations, which, since that period, have been doubled in number and population.

Since then, although the natural flow of the river remains the same, and the recurring swell of tide continues as equally, yet the quality of the original supply has been greatly deteriorated up to its highest tributaries, and the pollutions from both town and city taint Father Thames in a complicated volume of filth. Were it not for the action of paddle-wheels, which causes a fluctuation that washes off the slimy shoals along the margin, the nuisance of fetor would be much worse than it is at present; for now, along the whole extent from Vauxhall to the Pool, these black deposits cease to accumulate, and the bed at low water discovers a pebbled shore.

The exuviae of the city are thus more effectively carried down, but in the process, being held in solution and active commixture, by so much the more is the atmosphere tainted and the traffic incommoded.

If the increase of houses and population in the metropolis have aggravated the evils of a foul river, so the same cause operating in the rural districts (along the whole course to Richmond, and thence by Staines to Reading, Oxford, and other towns, as well as on the Colnefede, and numerous rivulets) must render the volume of the Thames, as a source of pipe-water supply, highly improper, if not detrimental, as it is impure. In fact, the only objects to which Thames water can now be applied, are those of navigation, amalgamation, and avoidance of the sewage, mortar, or grout-making, and (from the crassitude and economy of the ingredient) porter brewing!

So vitiated has the stream become of late years, that until the amateur of Barcarole exercises has ascended above Chelsea, the reek and stercor of the river are at certain periods of tides intolerable, and always noisome. But below Waterloo-bridge it is black as Acheron. Steam-boats plying between bridges, when the atmosphere is still, give ample evidence of the fact, and very frequently, even when the wind is fresh up the river, it is commingled with a stench that it is painful to the sense as it must be inimical to health. The proposed amendment of sewers and diversion of sullage from the river by tunnels, which should carry the material to azote factories, may remedy the evil; and in the present age of improvement and enterprise, such a regulation would be as easy in the performance as the expense of con-

struction is within the scope of the city's means. Yet supposing this great system of civic sewage carried out, still unless all the towns on the "rivage" should be treated after a similar manner (so that the corporate rights of London in the *due conservancy* of the Thames should be rigidly enforced), no use could be properly made of the natural river supply for nutrition, or even for culinary purposes.

Science and art, which are daily adding to the comforts of mankind, may yet offer some new remedy for the growing vitiation of this element of life. The columns of THE BUILDER announce a new filtering apparatus, which, applied to every cistern, will, as pledged, yield a constant supply of faultless limpid water: how this may answer I am not informed; should it, however, be efficacious, then one desideratum will be gained; but until the sewage be wholly carried off from the river and disinfected, all the regions of the vicinage must remain unhealthy, and the free traffic of waterway continue to be, as it now is, disgusting.

As the growth of population is the cause, so every increase to the sojourner must add to the loathful reek of the river; and the accession of one million during every month of the coming summer increase the breathing horrors. The memory of every one who had a penny or twopenny transit last summer from Hungerford to the Shades must shudder in the recollections of appalling miasmas; and even those whose nasal perceptions are obtuse, if they have any dread of contagion and the spread of cholera, cannot but feel an interest in the great sanitary question—the *expurgation of the river*.

Foreigners (particularly the Parisians, who have no river locomotives) are very prone to the use of those facilities which cheap steamers afford in the long reaches: they will admire the noble aspect of St. Paul's, Somerset House, the apses, and, at high-tide, the majestic flood itself; but in the contemplation what spasms will not offend sensitiveness interpose to disenchant the wondering tourist? for not all the artifice of millefleurs, odours, or essences can overpower the baneful fluid.

Of the plans sent to the Board of Health, some are admitted good and feasible. The Corporation itself considers the necessity for improvement crying, while it purposes to expend more money in *only modifying* the abominations of Smithfield; but authorities are so complacent, until they are impelled by some dire calamity. Your correspondent once spoke of the matter to a civil official, who shortly reproved him in these words,—"What business is it of yours? You can never let nothing alone."

A snug *employé* cares not one d—n

For all the proffered hints of

QUONDAM.

THE BURY PEEL MEMORIAL.

THE sum of 2,700*l.* having been subscribed in the native town of the late Sir Robert Peel, a limited competition was allowed, in which the following artists were requested to send models of a monument suitable to a site and position pointed out,—namely, Baily, Behnes, Bonner, Cheetwood, Duckitt, Durham, J. Foley, E. A. Foley, Hogan, Jones, Lough, Macdougall, Milnes, Marshall (the artist successful in the Manchester competition), Marchetti, Manning, Noble, Thomas, Weekes, Theed, and Truett, in all twenty-one. All the models, nearly forty in number, have been arranged for exhibition in the new Town-hall, recently erected by the Earl of Derby. The principal figures will be in bronze, and the pedestal in granite. The successful artist will receive 2,500*l.* for the monument. Out of thirty-eight statues, busts, and architectural designs, there are five by Baily, two by Macdougall, two by Noble, three by Jones, two by Durham, two by Duckitt, two by J. Foley, two by E. A. Foley, three by Manning, two by Marchetti, two by Milnes, three by Behnes, and one each by the rest, classified thus:—thirty-two statues, three busts, four architectural designs. Messrs. Bonner, Cheetwood, Jones, and Truett, are the authors of the four architectural designs. We are able to announce

that the committee have selected Mr. E. H. Baily, R.A., to execute the memorial. The statue, which will be in bronze, stands on a rich pedestal, decorated with the emblems of literature, science, art, manufacture, and the various branches of industry, in which he ever took a warm and zealous interest.

miscellanea.

MANCHESTER SCHOOL OF DESIGN.—A selection of drawings produced in this school during the last year has been recently exhibited before being forwarded to the central school according to the regulations of the Board of Trade. The exhibition comprised some 400 drawings, selected from the work of the 360 pupils. It included specimens from the three departments into which the masters have found it necessary to divide operations; Mr. Hammersley attending especially to the instruction of designers for textile fabrics and the advanced pupils generally, besides giving a general superintendence to the whole; Mr. McCallum undertaking the strictly elementary department, and Mr. Holding the architectural studies, or art in projection, including modelling. Of the 360 pupils, there are about sixty studying the production of designs for the staple trade. The female class lists comprise the names of seventy pupils.

WHITE'S HYDRO-CARBON GAS: EXPLOSION.—A fatal explosion in a gas and oil manufactory at Salford, belonging to Mr. Stephen White, the patentee of the "Hydro-carbon Gas," appears to have revealed the fact that this patentee derives "a still more purified gas" from the residuum, it is alleged, of the manufacture of his ordinary "hydro-carbon gas," besides "turpentine of a fine quality and a description of oil." In the explosion of three retorts referred to, Mr. Hodgetts, a practical chemist employed as manager, was killed, and more mischief, it is said, would have been done had not the flames been speedily extinguished by buckets of sand, as a large tank with a store of 400 gallons of naphtha stood not many yards distance from the flames.

RAILWAY JOTTINGS.—The Great Northern Railway undertaking in the neighbourhood of Newark advances satisfactorily: the line is nearly on a dead level about Newark, and the works being very light, are nearly completed. Rails are being laid down in aid of the river operations, upon which about 200 men are employed. Messrs. Rennie and Logan, of Newport, Monmouthshire, have engaged in the Trent works, at a very moderate contract.—Two gentlemen in New York are exhibiting an invention for stopping trains by electricity—or electro-magnetism rather, we presume—thus entirely dispensing with breaksmen.—The Venetian railway bridge is under repair. The part between Mestre and St. Giuliano has cost 150,000 florins. It was found necessary to rebuild thirty-four arches from the very foundation; ten were rebuilt from the surface of the water, seven somewhat repaired, and forty-four, which had been prepared for blasting (powder was found in some of them), have been walled up. The expenses will altogether amount to 235,000 florins.

THE NEW SLAUGHTER-HOUSES, EDINBURGH.—The plans of the new "City Abattoirs" have been completed by Mr. Cousin. The main portion of the building has been arranged in straight lines, and is laid off in double rows—each row containing seventeen killing-booths, with a central passage 25 feet in width. There is a cattle-shed at the back of each booth, with separate entrances behind. The extent of each booth is 18 by 24 feet; and the cattle-sheds 19 by 27 feet. The sheds are each calculated to hold nine cattle and sixty sheep. The rows of booths are not continuous, but are divided into three separate blocks of building, with roadways between. The booths and cattle-sheds are to be all covered and slated. The drainage is managed by two sets of glazed pipes, one set to convey all the liquid manure to a large tank, and the other being appropriated to conveying the roof and surface water. A place has also been set apart for the

reception of the blood—an article now used in manufactures. There is also an erection for the cleaning of tripe, and that part of the building which is opposite the rear of Gilmore-place is to be devoted to a hide and skin market. A manure dépôt is to be placed alongside of the Lochrin burn, into which the whole of the offal and other refuse of the killing-booths will be conveyed in covered machines, so as to prevent any falling on the roadway leading thereto. The principal access to the slaughter-houses will be by Fountain-bridge. The extent of frontage there will be about 150 feet; and it consists of a lofty screen wall, with a porter's lodge and two gateways in the centre. The design of the façade will be massive, but without much architectural display. The inspector of markets will have an apartment above the porter's lodge, from which a view will be obtained of everything that goes in or comes out of the slaughter-house. The building is to be commenced in the course of a few weeks.

GUTTA PERCHA WATER-PIPE.—A gutta percha pipe of two and a half inches calibre, and 1,000 feet in length, has been laid down for conveying the Croton water to Blackwell's Island, New York. The line extends from the foot of Seventyninth-street to the island, the depth of the water varying from 30 to 7 feet. The engineer first arranged his pipe in one length upon the island, and formed a line of thirty boats, well manned, across the river. He then gave his order at the commencement of slack water, and the end of the pipe was drawn across the river by men upon the opposite shore, and was taken up by the men in the boats, and 110 anchors, each weighing thirty-two pounds, were attached to the pipe, being 10 feet apart. By word of command the men in the boats lowered at each point, to suit the inequalities in the bed of the river, as ascertained by previous survey. This was all accomplished in seven and one-half minutes, without accident.—*New York Paper.*

THE AREA IN FRONT OF ST. PAUL'S CATHEDRAL.—On Monday last the gates of the area in front of St. Paul's were opened to the public, and will continue to be so during the day. This may be regarded as the first step towards the accomplishment of the improvement suggested by THE BUILDER, and which first led Mr. Barber to commence the agitation for the removal of the railings. An immense improvement would be effected by taking down No. 1, St. Paul's Churchyard (the house at the south-eastern corner of Ludgate-hill). On looking towards Ludgate-hill from beneath the noble west portico of the cathedral, the extent to which this stands in the way is strikingly evident.

IMPROVEMENT SOCIETY FOR LEEDS.—It is proposed to establish a society for the improvement of the town of Leeds. A preliminary meeting has been held and a committee appointed to draw up a prospectus and rules. It is proposed, we believe, that the society shall not be executive, but suggestive, and act by influencing public opinion and taste on all matters connected with the ornament, healthiness, arrangement, and requirements of the town. It will therefore include, not only questions of embellishment, but also sanitary measures, sewers, streets, baths, public halls, libraries, museums, parks, gardens. "Why should we not have our shops looking into glazed arcades," says one who writes to us on the subject, "where no carriages could come to raise a dust? Why should we not look from our town-houses into squares roofed over so as to afford gardens in the depth of winter? The proposers, doubtless, know of the "Metropolitan Improvement Society," which existed several years and effected much good. In our provincial towns such societies, if well organised and worked, might prove of the greatest service. We congratulate Leeds on the movement, and hope it will be persevered in.

COVERING THE ROYAL EXCHANGE, LONDON.—We understand that a design for a glass covering to the Royal Exchange has been submitted by Mr. Paxton to the Gresham Committee. It resembles in some degree the roof of the transept at the Exhibition.

HALTING PLACES IN SOUTHWARK.—My attention having been directed to the suggestion of your correspondent that the "paving boards of the different parishes can be at no loss to find suitable places for the erection of 'halting-places,'" I take this opportunity of stating that the Paving Commissioners under whom I have the honour of being surveyor, have for some years past taken advantage of every opportunity to erect such, and within the last three years have constructed eight, providing accommodation for twenty-one persons. They are principally formed of stone, with one, two, or three divisions: polished slate, however, has been used in two instances, in one erected about two years since, with accommodation for eight persons, and in another constructed last year for three persons; proper means of drainage and cleansing being adapted in all cases by channels, trapped gratings, and drains. The last erected, which cost about 16*l.*, had an addition of a sloping roof of polished slate. They have been placed at the points most convenient and accessible to the public frequenting the crowded thoroughfares of this neighbourhood, by whom, I doubt not, they are greatly appreciated.—A. S. NEWMAN (for my father, Surveyor of Pavements for the East Division of Southwark.)

ST. MARGARET'S CHURCHYARD.—There is a slight movement in this direction: the magnates have been acted on a trifle, and trifles light as air are forerunners of good. There is near the vestry a small shrubby planted; and if they would but relay all the paving—tomb-stones, if you will—with mortar, and make a *close paved* space of the whole yard, the surface water would run off, without being strained through our ancestors: this is a small request to make of them, and the mason employed would readily tell them the best way to do it.—NOT AN IDLER IN LONDON.

"THE VILLA OF LUCULLUS."—A correspondent says, with reference to this beautiful print, recently issued by the Art-Union of London,—"There is a circumstance connected with it, which I have never seen noticed, and which, perhaps, may add to the interest of the print, viz., this villa is the place to which Annibale Caracci retired for change of air when driven from Rome by his last illness. You will find a description of it at pp. 150 and 151 of a small book published by Chapman, in the Strand, called "Sketches of the Old Painters."

IRON TRADE CONTRACTS.—In the Court of Queen's Bench, on 15th inst., in the case of Staunton v. Wood, in which the price of a quantity of iron was sought to be paid for before the delivery of the goods, Mr. Justice Patteson ruled that, according to the contract, which was to be construed according to the intention of the parties, the delivery of the goods was a condition precedent. The use of the word "forthwith," in connection with "fourteen days," showed that the goods were to be delivered at some time within fourteen days. The declaration alleged a general performance of the contract, which was good on general demurrer. It contained a material traversable allegation, which the plea traversed: in that respect, therefore, the plea was good. The judgment of the court would be for the defendant.

LODGINGS AND HOUSES DURING THE EXHIBITION.—Since our intimation that Mr. Lahee was interesting himself in this matter, we have had various communications from agents; but we do not mention such matters except upon personal knowledge. Messrs. Eversfield and Horne, of Parliament-street, state that they would be glad to hear of any buildings, such as large warehouses or old-fashioned mansions, adaptable as dormitories for the working-classes.

FALMOUTH UNION WORKHOUSE COMPETITION.—Of seventeen designs submitted for this competition four were selected for further consideration. From these four, that by Mr. Frederick William Porter, of London, was ultimately chosen by the decision of the board. The other three selected competitors were Messrs. Eales, Niblett, and Powell.

TALKED-OF ROMAN CATHOLIC CATHEDRAL IN WESTMINSTER.—The statement which has been running through the papers that ground had been obtained by the Roman Catholic body, in the line of the new street now in course of formation between the Houses of Parliament and Piccadilly, for the purpose of erecting a magnificent cathedral, to be called St. Patrick's, is erroneous. The commissioners have declined to grant land for the purpose.

THE APPROACHES TO THE GREAT EXHIBITION.—A correspondent (D. Cooper) says, "as the building stands between two carriage-ways, I would suggest that barriers be erected at the ends of each of these roads, and let all walk that short distance. I would not allow a carriage of any description to approach the building under any pretence whatever. If something of this kind be not attended to, I fear we shall hear of very many serious accidents."

THE MUSIC HALL, BRADFORD.—As many as 200 architects have applied for the preliminary instructions, with a view to send in estimates. In consequence of the unexpected number of these applications, the day fixed for receiving estimates has been postponed from the 1st of March to the 15th. We are also happy to state that it is resolved upon to devote 10,000*l.* to the erection and furnishing of the edifice, instead of 8,000*l.*, as originally proposed. The additional 2,000*l.* we think a most judicious increase.—*Bradford Observer.*

THE NEW BUILDING, HUNGERFORD MARKET.—In a note to your excellent leading article of Saturday last, you state that a building is to be put up in the area of Hungerford Market for the purposes of exhibitions. As architect to the alterations, I beg to inform you that the present open area will not be interfered with, the works being confined to the central avenue of the great hall, and to the space where the old fish-market was. As your observation is likely to create a prejudice against the undertaking, as conspiring against the "lungs of the metropolis," I should be obliged if you would put in a word or two to remove from us the stigma of trying to take away air, when, from the crowds of foreigners and our own country visitors, we shall require a double supply at least.—*F. R. CANTWELL, Jun.*

ADMISSION TICKETS TO THE INTERNATIONAL EXHIBITION.—Some surprise and dissatisfaction have been excited by the intimation that the Local Commissioners will be called upon to pay on every occasion for access to the Exhibition. Considering the immense expenditure of time and trouble by many of the Local Commissioners in securing the success of the Exhibition, we do think that the very least acknowledgment of their services that could, in common gratitude, be made, would be free tickets of access on all occasions. Besides remonstrances to this effect, we have had suggestions from correspondents that it would be a graceful act of politeness to present a season ticket to each of the 248 designers of plans for the Building.

A TRIBUTE FROM THE CZAR TO AN ENGLISH ENGINEER.—The Emperor of Russia has transmitted a silver medal, with the riband of St. Anne attached, to Mr. Joseph Thompson, engineer, son of Mr. Robt. Thompson, of Newcastle-upon-Tyne, butcher. Mr. Thompson served his apprenticeship with Messrs. Robert Stephenson and Co., after which he superintended the construction of the bridge across the Neva, which in Russia is designated "the Blagoveshensky Bridge in St. Petersburg."

COLOSSEUM.—Active preparations are now making at this establishment for exhibiting Horner's Original Panoramas of "London by Day" and "Paris by Night," which must prove attractive to the great influx of strangers expected this year.

THE MONUMENT TO LORD JEFFREY.—We understand that the committee for erecting a monument to the memory of the late Lord Jeffrey, have commissioned Mr. John Steel, R.S.A., to execute a full length marble statue of the late judge, to be placed in the great hall of the Parliament-house.

SCHOOL OF DESIGN FOR WORCESTER.—A public meeting was held at Worcester on Monday in week before last to consider a recommendation by Lord Ward to the directors of the Chamber of Commerce, that a school of design should be established in that city. The meeting was numerous and respectfully attended, the mayor in the chair; and resolutions to support the proposed institution were unanimously passed. In order to increase the probability of a Government grant, an annuity of 25*l.*, and a donation of 100*l.* towards the erection of a building, were announced on the part of Lord Ward.

ELEMENTARY DRAWING AND MODELING SCHOOLS.—The Council of the Society of Arts propose that the aid and influence of the Society should be engaged to promote the establishment of such schools, chiefly for artisans. On the compliance of certain conditions relative to management, the Society is advised to prepare a code of rules, recommend trained instructors, provide and lend drawings, models, &c. till the school be self-supporting, and to distribute medals and rewards amongst the students.

THE TRIGONOMETRICAL SURVEY.—The Royal Society of Scotland, at the head of which is the Duke of Argyll, are strongly urging the municipal bodies in the country to petition Parliament for the speedy completion of the trigonometrical survey. They say, that although the survey has been going on for thirty-one years, its progress has been so slow that the mere skeleton of the work is not yet completed. The Irish survey was commenced in 1825, and practically brought to a close in 1843, at an average outlay of 40,000*l.* a year, while the average expenditure of the survey for Scotland has only amounted to 1,200*l.* a year. If carried on at the same rate, it would require 160 years for completion.

ELECTRO-TELEGRAPHIC.—The Judicial Committee of the Privy Council have refused an application made by the Electric Telegraph Company for an extension of the patent granted to Messrs. Cooke and Wheatstone on 12th June, 1837.

CHRISTCHURCH, SOUTHWARK.—The standing orders have been complied with in the case of a Bill to empower Marshall's trustees to alter, improve, or rebuild the parish church of Christchurch, the church to be completed within four years, with power to erect additional churches, chapels, and schools, and to borrow on mortgage 20,000*l.*

TENDERS.

Tenders for finishing seventeen fourth-rate Carcases, Grove-road, Holloway.	Mr. Tatlock, architect.
Lovell and Co.	2,371
Salter	1,710
Tear	1,671
Hocken	1,630
Hill and Son	1,600
Fletcher and Lloyd	1,505
Sheffield	1,410
Mitchell	1,319
Tenders for the erection of Sheds and Stores, in Victoria-street, Belfast.	Mr. Jno. Boyd, architect.
Cooper and Aiken	21,885
Watson	1,550
W. Crawford	1,420
Lowry (accepted)	1,400

TO CORRESPONDENTS.

"An Artist," "A Worn-out File" (shall appear), "Ex Member," "Constant Reader" (apply to the honorary secretary, Chester), "A Subscriber" (the competitors were aware of the requirement when they sent in. Our own objection to the course we have already expressed), "J. B. Queen-street," "H. D." "B. Belfast," "An Amateur," "H. A. Subscriber," "H. E." "P. G." "Quondam," "J. T. S." "J. J. C." "F. R. W." "J. E." "A Note Contributor," "E. B. L." (shall not be overlooked), "J. E." (will appear), "W. B. S." "J. W." (ditto), "W. F." "W. G. C." "J. J." "E. T. B." "C. T." "J. B. Black-head (cannot recommend), "J. P. S." "G. G." (thanks), "X. L." (timber frame-work would not be permitted), "J. M." (shall hear from us), "H. R. B." (ditto), "P. D." (we do not understand the question), "H. A." (send us the particulars), "Murderers," "H. M." (we are sorry we did not see him), "G. S. S." "H. C." "T. H." "Iota," (we are forced to decline), "The Geometric Beauty of the Human Figure Defined," by D. R. Hay, F.R.S.E. (Edinburgh, Blackwood, 1851); "Colour applied to Decoration," by G. B. Moore (London, Taylor, Walton, and Maclay); "Emblems of Saints," by Rev. F. C. Huson (Edinburgh, Burns and Lambert); "Modern Domestic Cookery," by a Lady (London, Murray); "Smithfield," by Thomas Dunhill, Civil Engineer (London, Effingham Wilson, 1851).

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the Publisher, and not to the Editor; all other communications should be addressed to the Editors, and not to the Publisher.

ADVERTISEMENTS.

ROYAL POLYTECHNIC INSTITUTION.—Lectures on the Music of Wales, by Ellis Roberts, Esq. (Harmonist of the Prince of Wales's Band), with Ystumlithers by Miss Blanche Young, R.A. of Music, on Monday, Tuesday, Thursday, and Friday Evenings at Eight, and on Saturday at Three. The celebrated Jeweller, the Lockwood Family, will perform Trios, under the direction of Mr. Frederick Knechtel, daily at Four o'clock. Lectures on the Chemistry of Ignition and Combustion, with brilliant Experiments, by Mr. J. H. Poyner, Esq. on Wednesday, 22nd inst. at Eight o'clock. On Thursday, 23rd inst. at Eight o'clock. Exhibition of the exhibited Altmann's Patent Electric Light. Exhibition of the Oxy-Hydrogen Microscope. New Series of Dissolving Views illustrating some of the Realities of Europe. Admission, 1*s.* Schools, half-price.—Open daily from Eleven till Five o'clock every evening (except Saturday) from Seven till Half-past Ten.

BUILDING FOREMAN WANTED.—Immediately. A person who has a thorough knowledge of Brickwork. One who has been employed in the erection of fine works preferred. Application, by letter only, stating experience and salary, to be addressed to X. Y. Z., at Watling's Newspaper Office, 405, Strand.

TO BUILDERS' FOREMEN.—WANTED, an OUT-DOOR FOREMAN, thoroughly conversant, and able to SUPERINTEND the several branches of a BUILDING ESTABLISHMENT. No person need apply unless he has held a similar situation. Apply personally at Messrs. SANDERSON & WOODCOTT'S Counting House, 31, Giltspur-street, Gray's-inn-road, between the hours of nine and twelve o'clock, on Monday, the 24th inst.

WANTED, for a permanency, a FIRST-CLASS THREE-BRANCH HAND, as a Plumber, Painter, and Glazier. None need apply with reference. Apply to Mr. ERSWORTHY, Builder, Saffron Walden.

WANTED, in an Architect's Office, a CLERK, who must be a good and quick DRAUGHTSMAN; one who has just completed his articles, and is desirous of having an opportunity of improving his knowledge of the Profession, would be preferred. Apply, by letter, with full particulars, to A. B., care of Mr. Everett, Newcastle, Cold-bath-fields.

TO PLUMBERS, PAINTERS, GLAZIERS, OR BUILDERS.—WANTED, by a Steady, Active, Sober Man, who thoroughly understands the above branches, a constant SITUATION. Not particular to town or country.—Direct by A. B., 21, St. Vincent Street, Clerkenwell.

TO NOBLEMEN AND OWNERS OF ESTATES.—WANTED, a Situation as AGENT, to Improve old and erect new Farm Buildings, Cottages, &c. The Advertiser, 40 years of age, has had good practical experience in the management of Estates, and well acquainted with Measuring, Valuing, Estimating, and keeping Accounts.—Address, W. M., 10, Abchurch-lane, London.

TO MARBLE AND STONE MERCHANTS.—WANTED, a SITUATION as FOREMAN, by a man 35 years of age. The advertiser has been four years in the management of a business, in which he has been engaged in buying and selling of every kind of marble and stone, either in block or slab, and also bookkeeping. As a practical man of twenty years' practice, has no objection to work at the banker's of necessity.—Address, M. A. B., 31, Star-street, Paddington.

TO PROPRIETORS OF SAWING AND PLANING.

WANTED, by a person who thoroughly understands the erecting, working, and conducting of Sawing and Planing Mills, &c., a SITUATION as FOREMAN, or MANAGER. Any Firm in want of such a person, who has sixteen years' unexceptionable reference. He has for the last four years been employed in erecting and successfully working out some of the best Machinery of the day.—Direct (prepaid), to J. C. A., at the office of the Builder, 1, York-street, Covent-garden.

TO CIVIL ENGINEERS, CONTRACTORS, AND BUILDERS.—WANTED, by a respectable Person, who wishes to make himself thoroughly useful, a SITUATION as GENERAL SUPERINTENDENT, or Inspector of Works. He has had seven years' experience in railway works, five years of which he was employed in superintending the erection of works, and afterwards in business by trade. Satisfactory references as to competence and trustworthiness can be given.—Address, H. R., Post-office, Norwich.

TO ARCHITECTS AND SURVEYORS.

AS ASSISTANT, or to MANAGE an OFFICE. The Advertiser is desirous of an ENGAGEMENT.—Address to A. B., Harrington-street North, Mornington Crescent.

TO PAINTERS, &c.

A GOOD WRITER AND GRINDER PAINTER wishes for an ENGAGEMENT (in Town or Country); has a practical knowledge of Painting, Glazing, and Paper-hanging, and the general routine of Jobbing.—Address, by letter, to the Editor of the Builder, 1, York-street, Covent-garden.

TO ARCHITECTS.

THE Advertiser, having completed five years as pupil and one as assistant in the same office, is desirous of an ENGAGEMENT. Most satisfactory testimonials and references will be furnished. Address J. H., Clements's Newspaper Office, 25, City-street, City-road.

WANTED, a Large Quantity of BREEZE, to be delivered in the South Western Railway Company's Trucks at Vauxhall.—Address, stating lowest price, to J. S. DRIFIELD, Hall of Commerce.

ALTAR and COMMUNION CLOTHS, ECCLESIASTICAL CARPETS, CHURCH DECORATIONS, RUBES, &c.—HARRISON, 21, Brownlow-street, Bedford row, London.—Decorations from the most simple to the most elaborate, at moderate prices.

LIGHTNING CONDUCTORS.—R. S. NEWALL and Co.'s PATENT COPPER ROPE, 3/4th diameter, 75*s.* per 100 feet.

ALBION FOUNDRY, NORTHAMPTON.—TO IRON and BRASS FOUNDERS, ENGINEERS, and MANUFACTURERS of Agricultural Machinery, Saws, Grates, &c.—An extensive establishment for casting iron, and for the sale of castings upon advantageous terms. The trade has been carried on for nearly thirty years upon the premises.—Apply to Mr. GRANT, Northampton.

MONEY ON LOAN at 23 per Cent. per annum.—ARNOLD WATKINS, Esq., is HEREBY GIVEN, that the Trustees of this Charity are enabled to lend out the Trust Money to poor occupiers or traders residing in the parishes of St. Martin-in-the-Fields, St. Martin-in-the-Vicinity, St. Margaret and St. John the Evangelist, St. Anne, Soho, St. Clement, St. George, St. James, St. Martin-in-the-Fields, St. Mary-in-the-Strand, and St. Paul, Covent Garden. The amount of each Loan is not to exceed £100, and is to be repaid after the rate of 23 per cent. per annum, and is to be secured by the bond of the borrower, with two sureties. Printed forms of application, and necessary information, may be obtained by applying personally, between the hours of Ten and Three o'clock in the day, at the office of the Clerk and Solicitor to the Trustees, No. 14, Great Queen-street, St. James's.

By order, EDWARD S. STEPHENSON, Clerk and Solicitor to the Trustees.

NOTE.—The Trustees meet on the second Wednesday in every month, to consider such applications for loans as have been sent in on or before the first day of the month. The sureties must be unexceptionable.

The Builder.

No. CCCXXI.

SATURDAY, MARCH 1, 1851.

LORD SEYMOUR has at length brought in the long-talked-of new Metropolitan Buildings Bill: the second reading is fixed for the 10th, but whether or not it will ever reach this depends on political events, at present obscure. *Cabinet making* is going on in Downing-street, but there is a difficulty in procuring joiners, so that what work will be done is uncertain. Our London readers will nevertheless expect to learn from us some particulars of the proposed measure, and we therefore proceed to mention some of its leading points.

It is intitled, "A Bill to amend the Act for regulating the construction and the use of Buildings in the Metropolis and its neighbourhood," but it is in truth a provision for an entirely new Act, superseding that in question. It contains 145 clauses (the present Act has 120), and was ordered to be printed on the 20th of February. The purpose of the Bill, as set forth in the preamble, is, besides making provisions in lieu of the present Acts for more effectually securing the proper construction of buildings,—"to provide other and more effectual means for administering the law relating to metropolitan buildings, and for the determination of questions and disputes respecting the construction and uses of buildings, the right to easements, and other matters of like nature," and it proposes a complete revolution in the Metropolitan Buildings Office. It will be remembered that the Bill which was presented by Lord Carlisle in 1849, but not proceeded with, retained three official referees as now, but made the registrar, in fact, sole arbitrator. The present Bill sweeps the whole away, and directs the Secretary of State to appoint "a competent person, being a barrister of not less than seven years standing, to be and who shall be called the Judge of the Court of Metropolitan Buildings under this Act; and the said Secretary of State is hereby empowered to remove any such judge for inability or misbehaviour."

He is also to appoint a deputy-judge, clerk, and others. The judge is to hold his Court where it shall be fixed: the court is to be a Court of Record: the judge may commit any offender for contempt of court, and is to appoint bailiffs and others to issue summonses, and do the business of the court.

"And whereas the questions arising in the said Court of Metropolitan Buildings may be in many cases of a technical nature, requiring the skill and knowledge of a practical surveyor or architect, and it is desirable that the said judge should be assisted by the advice and information of a person professionally conversant with the construction of buildings, and subjects of a like nature: be it therefore enacted, that it shall be lawful for the said Commissioners of Works and Buildings to appoint a fit and proper person, of the profession of an architect or surveyor, to be and to be called the "architectural referee," and from time to time, at their pleasure, to remove such architectural referee, and upon any vacancy in the office of architectural referee, occasioned by death, resignation, removal, or otherwise, to

appoint some other person qualified as aforesaid to such office."

The Commissioners of Works may also appoint a competent architect or surveyor to be "the official assistant-surveyor of metropolitan buildings," to assist the architectural referee, and act for him in case of illness. The architectural referee, "as often as he shall be required by the judge of metropolitan buildings so to do, but not otherwise, is to sit as assessor to the said judge in the Court of Metropolitan Buildings, and to assist the said judge with information and advice upon all matters pertaining to the science and profession of an architect or surveyor which may be material to the determination of any question arising in the said court, and whereupon he shall be consulted by the said judge; and also, whenever requested by the said judge so to do, to view or survey any building, structure, work, or operation respecting which any question may arise, or be likely to arise in the said court, and to report thereupon to the judge, in writing or otherwise, as the judge may direct."

Questions of doubt arising under the Act, claims for authority to execute works, and other matters in difference are to be referred to the said court, and the judge is to be the sole judge in all matters of difference; to "determine the same in a summary way, and give his decision in open court, in the hearing of the parties or their agents."

"Provided, that whenever the question to be decided by the said court shall consist of matter of fact, or shall involve the right to any easement which under the provisions of this Act may be tried and determined in the said court, it shall be lawful for the said judge, upon the application of any of the parties whose interests may be directly affected by the decision of such question, to order that such matter of fact, whether involving the right to an easement or otherwise, shall be tried by a jury, and the same shall be tried accordingly at the next or other subsequent sitting of the said court, as the judge shall direct; and it shall be the duty of the clerk of the court to cause notice of such intended trial by a jury to be given three days at least before the day on which such trial is to be had, to any of the parties concerned who shall not have been present in the court at which the order for such trial was made."

No person is to be entitled to appear for any other party, unless he be an attorney, barrister, or have the leave of the judge. Witnesses who do not attend on summonses may be fined 10*l*. All fees, fines, &c. ordered by the court are recoverable by execution against the goods and chattels of the party against whom the order shall have been made. The judge may rehear cases, and rescind or alter previous orders; and he may, with the consent of the parties, refer matters to arbitration. Questions as to right of way, light, and air, or claim to any easements, may be tried and determined by this court, either with a jury or without, if the parties consent. Appeal against the judge's decision in point of law may be made to one of the Superior Courts on a case drawn by the judge himself.

The architectural referee is to receive a salary (not fixed in the Bill) over and above the fees to be received by him for supervision of public buildings.

As to the district surveyors,—the Commissioners of Works are to have power to remove at their pleasure any district surveyor, and, in case of vacancy by such removal, or death, or resignation, to appoint (instead of the magistrate, as heretofore) another qualified person

to the office. The Commissioners may also consolidate some of the districts, and diminish the number of district surveyors as opportunities arise. Every district surveyor hereafter appointed is to reside or have his principal place of business in his district.

Modifications of the Act in certain cases may be made by the Commissioners of Woods, on the certificate of the Court. Greater discretionary powers are given to the district surveyors than by the present Act. The rates of buildings are but slightly changed: a first-rate may cover twenty squares instead of fourteen as now, and a fourth-rate may cover four-and-a-half squares instead of four. The thickness required for walls, too, remains the same, excepting in this, that the party-wall of the uppermost story of a third-rate building may be 9 inches instead of 14 inches as at present.

It will be time enough to say more about this Bill, and our "County Court," when we see how the cat jumps in St. Stephen's.

ON THE DECORATION OF SOME OF THE BUILDINGS AT MUNICH.*

THE BASILICA OF ST. BONIFACIUS

Is the most recently erected of the churches at Munich, having been completed only last year. It was erected from the designs of M. Ziebland in the Byzantine style, more especially in the interior, which resembles that of the Basilica of St. Paul at Rome. It has a nave 250 feet in length, terminating in a semi-circular apse. On each side are a double row of monolithic columns, 20 feet high, forming in all four aisles. These columns are of pale grey marble, the caps and bases being of white marble. The general effect of this church is exceedingly magnificent; the walls above the arches over the columns being covered with beautiful fresco paintings, by Professor Hess and his assistants. The principal range of subjects is that in the tier above the arches, which illustrates the life of St. Bonifacius, the patron saint, who was a native of England: these are contained in twelve grand paintings, each of which has taken a twelvemonth to execute: they are separated by ten circular compartments in chiaro-oscuro. Above these and between the windows is a range of subjects representing events in the lives of the Saints and Martyrs associated with Germany. On the walls of the apse are painted the figures of Christ with the Virgin, St. John, St. Benedict, St. Bonifacius, &c., on a gold ground. The ceiling is an open timber-framed one: the plain wooden ground is coloured rich blue with gold stars, the framing being brown and red, with interlaced ornaments in gold. The ornament on a gilt ground, introducing circles in which are the Lamb and banner on a blue ground, forms part of the decoration of the apse. The floor of the church is composed of inlaid marble. When I was at Munich, the frescoes of this church were not completed. I had an opportunity of seeing Professor Hess occupied with painting in fresco, and I remarked that the operation was not so rapid as I had imagined: he worked with great care, using sable pencils. The rich gold-work in the draperies was wonderfully given, and the flesh tints were free from any appearance of hatching.

THE ROYAL LIBRARY

Is a large and handsome building in the Ludwigs Strasse; but, like most of the elevations in this new street, the front is exceedingly flat: it is in the Byzantine style, and from the designs of the late Professor Von Gärtner. The staircase and the reading-room are the parts more particularly calling for observation. This staircase is a very grand and beautiful feature, whether from its architectural merits, or from the beauty of its polychromatic decoration. It consists of a broad single flight of steps, having on each side a colonnade, supporting a

* See page 118, ante.

waggon-headed ceiling. The ceiling is divided into nine compartments by strong contrasts of colour. It will be remarked that the centres of the ceiling are alternately of circular and lozenge form, and that while the margins of the one are red, those of the other are blue. The arabesques in the angles of each panel support figures of celebrated literary men, and geni of the various sciences. The vaulted ceilings to the galleries, or landings on each side of the staircase, also deserve notice. The colouring is also strongly contrasted, the grounds being alternately blue and red—so modified by the harmony of their arrangement as to produce a pleasing effect. Windows range on each side of the upper part of the staircase, and in the semi-circular space above them is a series of medallion heads, on a gold ground, surrounded by a blue margin. The general tone of the walls is a brownish red, with grey and pale buff panels, in which are arabesque ornaments of subdued colouring. The decoration of this staircase pleased me greatly, both from the simplicity of its main outlines, the harmony of its colouring, and its chasteness of effect; for though its colouring be powerful, rich, and cheerful, it is by no means gaudy. It has been executed too with great economy, for, with the exception of the figures, it must have been inexpensive to carry out, and, I am satisfied, cost no more than if it had been relieved simply by plaster cast mouldings, of which there is not one in the whole staircase.

The reading-room of this Library contrasts curiously with that in our own Museum. It is a square, divided into nine arched compartments. The ceiling of each division is vaulted, and simply ornamented in colour on a very light ground, the soffit of the arches being defined by margins, alternately blue and red, between which are gilt stars on a black ground. I imagine that 3*l*. at the utmost paid the whole cost of the little gold used in these stars; and yet, from its judicious introduction, great effect is produced. The walls are white; I think of polished stucco; the architectural forms being strongly defined by margins, having flat outlined ornament on a black ground. The door-frames are flat, and are marked by a colouring of Pompeian character, the frames being of a sort of Indian red colour, with an outer margin of dull green, and at the top a panel of warm grey; in the centre, a circle of red: above this is a coloured scroll ornament, from which springs a line drawn to the form of the arch. The caps of the pilasters are plainly moulded, form being given by colour alone.

In the other rooms of this building the ceilings are simply and elegantly ornamented, of which the illustrations now exhibited are examples. The rooms where the books are deposited are painted—walls, ceilings, cases, and all, pure white. I have dwelt at some length on the decorations of the staircase, because they seemed to me to deserve particular attention, from the theory of the power of colours having been well considered and treated in this example.

THE HOFGARTEN

Is a square, laid out as a garden, surrounded by a colonnade much in the style of the Palais Royal at Paris. One side of it is occupied by shops, cafés, &c.: at the end are the barracks. On another side is the king's palace. The ceilings and walls of the colonnade are all decorated with a series of subjects, painted by the principal artists of Munich. The subjects on the walls are historical, or battle pieces, landscapes, &c., painted in fresco. The ceilings are decorated in arabesque. Either these paintings were done in an inferior manner at first, or they have become injured by the weather: certainly they looked in a rather neglected condition when I saw them.

THE KÖNIGSBAU

Is the new palace, built for the ex-king Louis, and forms an addition to the old palace. It is a handsome structure in the Italian style, designed by Von Klenze. The interior deserves very particular notice, for its various apartments contain a series of decorations executed by the combined talent of the greatest

artists in Munich. On the first floor are the apartments of the king and queen: all of these are painted in a tasteful and beautiful manner: the sister arts of poetry and painting are here brought to illustrate each other, showing their development in the various stages of their progress. In the apartments of the king are painted illustrations from the ancient Greek poets; while in those of the queen, are representations of scenes from the poets of Germany. These rooms are finished with the utmost completeness, and the floors are all of inlaid woods, oak, ebony, maple, mahogany, &c., in patterns of great elegance and excellent workmanship.

Ascending a staircase of simple and unpretending character, we reach the first of these rooms—an *Antechamber*. Here the walls are stuccoed in imitation of green marble, and on a broad frieze is represented the expedition of the Argonauts, and other subjects, from the early Greek poets: the figures are painted in monochrome, dull red on a buff ground, outlined with black, and perfectly flat, in the style of the Etruscan vases. The ceiling is divided into small square compartments, with flat ornaments in a simple style of colouring.

The next room is also an *Antechamber*, decorated with panellings, in which are painted subjects from the early Greek poets: these are executed in the flat style, without any shadows, but various colours are employed. The general tone of the walls is cream colour, decorated in arabesque ornaments, perfectly flat. The frieze is about three feet deep, and painted with groups of figures from the poet Hesiod, on a grey ground. The general tone of the ceiling is light buff: in the square sunk panels are flat ornaments in lilac and green, and lilac and buff, alternately, on grey ground.

The next room is a *Reception Room*, decorated in the Pompeian manner. The principal panels are blue, bordered with red, the styles being white: the pilaster panels are filled with arabesque ornament, on a tea-green ground: the paintings in the centre of the panels are subjects from Homer. The ornamental cornice is white and gold, the ground of the frieze enrichment being picked in red. Above this is a broad frieze arranged in panels, containing paintings from the Iliad, and between these are white figures, the grounds being painted light green. The ceiling is arranged in four principal compartments, containing subjects from the Greek mythology in circular medallions; and subjects of the same kind are also painted in semi-circular panels. The general ground of the ceiling is almost filled with arabesque on a light ground. The border next the cornice is arranged in small panellings in white and gold, with pale blue in the sinkings. This room is much to be admired.

The *Speiseaal*, or *Dining Room*, is also decorated in the Pompeian manner. The ground of the walls is vermilion red, covered with arabesque and bacchanalian subjects, and in the centre of the chief panels are pictures from Anacreon. The pilasters, architraves, and surbase are of marble; the doors of mahogany, gilt. The ceiling is circular, and covered with arabesque on a white ground, surrounding panels containing paintings illustrating the same poet.

The general ground of the walls of the *Throne Room* is entirely gilt, and arranged in a series of panellings, containing subjects from the poets and historians of Greece, modelled by Schwanthaler: these are intersected by fluted pilasters, supporting a rich frieze. The walls, as I have already said, are gilt, but all the raised ornaments and figures are pure white: the ceiling is formed in compartments, containing ornaments, also finished in white and gold. The walls of the adjoining reception room are decorated in the Herculean style, with ornamented columns and arabesque, on buff and green grounds, and paintings in panels, with groups illustrating the tragedies of Æschylus: the ceiling is vaulted, and most effectively and beautifully painted in arabesque.

The walls of the *King's Study* are entirely surrounded by a series of cabinets, painted green and gold: above them the wall is an olive drab, the cornice blue and gold, the

ceiling painted in arabesque in small compartments, and the paintings, semi-circular in form, represent subjects from Sophocles. The *King's Dressing Room* is similar in form to the last: the walls are painted; the subjects of figures are illustrations of Aristophanes. The ground of the walls of the King's Bed Room is principally green: in the centre is the group of Thorwaldsen's Night: the ceiling is divided into panellings, containing subjects from Theocritus.

This terminates the range of apartments belonging to the king, and those of the queen now commence. The first is a *waiting-room*, painted with subjects illustrating the ballads of Bürger: the walls are arranged in arches supported by pilasters: between these are panels containing the paintings: the ceiling is arranged in small square panels, containing delicate arabesque ornaments.

The next is the *Throne-room*, the walls of which are ornamented with plaster in low relief, and entirely gilt: the dado is in imitation of lapis lazuli. The frieze is very broad, and divided into panels, containing subjects from the poems of Klopstock on a blue ground, also trophies of arms on red: between these are groups of children forming caryatides in white on gold. The ceiling is arranged in compartments, containing enrichments in white and gold, on blue and red grounds. The *queen's drawing-room* is decorated in the richest style of arabesque, in the manner of Herulanum, principally on a green ground: the whole wall space is covered with perspectives of columns, interspersed with children, flowers, ornaments, &c.: in the frieze above is illustrated the Oberon of Wieland: the ceiling is white and gold, with coloured grounds to the ornaments. In the *queen's bedchamber* the walls are painted in green drapery: in the broad frieze above are painted very graceful illustrations from the poet Goethe. The *queen's writing-room* is also a very beautiful room: the walls here are arranged in panels: in the centres are pictures, framed with arabesque ornament—these contain subjects from the works of Schiller: the ceiling is also covered with illustrations of the same poet. In the *queen's library* the walls are covered with bookcases: the fronts of them are of looking-glass, elegantly framed by gilt brass work: the ceiling is circular and very beautifully ornamented with pictures from the works of Ludwig Tieck: the ground of this ceiling is blue, the ornaments being white and gold.

In the ball-room, which is a very beautiful apartment, the walls are painted in arabesque on a polished white stucco ground: groups of classic figures are painted in the frieze.

On the ground floor is another suite of rooms, worthy most particular notice. There are four chambers, painted by Julius Schnorr, with a series of remarkable subjects, illustrating the Niebelungenlied: the events of the story are represented in a series of groups, nearly life-size, painted on a very rich brown ground diapered with gold, framed with ornament in blue, brown and gold. The ceilings are vaulted, and enriched with gold ornaments on a black ground, the stiles being dove-colour, and the margins fawn-colour, with mouldings white and gold. Unfortunately these rooms are not well lighted, and the colouring adopted rather increases that defect.

The *Festsaalbau* is the part of the palace containing the state apartments for court purposes. The ball-room is decorated with reliefs and paintings, in the Pompeian style. Two rooms are devoted to portraits of the most beautiful women of Munich, from the princess to the peasant, by M. Stieler: the walls of one room are red, the other dull green. These grand halls contain pictures, painted in encaustic, by Schnorr and others, of the battles and principal historic events, illustrating the lives of Charlemagne, Frederick Barbarossa, and Rudolph of Hapsburg: the ceilings of these rooms are white and gold, with relief of blue and red in the grounds.

The *Thronaal*, or State Throne-room, is an imposing and very handsome apartment: large columns in white and gold range on each side, and between them are fourteen colossal statues in bronze, gilt, of the electors and

princes of Bavaria, in the costume of the time in which they lived.

I have thus gone through the list of the buildings calling for particular notice. I am fearful that description, such as mine is, after all, a feeble mode of making known works of such high importance. I studied these works with the greatest interest, and I compared them with what I had seen at Paris and in Italy. The present style of decorative art in Munich seems founded upon the study of the paintings at Pompeii, mingled with those of Giulio Romano, and a relic of the old German Gothic style, which is often to be traced in their foliage ornaments. In their knowledge of the powers and harmonies of colours, I think the artists of Munich superior to the French; but the artists of Paris excel them in the elegance of form, and the colouring of ornament: in fact, their principles seem directly contrasted: the one (the German) gains his effect in the purity, richness, and harmony of the colours forming his grounds; the French rather in the ornaments themselves. May we in time obtain the excellences of both! The sight of these works raised in my mind a feeling of regret, almost of shame, that a city so inferior to our own metropolis in wealth, historic associations, grandeur, and renown, should so far excel it in the complete beauty of its public buildings. I say in the complete beauty of its buildings, because we have fine buildings, structures worthy of our famous city, but they are not complete. Who can visit St. Paul's Cathedral and not feel what it might be made, if the rich glow of harmonious colouring threw into full effect the exquisite proportions of its architectural details? Is the National Gallery complete? do the ceilings of that building bear tribute to the works of genius on its walls?

Yet I acknowledge that much has been done, and that the profession are alive to the importance of colour in giving value to form. I know that the government are anxious for the success of art, as an important adjunct to manufacture. I know that a Prince to whom all this country looks with affection, is ever anxious to encourage art in whatever form it presents itself; and, therefore, I hope the time is not far distant when the national buildings of London will present to the eye monuments, not of architectural genius alone, but adorned by the sister arts of sculpture and painting.

JOHN G. CRACE.

ELEMENTS OF ORNAMENTAL FORMS.

SYMMETRY AND CONTRAST—REPETITION AND VARIETY—ORNAMENT AND MUSIC.

IN course of a lecture on this subject by Mr. Wornum, at the Central School of Design, on 7th ult., after some introductory remarks, in which he divided ornamentation into its two great classes, the flat and the round or relieved—respectively the objects of painting and modelling, on the elements of each of which he dwelt at some length,—the lecturer proceeded to remark that it seemed to be a law of nature that every individual thing should be composed of two similar parts in its outward appearance; and as the internal arrangement was often different, as in the animal creation, that this similarity of externals would appear to be an evidence of the design of beauty. We find this similarity of parts more or less decided (he continued) according to the individuality of the object, from the simplest crystalline form to that of man. And we find this remarkable similarity relaxed only where its relaxation does not interfere with the beauty of the object, as in a tree, the two halves of which are not exactly symmetrical in their branches, yet they are generally so, and there is quite as much symmetry in a tree as the eye can appreciate. It is so also with flowers: the calyx and petals of all flowers are symmetrical, and the symmetry is the more decided inversely as the number of flowers on the stem. Plurality of members seems to do away with the special symmetry of the individual member; and where there are several flowers from one root or on one stem, the deviation from individual symmetry is always in favour of the symmetry of the collective group or groups: where nature

groups it is the group that is the ornament, not the individual, and this is a law which must be observed likewise in art,—as in all clusters, colonnades, or festoons: the individuals of such designs may be arranged at random, provided the cluster, colonnade, or festoon be itself of symmetrical proportions. In endeavouring to be symmetrical in our designs, therefore, so far from being artificial or formal, we are strictly following one of the grand principles of nature. This distinction between the symmetry of the parts and the symmetry of the group or cluster is very important. Take man himself: he is a compound form—a group of trunk, limbs, and extremities: whatever part of the group is balanced by a similar member on the other side is without that symmetry of which we are speaking: the arm is not symmetrical, because it is balanced by a similar member on the other side; but take the head, which has not this plurality to disturb its symmetry, and we find a perfect contrast of the two parts. This I believe to be true of all natural groups, and this law of symmetry is so important, that there is no form or combination of forms whatever that, when symmetrically contrasted or repeated, cannot be made subservient to beauty.

The whole grammar of ornament consists in contrast, repetition, and series. A perfect contrast in form may be defined as the solid, or section of solid, generated by the revolution of an outline around a given axis: a sphere, for instance, may be regarded as a form generated by the revolution of a semicircle round its own diameter. Repetition and series are nearly identical: series comprises repetition, and defines its order. Mouldings are simple repetitions, right-lined or curved, as the case may be. Perhaps the best illustration of the value of series is the kaleidoscope: all the beautiful figures represented by that instrument are repetitions in circular series, and often the rudest materials will generate extremely beautiful effects. The designer should have constant recourse to the kaleidoscope: he will derive an infinite variety of suggestions from it, including an endless store of beautiful rosettes ready made to his hand. The elliptical, or any other regular series, symmetrically arranged, will be found nearly equally valuable with the circular.

The application of these and other principles to diapers, &c., was illustrated by various drawings, and the lecturer thus proceeded:—Taking it for granted that the eye requires variety of surface to gratify that faculty of the mind called taste, how is this variety to be effected? By dividing surfaces into compartments, and by making some portions more prominent than others, and thus producing that contrast which we assumed at starting to be the element of all ornamental effects. These compartments are known as panels, borders, cornice, frieze, basement or dado, capital, shaft, base, pedestal, neck, body, foot, and so on,—all names designating the ornamental divisions of the general schemes of objects. Though these things may not be in themselves ornamented, the mere division of an object into such parts is done solely for variety of effect, in obedience to one of the tendencies of the mind. These various compartments are separated or made prominent by mouldings: mouldings may be either mere suits of concave and convex members, as in many Gothic examples, or the concave series may be filled in with ornamental details; but the border or moulding is the ornament, and not the details of which it is composed; and although these may be varied indefinitely, they ought not to disturb the order or arrangement on which the ornament depends, because special attraction to secondary details is not a merit but a capital defect in a design. The ornamental details referred to are the zigzag, the fret, the echinus, the astragal, the anthemions, the guilloche varieties, and the scrolls. In the zigzag we have the simplest variety of lines we can well conceive. In the frets we have a more complicated order of right lined series. In the varieties of the guilloche we have a similar simple series of curved lines or interlacings. In the echinus we have another character,—a bold alternation of light and shade; and in

the astragal we have a similar result on a smaller scale: both of these latter belong essentially to the solid or round. In the scrolls we have a regular running series or alternation of spirals, or any materials treated in that order of curve. Use among the Romans established an extraordinary prestige in favour of the acanthus, but any other materials would answer the purpose. In the anthemions we have a compound element, a succession or alternation of a harmonic group of curves in a conventional adaption of floral forms, as the name anthemion itself implies. In Greek examples we have a smaller and larger cluster alternated, sometimes reversed, sometimes inclosed in a curve, and generally connected by a band, by mere contact, or by some simple scroll.

Every example of an ornament must have an individuality of detail necessarily, but it is a very great mistake to adopt this detail as an essential part of the ornament. Half of our classical buildings are covered with honeysuckles, bringing the whole art of Greece into disgrace for its monotony and formality, while there is scarcely a weed in England that might not with equal skill have been substituted with perhaps equal effect. To the designer, not one of the whole series of popular ornaments is beautiful merely because it represents any natural object: we do not admire the echinus and the astragal, because they are derived from the horse-chestnut or the huckle-bone, but because they are admirable details for that prominent contrast of light and shade which is so extremely valuable for edges or mouldings: in short, the ornament or detail is beautiful in design because it has been chosen to illustrate certain symmetries or contrasts delightful to the mind, just as harmonies and melodies delight it through another of its senses. The analogy between music and ornament, indeed, I believe to be perfect: one is to the eye what the other is to the ear, and the day is not far distant when this will be practically demonstrated. The principles of harmony, time or rhythm, and melody are well defined in music and indisputable: many men of many generations have devoted their entire lives to the development of these principles, and they are known; but in ornament they are not known, and perhaps not recognised even as unknown quantities, simply, the lecturer believed, because as yet no man has ever devoted himself to their elimination; though many of the ancient and middle age designers have evidently had a true perception of them. Notes in music correspond exactly with the component details of form in ornament, and as an independent note is not music, but only sound, so no detail of form is anything more than an individual figure unless subjected to the laws of ornament, as the sounds must be to those of music. The first principle of ornament seems to be repetition: the simplest character of this is a measured succession, in series of some one detail, as a moulding, for instance: this stage of ornament corresponds with melody in music, which is a measured succession of diatonic sounds, the system in both arising from the same source—rhythm—in music, called also time,—in ornament, proportion, or symmetry,—in both cases proportion or quantity. The second stage in music is harmony, or a combination of melodies: it is also identical in ornamental art: every correct ornamental scheme is a combination of series, or measured successions of forms, and, upon identical principles in music and ornament, called, in the first, counterpoint, in the other, symmetrical contrast. Such a close analogy must convince even the most sceptical that ornament consists in something more than a mere artistic elaboration of either natural or conventional details, and that all mechanical ingenuity must be kept strictly subservient to theoretical principles of arrangement. The highest imitative skill, employed on the most beautiful natural materials, out of the strict province of so-called fine-art, will engender but mere fanciful vagaries, utterly powerless on the eye, as ornament, when compared with even the crudest materials of the coarsest execution if only arranged in any order or combination

of harmonic progressions. It is remarkable that there is a special analogy between Greek ornament and Greek music. Melody was perfectly developed among the Greeks, while they seem to have entered very slightly into the capabilities of harmony. Their ornament is also, as far as series or independent successions are concerned, perfect; but it exhibits few combinations beyond this. Ornament became more complicated among the Romans; but it was not until comparatively modern times, as in music, that those vast schemes were developed which constitute the masterpieces of their respective arts; such as are displayed by the Moors in Sicily or in Spain, or by the great masters of Italy. The Parthenon itself, taken as a whole, is a magnificent combined harmony, but examined as to its ornamental details, is of an extremely simple character: the sculptures of the pediments are the only departure from a simple progressive series of uniform materials. In his next lecture, Mr. Wornum proposed to treat of harmonies in colour.

THE INDISCRIMINATE PRAISE OF THE BUILDING IN HYDE PARK.

I HAVE waited patiently up to this time in the expectation that the tremendous flourish of drums and trumpets about the Exhibition building in the Park would cease, and something like a calm and reasonable investigation of the merits of the work would supervene. The noise being now somewhat hushed, I think I may venture to write this letter, to suggest a few points of inquiry as to the con-

struction and appointments of the building, and to state a fact or two which I think should be known. I may premise, that I should not have gone into the matter had all the laudations we have heard been *comparative*, and made with reference to shortness of time, &c.; but they are *absolute*, and the building is referred to as an illustration of the highest pitch to which the science of construction has been carried in this country. Without presuming to dictate, and certainly without any desire to undervalue the importance of the undertaking, I may perhaps be permitted, under the circumstances, to ask a few questions and make a few suggestions.

Dismissing for the present all inquiry as to how this design came to be adopted by the commission, I will confine myself to the building as it stands. We are told by the authorised exponent of the work, that every portion of the building is the result of most minute and scientific calculation (he was, by the way, guilty of a piece of gratuitous impertinence about architects never calculating, &c. &c.). Now, the first point to which this calculation would apply, would be, I apprehend, to determine the size and section of the columns, so as to obtain the requisite strength with the least metal. Has this been done? Or is the form adopted the result of any *a priori* calculation whatever? I very much doubt if these queries can be answered in the affirmative; and (without pretending to be guided by an elaborate equation) I would suggest, to moot a point, whether the form A in the accompanying sketch be not stronger

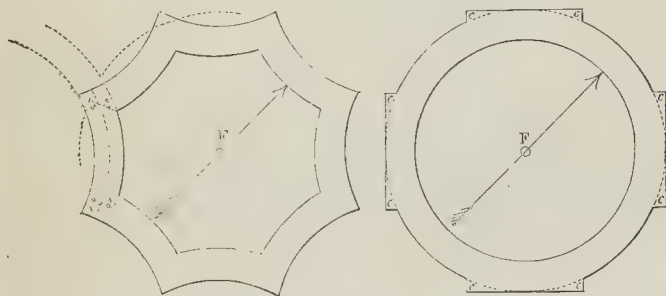


FIG. A.

FIG. B.

than the form B, the one used, and whether it do not also contain less metal: the metal in the form A—the radius of the flutes being equal to that of the circle of the same diameter as the octagon—is the same as in the continuous circle of that diameter; whereas, in the form B, the gusset pieces *c c c*, &c. are in excess. Suppose a force acting on each column in the direction of the line F, in the case of A the pressure is resisted by a convex surface, in B by a concave surface: in one case the pressure is *on* the arch, in the other it is applied to the soffit. I am told by an iron-founder that he would as soon cast one column as the other: at all events, the form I suggest is in accordance with nature's construction, as may be observed in the ribbed and fluted forms of the stems of ferns, grasses, &c. Further, with respect to the columns, as a question of art and design, why should they not be ornamental? the cost would be simply the extra expense on one model; and why should not the caps and bases form part of the construction, instead of being "dummies," stuck on afterwards to *disguise* the construction, and to make it appear one thing whilst it really is another?

To pass to the next important feature of the construction—the girders between the columns,—are these girders or ties (cast-iron, of a trellis pattern) of a proper material for the purpose? and if so, are they of the best form in which the material can be used? I am inclined to think that both these queries must be answered in the negative. Cast-iron, as too many failures have proved, is a most treacherous material, especially when under tension, even in its best form; and I can by no means persuade myself that the

form used is the best: the great characteristic of cast-iron is the power to resist compression; but it is here made to do duty, with respect to the parts on which the strength depends, by the top and bottom flanges, under the most severe tension—a mode of construction very proper for wrought-iron or wood, but surely wasteful and unscientific in cast-iron. I say wasteful, because if the girders will bear a certain proof in this form, they would, I imagine, bear a heavier one if the same weight of metal were arranged in almost any other, say the ordinary open web with top and bottom flange. But why should wrought-iron girders not have been used, unless it be urged that they would take a longer time to make, and would cost more money, which I doubt? Besides, such a plea would be no answer on the merits: the wrought-iron might have been used either in the form of boiler-plate girders, or in the trellis form: half the depth would have given more strength, at least. I know of wrought-iron trellis girders 80 feet span in the clear, which are loaded with two arches in brickwork, the floor above, and the moving weight of hundreds of people, the room being a grand ball and reception room of a palace, of which the exhibition building are 3 feet 4½ inches high: those of the exhibition building are 3 feet 4½ inches. Further, as a matter of art and design, would not the effect have been much more harmonious if the slender iron columns had been connected by the light and graceful forms of the wrought-iron trellis, instead of being, apparently, crushed by these ponderous bearers?

It appears that doubts have been entertained of the general stability of the building, and Messrs. Fox and Henderson, I presume for the sake of peace and quietness, have con-

sented to the introduction of wrought-iron diagonal tie-rods in some parts of the work: now, the principle of construction being one of inertia, or dead weight, and not of equilibrium, I, for one, do not think these ties will be of much use, although I cannot agree with Mr. Scott Russell, who, in a harangue he delivered at the Institution of Civil Engineers, made it out that any one in a series of columns might be broken without disturbing any other part of the work, and illustrated his position by stating you might knock away I don't know how many legs of a dining-room table, and it would stand all the same. Without offence to Mr. Russell, he has, by proving too much, talked nonsense, inasmuch as if one of the columns, say on the ground story, were to be broken away, the girders which that column supported would certainly follow it, as would also all the superincumbent columns and load, and if that load were a heavy one, the leverage and cross strain would, most probably, break the adjoining columns, and make a tolerable "average" of the whole affair. However, dismissing the above amateur engineering, I wish to make a remark on the manner in which the tie-rods are fitted. They are brought up at the intersections through a cast-iron ring, apparently about five-eighths or three-quarters of an inch thick, tapped at the ends, and screwed up with nuts. Wherein consists the strength of these ties? It is measured by the power of the worm of the screw, and by the power of the cast-iron ring to resist extension: even a wrought-iron ring would become distorted: why not have used coupling plates and wedged up? I suspect this is a bit of a quiz on the part of the contractors: they seem to say, "You shall have your ties if you like, but we will take care they shall be of no use."

I now come to a very great gun that has been so often fired off with so much noise,—I mean the ridge and furrow roofs, and the so-called "Paxton gutters." You will be rather surprised to hear that Mr. Paxton is no more the original inventor of these arrangements than your printer's devil. To prove this it will be sufficient to state that the late Mr. W. Strutt, of Derby, in conjunction with the late Mr. C. Sylvester, engineer, executed on a small scale a ridge and furrow roof, with the triple gutter, forty years ago, but the triple gutter was of iron: this Mr. Paxton admits he has seen, and it does so happen that Mr. John Sylvester, the son of Charles Sylvester, designed and executed, *seven years ago*, a viney for the Right Hon. E. Strutt (the son of Mr. W. Strutt), wherein the triple gutter out of the solid in wood and the ridge and furrow roof are adopted, the columns being used as downright rain-water pipes. Indeed, to come nearer home, if any of your readers will go four or five miles on the Edgeware-road, they will see on the left hand side a ridge and furrow roof over a greenhouse which has been up these twenty-five or thirty years. Had there not been so much noise made about this matter, I should not have alluded to it, as I really considered a knowledge of these arrangements was "common stock" among professional men, and the worst symptom in the business is, that it is not so.

There are many other points in the construction and details of the building worthy of investigation, such as the thickness of the glass, which will certainly be smashed all to pieces if such a hail-storm occur as happened in the neighbourhood of the building three or four years ago. As to the calico covering, perhaps a sailor can tell us how long this would last in a gale of wind. The difference of expansion between the bottoms of the ground-floor columns rigidly tied together *underground*, and the tops of the columns in the great heat immediately under the glass, is a matter for inquiry: so as to the open floors through which all the dirt from thousands of feet is to be swept into a chamber below, which is to be a source of ventilation. Query, whether the air will be any sweeter for passing through the exhalations of this dungheap; but my letter is already much longer than I intended, so I will conclude by stating that I sat down to write the foregoing

remarks (although I dare say my motives will be misinterpreted) entirely with a view of promoting useful inquiry, and of getting fairly at the merits of the question; that we, as practical men, must not be carried away by an indiscriminate admiration merely because the building is large; and that, as I see the matter, the only part of the undertaking which calls for hearty praise, and which is thoroughly satisfactory, is the fact that Messrs. Fox and Henderson have executed this very large work in an unparalleled short space of time, and have thereby proved the great resources of the country, and their own means of commanding them. I, as a professional man, congratulate them on their performance, and I hope they will some day build another such building, when they shall have had more time to turn themselves round, and to thoroughly consider the details of the construction and appointments.

HENRY DUESBURY.

DESIGNING MEN.

As you seem to regard with some favour the history of a life spent in the arts, I shall imitate my good old friend Britton, and offer you an autobiography, which you will decide upon for printing, if you consider worth anything the opinions of an old stager, as the boys of the present day impertinently call me; though you may see that my hand is still steady enough for work; and of my brain, here is a specimen:—

Imagine, then, in the year 1817, two young men entering upon life, each with a thousand pounds for his capital: one (my brother) an eminent tradesman, whose house has slaughtered more calves, perhaps, than any other in London, and who now retires on a comfortable income (though I doubt if his boys, who are to buy his business, will do as well; but this by the way); the other, myself, just out of a good architect's office, where I was truly educated for a term of seven years. Then getting connected with the Board of Works, and being offered, or rather commanded, to go abroad, to arrange some important works, and start them, you must fancy me returned to England in 1823, just in time to find that only travelled men were worth patronage, and therefore off again on the grand tour,—Italy, Greece, Sicily, a little of Egypt, France, the Rhine, and home. Little enough of the thousand pounds was left, you may imagine, but still some connections, I thought, remained to me; but, alas! no; 1825 had done some irremediable harm: other men had stepped into my path, and builders began to be architects. Only one course seemed opened to me, and I embraced it. Let my previous history (for you, perhaps, do not recollect the two Bonds) be a warning to architects who leave their prospects to improve their minds, as my future progress will also teach a lesson. The manufacturers began to get tired of the French taste which had succeeded to the Gallic classicism of Napoleon, and it was my good fortune to get into habits of designing for different trades: my style is now to be seen everywhere, for it was luckily a favourite; but my name is never heard: let that pass for the present. I have seen enough to warrant my speaking on the present position of design, designers, and manufacturers: thank goodness I have done with them, and hope to live as easily as I may in my brother's house on the little more than sixty pounds a year which I have managed to save by buying an annuity cheap. What is the great complaint against manufacturers at the present time? the want of taste in their productions. What is the cause of that want? the non-employment of proper artists. What is the reason of the manufacturers, when willing, being unable to find such men? their fault for the last thirty years in not paying them. So now, when the manufacturer exclaims that he does not know where to find his men, it seems, in the first place, that he does not mean to pay sufficiently to tempt great artists; secondly, that those great artists are really incapable (and I admit the fact, for they do not know the details of their business); thirdly, that he cannot find the lesser men, for

their addresses are not known; their existence is barely tolerated by the manufacturer. This cry is his excuse for copying foreign works; and he is spoiling the students of the schools of design by taking the young men, as soon as they can copy, from their lessons. Now, in France, there are, as always, ateliers which the student cannot leave till he can design; that is to say (translated for the benefit of the tradesman), *invent*. It really is remarkable so few of them know the difference between a drawing and a design.

It is far from my meaning that there are no designers in our manufactories: in some of the oldest houses there are such men, either as partners or as confidential clerks; and if you want to know these houses, there are so few that, I believe, you may find them all among those who petitioned for the Registration of Designs Bill; but even these houses fell into the error of hiding the name of their art-producer, so that we know of few, and of these few, who knows the fate of Bogaerts or of Bridgens? Yet one helped to revolutionize the style of our furniture; the other taught how metal could be effectively cast.

But the poor lads of the present day, compelled to steal, have no ground for asking their employers to parade them as men of talent, so they get swamped; and if any credit be given, the manufacturer takes it to himself, and often does not confess he has bought it. Now, in times gone by, Andrea Mantegna, Giulio Romano, Le Pantre, and a host of others, were employed by men who proclaimed their artists' names as an advertisement of the excellence of their goods. In this country it is the reverse: by employment in a factory an artist loses caste, and so I cannot be found in the ranks of the Institute of Architects, which, perhaps, is no loss, as I could not afford the honour; but in Germany and France the architect is in a worse position than the ornamentist. How is it that all the upholsterers have a generally uniform style? and where were they educated to get it? The style of my master's day has gone out—who devised the new one? do styles arise spontaneously. If so, why did not a new style of architecture arise at the same time?

It was, and I am proud to say it, through the architect that the manufacturers got designs; and how do they behave? They steal, Sir; they steal; and so they get their reward, while their slaves are yearly let down in the proportion of their pay, as the excellence of their former designs occasions a demand for similar articles which want no designing: and this is not an unfair statement, for, like their brethren in other trades, who say, "we risked the first, let us have the profits of the following," the manufacturers in London, till the last seven years, made their employers pay for the design in the first instance. Whose was it then? The employer paid for a design for an article of which he only would have one, and so paid—was it his? The manufacturer was paid for producing it—was it his? The designer was paid as if one only was to be made from it, when hundreds of copies were made,—by the employer, by his friends, by the manufacturers they employed, by the first maker for his clients, for their friends, to no end of reduplication. Had the designer no claim to anything but his first guinea? Should he not have even the reputation, which should induce others to employ him? Such successful articles were common, and in one house a single designer's productions only to this moment are inquired for by the public and the trade.

Yet with this crying evil, known to every one connected with the literature of art, all editors, and you are one of them, allow the public to read "we are inferior in talent of design to foreign ornamentists." Take another instance: one manufacturer, on being taxed by his employer for multiplying the pattern from a mould charged to the employer, was cool enough to say, "your bill was paid last Christmas, and till then I did not use your mould." Another, equally candid, told one of his employers that all the moulds he used had been originally paid for by that very employer; and again, I was last year shown my own drawings as the property for sale of

the manufacturer to whom they had been entrusted by a former client of mine for execution for him only.

Yet the Society of Arts rewards manufacturers at its exhibitions, and the governing body or jury may be defied to give a reasonable reason. Is it for the design? then they should reward the designer. Is it for workmanship? then they should reward the workman. Is it for understanding his own interests? that is an odd cause for rewarding the manufacturer only, who does not exhibit a speculation for love, but a commission, or a selling article.

How many names of designers will appear at this great exposition in the glass case at Hyde Park? Excepting the pupils in the schools of design, I may say, not one such man will be put forward. Nor, unless he execute his own designs, can he step forward of himself.

As for the art-manufactures, as they were called, I presume they have had their day, and will forbear to rake up their weaknesses, unless some one will praise them first.

I said that the manufacturers stole: they steal in all manner of ways,—even before the first article is supplied to the employer, the public can get it: such was my information at our late great goldsmiths. [Speaking of that trade, I must admit, too, that Messrs. Garrards do show off Mr. Cotterill, and he deserves it]. And in the very last article which I have invented, the substitution of one colour for another, at the suggestion of the manufacturer, has authorized him, he thinks, to copy it as his design, and to do what he likes with it as his own. That suggestion, too, was stolen from the rough sketch which lay next it in my sketch-book, when he came to see it; and I caught him turning over the leaves, to see, as he innocently avowed, "if he could find a new notion." But that was honesty itself compared to the practice of the paper-stainers, who must needs patronize the Germans and French, because these artists bring each, at every season, some hundreds of patterns to show; and, while buying one, you can steal the idea of three;—or to that of a silk man, who, on seeing some foreign patterns which I had brought home, offered a trifle for one, and, on being refused, said it did not matter, as he could recollect it well enough. So he did.

But to return. I recollect one design has lately been made by an eminent artist, that has been successful in its run, after he had learnt the details of the business he was kindly patronising, and the manufacturer has been obliged to give him the credit of it, because, as he said, "every body asked for it by that name." He thought it very hard, too, considering that the artist only gave his design, while he went to the outlay necessary for its production. It will appear that if the manufacturer will pay liberally (and by liberally, I mean only at the scale of French or German payment, calculating the difference in money by the prices of bread), and if they will let the public know that it can get good things from good men, the public has taste enough to foster that set of productions: then the manufacturers may find that it is their interest to have again one partner a designer. It is a pity that so few of the old houses were in favour of that arrangement.

I have just written "the artist only gave his design:" such is the folly of some men, that if asked, after a state "dinner," just to make a sketch "for my little love of a—" whatever it may be, some of our first architects are in the habit of taking the bread out of other men's mouths by taking pen and ink and a little colour, and making such a drawing of decoration as the client would not dare to beg if she saw it on the artist's own table; and this, too, without filling his own mouth, except by the hospitality, which is afterwards placed to his account as a reason why he should not make the usual charges for his services. An acknowledged service is worth something more than the degradation of being unfit to be named; and the loss of position is to be expected when the artist becomes a mere manufacturer of varieties of patterns from one design. Yet such is becoming the state of the English

ornamentalist; while the press cries, again and again, "We are inferior in talent of design to foreign ornamentalists;" give a proper position: teach the manufacturer, what is difficult for him to comprehend, as he has no soul above money, that the artist asks for honour (as one means of making money if the trader choose), and that a bank-note may pay for a drawing, but not for invention; and then the English artist will be able to fight his way.

Only when they cannot help themselves do the manufacturers apply to the few men who profess design,—the pupils of other days—of such men as Sheringham, and Boileau, and Dumont, and Belanger: and when they do go thither it is without a purse, and the waste of time in bargaining becomes greater than the value of that occupied in work, and unless the artist get the money before he deliver the goods he may have them returned, after being copied, with the assertion, made true by the theft, "That they are literally valueless." One slight resource the young men have,—the Registration Act; but how it works the office itself can best answer; and I leave to some other victim the task of exposing its faults. One deficiency is the want of nominal entry, i. e., until the design be used or sold, for a fee of 1s., for an unlimited period.

I do hope to see before my death an exhibition of designs, shown by the designers themselves.

To conclude, after all these years of experience and vicissitudes, I have left off very nearly where I began,—a discontented bachelor; for I was too much vexed to go on in harness any longer, since last week, when I having designed a frame for a lady's tapestry, the upholsterer, on putting the work in the carving, ingeniously placarded it as "a screen of his own making." A WORN-OUT FILE.

THE LADIES' CARPET.

SUCH a crowding of pretty bonnets, with prettier faces under them, as there was last week in the great room in John-street, Adelphi (a Society of Hearts on that occasion, shall we say?) has not been often seen. A hundred and fifty ladies had conspired to produce the carpet which was there hung up, and they each brought their hundred and fifty friends to look at it and abuse,—if they dared. There have been several carpets made in Berlin wool work by the contributions of many different ladies, chiefly for churches; but these have been composed of different geometrical designs, each complete in itself, and were easily put together. The idea of producing one large design, cutting it into parts, and which, when worked, could be joined together in such manner as to form one ornamental subject of architectural character, is a new one; and it is this which distinguishes the work before us, originated by Mr. W. B. Simpson, and designed by Mr. J. W. Papworth.

Bowers of roses, trellis work, covered with hollyoaks, over a sky ground, often seen, were thought to be very unsuitable things to walk upon. Flatness of surface was the object desired, though not wholly gained; and a design of inlaid work, scattered profusely with flowers (the latter a *sine qua non* with the lady-workers), was prepared. The full-sized pattern, 30 feet by 20 feet, was then painted exactly as it was to be worked; and when finished—which took many months—it was resolved, instead of having the painting transferred to squared paper, with the stitches arranged for the executants to follow mechanically, to cut up the original painting, and lithograph the stitches on it—a process which, although it gave some trouble to the workers, saved the expense of the transfer, and insured the copying the neutral and other tints unknown to Berlin workers in general.

We have heard some objections to the course, but must leave the learned in wools to settle the question. There is much that we can legitimately praise in the work,—the wreath of flowers on a light ground, forming part of the border, in particular. We could have spared the union-jack and shields at the angles, and are disposed to think, that if the whole had been

surrounded by a border of darker colour, it would have given richness at present somewhat wanting. It is so admirably joined, that the junctions can scarcely be discovered.

ON THE LAWS OF COLOUR.

MR. CRACE CALVERT's paper at the Society of Arts, on the Laws of Colour with reference to the effective arrangements of fabrics in the Great Exhibition, excited much interest. In the course of it the lecturer said, that to understand the laws of colours it is necessary to know the composition of light. Newton was the first person to give to the world any statement relative to the composition of light which he said was composed of seven colours—red, orange, green, blue, indigo, and violet. But it is distinctly proved, at the present day, that, in reference to this, Newton deceived himself: it was, however, sufficient to the immortal Newton to have shown us that light was composed of seven colours, and it was then for us to discover that four of these seven colours are produced by various proportions and combinations of the three colours now known as the primitive colours, viz.,—red, blue, and yellow. Thus, blue and red combined produce purple or indigo. Blue and yellow produce green. White, red, and yellow, produce orange. These facts being known, it is easy to prove that there are not seven but three primitive colours, and four secondaries, or what I shall call completing colours. Several proofs can, however, be given that light is composed of three colours only. One of the most simple consists in placing pieces of blue, red, and yellow papers on a circular disc and rotating it rapidly, the effect to the eye being to produce a disc of white light. If, therefore, the eye can be deceived so rapidly, while the disc proceeds at so slow a rate, what must necessarily be the case when it is remembered that light travels at the rate of 190,000 miles a second. Therefore, the rapidity with which light travels is such that we are not able, with the eye, to perceive either the blue, yellow, or red, the sensitiveness of the nerves of the retina of the eye not being rapid enough to receive and convey successively to the mind the three or seven colours composing light. Newton was not, however, satisfied with such an experiment as this: he made several others, and found, that when rays of light underwent a refraction or deviation from the straight line, equal to an angle of sixty degrees (as is the case when they are passed through a prism), light was decomposed, as he considered, into seven primitive colours. But it may be said that this is no proof that light is composed of these colours. Do they not result from the influence of the prism itself? Newton satisfactorily resolved this question. He found that, if, instead of allowing the rays and decomposed light to travel far enough from the spectrum, he passed them through what is called the double convex lens, and then received them on a mirror or reflector at a certain distance, a white instead of a coloured spectrum was seen. There can, consequently, remain no doubt that light is composed of seven colours, three of which are primary and four completing colours. Before entering into the laws of colours, Mr. Crace Calvert stated that it might be interesting to know what scientific minds had devoted attention to the laws of colours.

Buffon followed Newton, and his researches had special reference to what Mr. Chevreul had called the successive contrasts of colours.

Father Scherffer, a monk, also wrote on the laws of colour. Goethe, the poet, also brought his mind to bear upon the subject, and studied it to a great extent. Count Rumford, a Scotch philosopher, about the end of the eighteenth century, published several memoirs on the laws of colours. He explained very satisfactorily the "successive" contrast, and arrived at some insight into the "simultaneous" one: still he did not lay down its real laws.

Prieur, Leblanc, Harris, and Field, were also writers of most interesting works on this subject. The reason that they did not arrive at the definite laws of colour, was because they

had not divided these laws into successive, simultaneous, and mixed contrasts. These form the basis of the practical laws of colour, and the honour of their discovery is due to Mr. Chevreul.

The motive why a surface appears to us white or brilliant is, that a large portion of the light which falls on its surface is reflected on the retina, and in such a quantity as gives to the surface a brilliant aspect; whilst in plain white surfaces, the rays of light being diffused in all directions, and a small portion only arriving to the eye, the surface does not appear brilliant. The influence of colours on these two kinds of surfaces is very different, as may be perceived by the examples round the room, showing the influence of different colours on gold ornaments. When rays of light, instead of being reflected, are absorbed by a surface or substance, they appear black; therefore white and black are not colours, as they are due to the reflection or absorption of undecomposed light. It is easy to understand why a surface appears to us to be blue; that is due to the property which the surface has to reflect only blue rays, whilst it absorbs the yellow and red rays; and if a certain portion of light be reflected with one of the coloured rays, it will decrease its intensity: thus red rays with white ones produce pink. On the contrary, if a quantity of undecomposed light be absorbed, black is produced, which, by tarnishing the colour and making it appear darker, generates dark reds, blues, or yellows. The secondary colours are produced by one of the primitive colours being absorbed and the two others reflected: for example, if red be absorbed, and blue and yellow reflected, the surface appears green. There are two reasons why we can never see a perfect blue, yellow, red, &c. The first is, that surfaces cannot entirely absorb one or two rays and reflect the others. The second is, that when the retina receives the impression of one colour, immediately its complementary colour is generated: thus, if a blue circle be placed on a perfectly grey surface, an orange hue will be perceived round it; if an orange circle, round it will be noticed a bluish tint; if a red circle, a green; if a greenish-yellow circle, a violet; if an orange-yellow circle, an indigo; and vice versa.

The next point was that of the different contrasts of colours. The "successive" contrast has been known, and it consists in the fact, that if you look steadily for a few minutes on a red surface fixed on a white sheet of paper, and then carry your eye to another white sheet, you will perceive on it not a red but a green one; if green, red; if purple, yellow; if blue, orange. The "simultaneous" contrast is the most interesting and useful to be acquainted with.

When two coloured surfaces are in juxtaposition, they mutually influence each other,—favourably, if harmonising colours, or in a contrary manner if discordant; and in such proportion in either case as to be in exact ratio with the quantity of complementing colour which is generated in our eye; for example, if two half-sheets of plain tint-paper—say one dark-green, the other red—are placed side by side on a grey piece of cloth, the colours will mutually improve in consequence of the green separated by the red surface adding itself to the green of the juxtaposed surface, thus increasing its intensity, and in its turn the green augments the beauty of the red, and which effect can easily be appreciated if two other half-sheets of paper of the same colours be placed at a short distance from their corresponding influenced ones:—

RED RED-GREEN GREEN.

It is not sufficient to place complementing colours side by side to produce harmony of colour, the respective intensities having a most decided influence: thus pink and light-green agree—red and dark-green also; but light-green and dark-red, pink and dark-green, do not; therefore, to obtain the maximum of effect and with perfect harmony the following colours must be placed side by side, taking into account their exact intensity of shade and tint:—

HARMONIZING COLOURS.

Primitive Colours. Secondary Colours.

Red	Green ..	Light-blue. Yellow.
Blue	Orange ..	Red. Yellow.
Yellow orange.	Indigo ..	B. ue. Blue. Red. Yellow.
Greenish yellow	Violet ..	Blue. Yellow. Yellow.
Black	White ..	Blue. Red.

If respect be not paid to the arrangement of colours according to the above diagram, instead of colours mutually improving each other, they will, on the contrary, lose in beauty; thus, if blue and purple be placed side by side, the blue throwing its complementary colour, orange, upon the purple, will give it a faded appearance; and the blue receiving the orange-yellow of the purple, will assume a greenish tinge. The same may be said of yellow and red, if placed in juxtaposition: the red, by throwing its complementary colour, green, on the yellow, communicates to it a greenish tinge; the yellow, by throwing its purple hue, imparts to the red a disagreeable purple appearance. It is of very great importance that every one should be acquainted with the laws of colours who intends to display or arrange coloured goods or fabrics at the Great Exhibition, an opinion which Mr. Calvert substantiated by showing a great variety of embroidered silks (kindly lent by Mr. Henry Houldsworth), calicoes, and paper-hangings; and thereby clearly demonstrating that if these laws be neglected, not only will the labour and talent expended by the manufacturer to produce on a given piece of goods the greatest effect possible be neutralised, but perhaps lost; and also, if the goods of one manufacturer be placed injudiciously near those of another, they will decrease or despoil the brilliancy of the colour displayed, and, consequently, the principal object of the Exhibition would be frustrated—that of affording fair play, and of producing, with the goods sent, the best effect possible. It was clearly demonstrated that these effects are not only produced by highly-coloured surfaces, but also by those whose colours are exceedingly pale, as, for example, by light-greens or light-blues with buffs. The mixed contrast gives the reason why a brilliant colour should never be looked at for any length of time if its true tint or brilliancy is to be appreciated; for if a person look, for example, at a piece of red cloth for a few minutes, green, its complementary colour, is generated in the eye, and adding itself to a portion of the red, produces black, which tarnishes the beauty of the red. This contrast explains why the shade of a colour may be modified according to the colour which the eye has previously looked at, either favourably or otherwise.

DINNER OF THE BUILDERS' SOCIETY.

On Thursday, the 20th ult., the Builders' Society celebrated their sixteenth anniversary by dining together at the Freemasons' Tavern, Great Queen-street. Mr. William Piper was in the chair, and did his duty efficiently.

Professor Cockerell was present as a visitor, and his health having been drunk, coupled with an expression of goodwill to the Provident and Aid Society, for which he has exerted himself so much during the past year, he took occasion to advert to the fact that by the course of business the separate building trades had become absorbed, so that to a considerable extent the small master had ceased to exist, and had become a salaried servant; hence, he said, arose a loud call on the charitable consideration of those who were placed at the head of the large establishments. He adverted to the fact that the existing fund had been raised very much by architects, and, while calling upon the builders to aid, pointed to the example of the architects and pledged them not to be behind hand. He considered that from the

workman to the artist all were of one craft, and had mutual claims one on the other.

The treasurer, Mr. W. Cubitt, M.P., in reply to his (eustomary) health-toast, paid a just tribute to Mr. Cockerell's exertions, and vindicated the characters of the builders, as to their readiness to aid in every good work.

In the annual report it was stated that no claim had arisen for the benevolent fund during the past year.

Mr. Cubitt and a large number of the guests left at an early hour to attend the ball given in aid of the Builders' Benevolent Institution; but not before a pleasant evening had been spent, and many kind things said, inducing good feelings, and drawing men closer together. There is great virtue in a dinner.

THE BALL FOR THE BUILDERS' BENEVOLENT INSTITUTION.

We said just now, that many who were dining with the Builders' Society, on Thursday, the 20th, went away to the ball for the Builders' Benevolent Institution, at Willis's Rooms. And what did they find there? Nearly 600 visitors enjoying themselves to the top of their bent, Adams's band pouring out music, and the treasurer and the committee doing all in their power to make the evening pass off satisfactorily. It did pass off very satisfactorily; and the result will be an addition of about 120*l.* to the funds of this very deserving institution, which has now taken its proper place amongst the established charities of the country,—an institution which will be the means of saving many a meritorious and honest tradesman from the workhouse, and enabling him to pass the evening of his days in peace. The subscriptions last year amounted to more than 1,000*l.*, and the committee have funded the sum of 2,150*l.* At the present time there are six male, and three female pensioners on the books, and the committee look forward to receiving such further assistance from the public as will enable them to have another election at Midsommer next, the claimants being numerous. *Vires acquirit eundo.*

We might, perhaps, have said more of the ball, quoted Byron about "Lamps shining on fair women and good men," and chronicled the mazy doings of Mrs. H. and Mrs. C., Miss M. and Miss G., but what with ladies' carpets, builders' dinners, new cookery-books, and similar theses, our present number has taken so dissipated a tone, that we must restrain ourselves from the flowery paths into which such a disquisition would lead us.

BOLTON-LE-MOORS.

MR. GILBERT FRENCH, whose altar fittings and church vestments are well known, has been exhibiting to his townsmen the works he is about to send to the great Exhibition. They consist of two superb velvet covers for communion tables, very beautifully embroidered, a woven linen cloth for the same purpose from the looms of Donferline, book covers, and kneeling cushions. One of the velvet cloths is adorned with Elizabethan forms very cleverly introduced: the central ornament of the second (medieval) is very elegant. The white cloth has angels and emblems, and is a remarkable specimen of weaving: it must have cost Mr. French much trouble. The embroidery of the works is executed on the premises, mostly by young girls. It surprised us to hear that the richest things produced at this establishment are required for America.

We saw at Bolton a specimen of a new mode of casting architectural and other enrichments invented by Edward Tilling, a working man of that town, and which promises to be of great value. The specimen consisted of vine stems and leaves in full relief, very artistically displayed, and so curled and twisted, that to cast them would seem to require a very expensive operation. One great feature in the arrangement, however, is extreme cheapness, and the method is said to be so simple that it is feared it will be difficult to secure any advantage to him for his ingenuity. He has a mode, he says, of making natural leaves rigid to mould

from, and the casts have the advantage of being ready for gilding, when required, without any previous preparation.

The baths here seem to answer their purpose admirably. They are arranged for four classes,—gentlemen, workmen, ladies, and workwomen: there are two large swimming-baths, and each class has a tepid plunge-bath and three private baths. The cost of the building, which includes a large assembly-room above, was 5,458*l.* The working expenses of the past year were 131*l.* 17*s.* 7*d.*; the receipts from the baths, 134*l.* 5*s.* 7*d.*, and the proceeds of the assembly-room, 47*l.*

A great improvement will be made in Bolton by the erection of the proposed markets, which are to occupy a site at present covered by tenements of very miserable character.

A Gothic chapel, of considerable size and pretensions, is in the course of completion for the Methodists. A Town's Improvement Society, similar to that which is now being organised for Leeds, might do good service in Bolton.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

On February 12, 1851, Mr. J. Heywood, M.P., president, in the chair, a communication was read from Mr. H. King, describing the rood over the south door of St. Dunstan's Church, Stepney. This sculpture has been figured by Malcolm, but very incorrectly, partly from the existence of a porch then at this door, which hid the lower part of the sculpture. It is of very rude workmanship; but Mr. King considered it was not older than the early part of the sixteenth century. Its position, likewise, over a door, was stated to be unusual. Mr. King also produced a drawing of another sculpture (the Salutation?), on the external wall on the west end of the south aisle of this church.

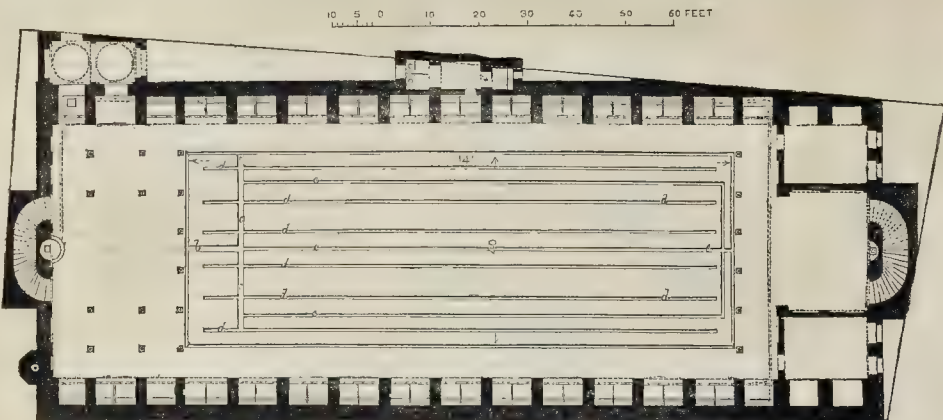
Mr. T. Lott communicated the discovery of two stone coffins in the East Cloister of St. Bartholomew's, Smithfield. This part of the priory buildings is now occupied by Messrs. Palmer, who made the discovery while sinking some feet deep for stowing timber. The coffins each contain human bones, but have evidently been disturbed at a former period, as the lids are gone, and one coffin contains two skulls.

Mr. C. Bailey read some remarks on an inscription and figures rudely sculptured on two of the window jambs of the south-east tower of Goodrich Castle, Herefordshire. The inscription relates to one Adam Hastin, and the figures consist of men hawking, dogs, hawks, a peacock, rabbits, and other things connected with field sports. Beside these, the Virgin and Child are represented. They are of about the latter part of the fourteenth century. Mr. Bailey considered they were the work of some one confined in the castle, and not probably to commemorate the visit of Henry IV. to the castle when Earl of Derby.

Mr. Albert Woods, *Lincaster Herald*, communicated a curious version of the Latham or Stanley legend of the Eagle and Child, from a MS. in the College of Arms. According to this account, the child was brought by the eagle from Ireland, and was the son of a king in that country, and it differs in other respects from the metrical history of Bishop Stanley.

MASTER AND WORKMAN.—IMPORTANT DECISION.—An action was brought in the Clerkenwell County Court on Tuesday last week, to recover of the defendant, Mr. Hodgkinson, a builder, the sum of 1*l.* 19*s.* for six days' wages and lodging. Mr. Hodgkinson disputed the claim on the ground that the plaintiff was an inefficient workman, and that the whole of his work (a slate cistern and urinal) had to be pulled down and refixed by another workman. His Honour said it was the duty of masters to ascertain the abilities of workmen before employing them: inefficiency did not bar the right to recover for work and labour actually performed. The judgment must, therefore, be for the plaintiff. The debt and costs, amounting in the whole to 3*l.* 6*s.* 1*d.* were ordered to be paid forthwith.

PLAN OF SWIMMING-BATH, VIENNA.



THE DIANA BATH, VIENNA.

It was in the year 1804 that Messrs. Moreau and Hummel, the former a distinguished architect, the other a painter, conceived the plan for establishing at Vienna a public bath, which, like those already existing at Paris, should possess all the qualifications desirable for utility and comfort. The site chosen for these baths was most appropriate, being that where the city and the populous suburb Leopoldstadt are most contiguous, besides being on the road to the much-frequented public resorts of the Prater, Augarten, &c.

The site of the baths presents an irregular figure. The ground and first floor of the building next to the river comprise the dwellings connected with the bath. The façade is pierced in its centre and at both sides by gateways. To the right and left of the central entrance which is the largest, are the outbuildings, antechambers, and staircases leading to the dwellings. Thence we arrive through a court to arcades, under the shelter of which those arriving in carriages descend; and then gentlemen proceed to one ante-room, ladies to another, take up their tickets, and proceed to the bathing-rooms, which extend round a garden.

There is a machine moved by horses, by which the water of the Donau Canal is raised into the reservoir and tanks situate above the building. The second building contains stables. There is a third court on the left, one side of which is occupied for the economical purposes of the establishment, which, neatly and comfortably conducted, enjoyed great popularity, and yielded large profits to the owners. In the year 1841, the Noris Society for filtering water established a branch agency at Vienna. This led the proprietor of the Baths to the idea of making use of the apparatus for obtaining a constant supply of clear water, and also to establish a swimming bath. As the then existing establishment did not possess sufficient room for this purpose, an adjoining locality was acquired. A turret 70 feet high was erected, in the upper part of which is a reservoir. Two steam engines, of eight-horse power each, convey the water of the Donau Canal to the tank, whence it is conducted by tubes to the filtering places, and thence again into a reservoir placed above at a height of 34 feet; and from this it is conducted to the warming copper of the baths and the swimming establishment. After this apparatus had been fixed, the building of the winter swimming bath was begun, and it is of this that we give a view, plan, and section. The direction employed the architects Messrs. Förster and Ekel, of whom the latter worked out the plan and conducted the works.

The building consists of an irregular, oblong square, whose surface, previously used as a garden, lay 6 feet deeper than the floor of the Diana bath. Here, a hall as large as possible was constructed, which was then connected with the original establishment, that its entrance should be through the ante-room of the gentlemen's bath. The hall was disposed parallel with the longitudinal line. The outward width of the building is 68 Vienna feet, and its length, without taking into account the staircase, 173 feet 6 inches. The basin 40 feet broad, and 114 feet long, occupies the midst of the hall. On its longer side extend Trottoirs 6 feet broad, which serve for the general circulation, and for the swimming masters going about. Behind is a row of cabinets for the bathers. Two stone staircases lead to the cabinets of the first floor. The semicircular niche which is to the right of the entrance, in the end wall, is for a fountain of filtered water for drinking, and the corresponding one in the other end of the hall has a statue of Diana. At the same end of the hall on the ground floor are placed right and left rooms, one of which contains an apparatus for assisting cases of accident: the other is that of the swimming masters. Boxes for receiving the clean and used cloths are placed on both floors in different places. A room for a *friseur* is in the first floor above the antehall, and the water closets are on the long side of the hall.*

MONUMENTAL.

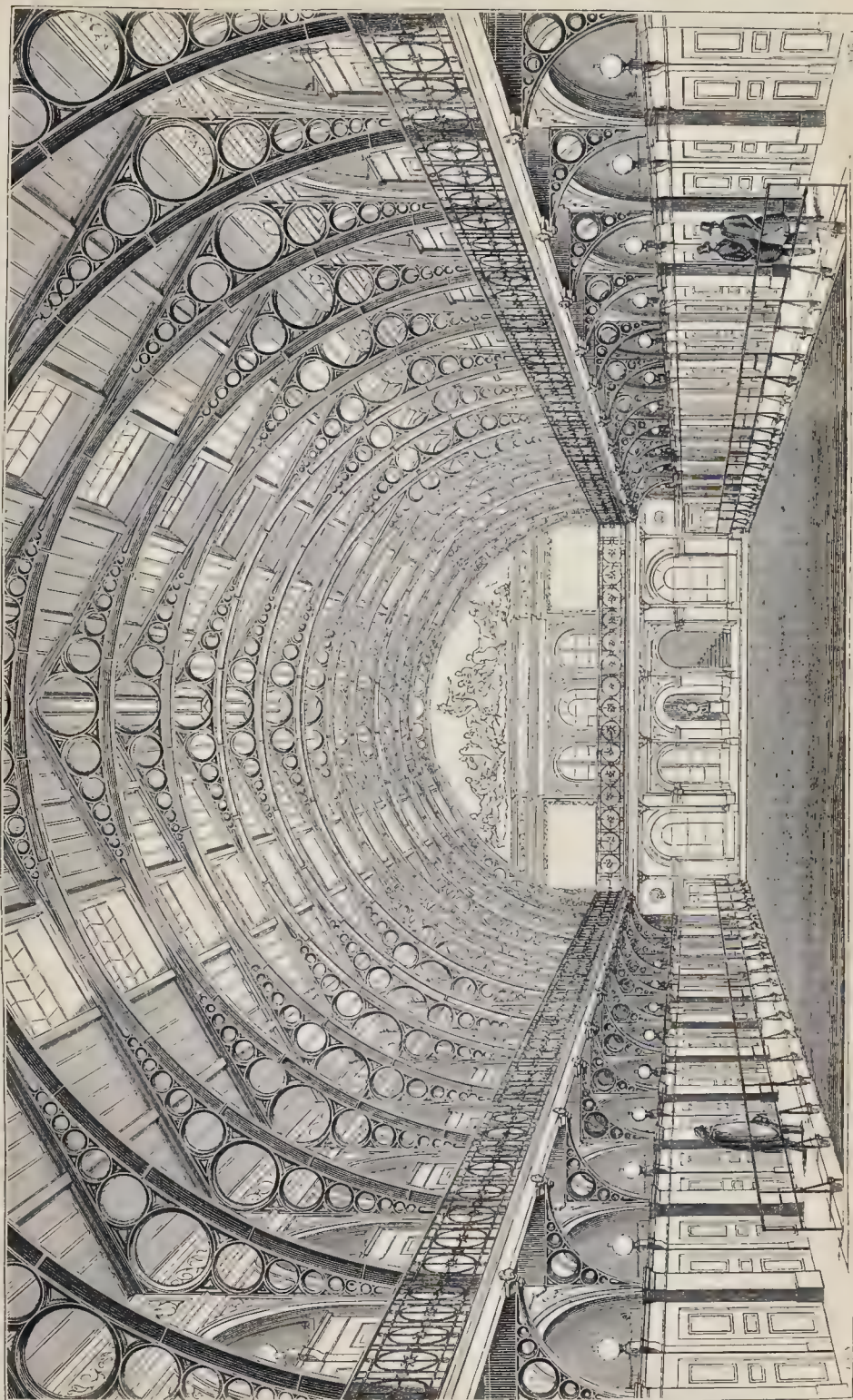
MR. THOMAS, the sculptor, has just finished, at his studio in Old Church-street, Paddington, a monument to the late John Brooks, Esq., merchant and cotton manufacturer, of Manchester, a distinguished leader of the free-trade movement; and which is to be erected by that gentleman's family at Prestwich, near Manchester. As a successful combination of architecture and allegorical sculpturè, this is a work of art deserving of more than a mere passing notice. The style is the Cinque-cento, or revival, of Italy, assimilating that of Bramante especially. The design is of the cubical description, being square in plan, with four angle pilasters, arched between on each face, and surmounted by a consoled cornice, which is pedimented on each face, and finished with a blocking: the order thus described is sustained by a high pedestal with base and surbase, and which rises from a spreading platform of two steps. In the arch on each side is a niche containing a draped female figure, of nearly life size: the pilasters and spandrels are panelled; and these, as well as the tympana of the pediments are enriched in relief.

* We have taken the materials for our illustrations from Herr Förster's excellent work, the *Bausetzung*. We shall give a section in our next.

The character of these several faces is as follows:—1st face,—figure of COMMERCE, with joyous expression of countenance; her brows circled with a wreath of Indian corn; her left hand holding the classical rudder; while on the ground beside her are bales, and other signs of merchandise: the pilasters contain English corn; the spandrels, Indian corn. 2nd face,—figure of INDUSTRY, of cheerful aspect, wearing the laurel wreath, and having in left hand the distaff; the right hand, with the hammer, resting on the cog-wheel and anvil; the pilasters exhibiting the flax, and the spandrels the cotton plant. 3rd face,—INTEGRITY; a firm set figure, expressive of strength, decision; the head covered with the skin of the lion's head, the left hand resting on the sacred volume, inscribed with "Truth," and which is supported on a pedestal covered with lion's skin: in the right hand is the oak branch: the pilasters contain the oak branch, and the spandrels the palm. 4th face,—CHARITY, benignant and benevolent: on her left arm is an infant, which nestles in her neck, while on the ground is another little child clinging to her garment: the pilasters are decorated with the lily, emblematical of purity; the spandrels with the poppy—death—eternal sleep. In the pediment on this side are the arms of the deceased, who was distinguished for the lofty virtues which are shadowed forth in the composition.

The pedestal is of Aberdeen granite, the superstructure of Sicilian marble,—a white with occasional blueish grey mottling, not veined, and which stands almost alone as adapted for external work in our climate; while, for monumental purposes, its quiet aspect is very appropriate.

THE EXCAVATIONS AT FOUNTAINS ABBEY have of late been confined to that portion of the abbey east of the refectory, and south of the chapter-house and choir. It was known, from a plan of the abbey prepared by Mr. J. R. Walbram, of Ripon, for Earl de Grey, that a solitary arch just peeping above the ground, a few yards west of the river arches that support the remains of the Abbot's house, bestrode an old water-course immediately in the rear of some buried buildings supposed to have been the abbey brewhouses. In order, therefore, to come at once to the real level of this water-course, the workmen commenced on nearly a level with the present river. They had got to the arch, when a workman brought down what was at first thought to have been a quantity of old glass. It turned out to be a number of silver coins, in excellent preservation, and apparently deposited by some one in the troublous times of Charles I.



THE DIANA-BATH, VIENNA.—MESSRS. FÖRSTER AND EDEL, ARCHITECTS.

BISHOPS' THRONES AND EARLY CHURCHES.

Your correspondent, "S," at page 94, states that the *onus probandi* lies with me in respect to the position I have assumed, that the chancel in primitive churches was a mere platform, with no other screen than a low railing for safety; and that on this platform, or "chancel," the communion-table was never placed.

In your pages I can only expect space for a brief outline of a subject which requires volumes to do it justice.

In the first place, I claim the whole Scriptures, every page and line in them, as being on my side in this question; secondly, every church, if in its *original state*, erected during the first three or four centuries, and I think I may venture even so far as the seventh; thirdly, the testimony of Justin Martyr, of Jerome, and others among the fathers; fourthly, the Reformers; and fifthly, Cardinal Wiseman, who will doubtless be somewhat astonished to find himself placed in such good company.

The Scriptures prove that under the old dispensation the people were not admitted into the temple, that privilege being restricted to the priests, and the high-priest alone was permitted once only in the year to enter the holy of holies; all this being typical of the fact that the race of man was, by the fall, excluded from the presence of the true Holy of Holies—God. To keep alive the memory of God's promise that in due time his only Son would come to save those whom he had created, the typical sacrifice of bulls and goats was made on the altar by the priests for the people.

When the "Great High Priest" had completed the *one great and only real sacrifice*, which was to be offered "once only and for ever," when he had uttered the words "it is finished," the thick veil which screened the holy of holies in the temple was "rent in twain," the intervention of human priests between man and God was abolished, and from that moment every Christian, the humblest and the poorest, in the words of St. Peter, became a partaker in the heavenly calling, a king and priest unto God; privileged through faith in the great atoning sacrifice, to address his prayers and praises direct to the "Holy of Holies," and to offer to Him that only sacrifice he would henceforth receive of man—"a broken and contrite heart."

The Jewish temple was a most important commentary on the Jewish religion, and the primitive churches afford a commentary, not less instructive as to the manner in which the first Christians—they, be it remembered, with whom temple rites and arrangements constituted an integral part of religion—understood Christianity.

As all were henceforth brethren, all equal as Christians, whether prince or peasant, rich or poor, before their common Father, the worship rendered to him, in the most striking contrast to all previous notions on this subject, would henceforth be a social worship: at least so the apostles and their followers understood it, for they met at first in the upper room at Jerusalem, the real mother church therefore, and subsequently in the houses of those converts whose mansions possessed rooms sufficiently large to accommodate their brethren: at Philippa, Aquilla and Priscilla enjoyed this honour: at Jerusalem, James and Mary provided the requisite accommodation: Nympha's house was in use at Colosseæ; and we also read of Philemon's residence being so employed.

"The church which is in every house," implied that each Christian family with its natural head was a true church. The broader scriptural definition is, "a congregation of faithful men;" that is to say, the aggregated families, who elected one of the brethren to preside over them, and gave him the endearing name of father; his technical appellation being that of the elder, bishop, or overseer, or president, as he was often called.

In the mansions of the Greek and Roman nobility, they had a room set apart in which their families and dependants assembled, and in which the head of the house, on a raised platform at one end, having a slight rail in front of it, sat to decide disputes. This room was the original of the Greek and Roman

Basilica, or halls of justice, in which precisely the same arrangement prevailed, only these being often of much larger size, had rows of columns to support the roof, thus dividing the building into nave, side-aisles, and clerestory—a constructive arrangement common to Egyptians, Greeks, and Romans, and owing its origin to their inability to roof over such wide spans without these intervening supports.

When the Christians were able to construct churches, although the dismantled temples were placed at their disposal, these were rejected; and I challenge Cardinal Wiseman to produce his instances of any being adapted, as he says they were, to Christian purposes, before the conversion of the Pantheon, once dedicated to Minerva and all the gods, into a church, by Pope Boniface the Fourth, who rededicated it to the Virgin Mary and all the saints. The temple model even was repudiated, and the Christians followed, with the most absolute literalness, the arrangement of the halls of justice, placing their president on a similar platform to that which the Roman official president occupied, and continuing to call this platform by the same name of cancelli, a name perpetuated to this day, all through Europe, in the term "chancellor"—a title by a natural figure of speech derived from the raised platform on which the president sat. In adopting this model, this open hall, the Christians were following, in the most literal manner, the precedent set by the apostles and disciples, who met in the upper room at Jerusalem: indeed, in all probability, the rooms set apart in the houses of the more wealthy of the faithful as the common meeting rooms, (for that is the English meaning of conventicle, that word and the term convent both owing their origin to *conventus*, the meeting house) were the tribunal halls. As no one with any regard for his reputation will venture to dispute the well-known fact of the literal copy of the Basilica in the first erected churches of which we have any definite description or remains to judge from, the point is proved that for the first three or four centuries the practice of the Christians was uniform in considering that a simple room, in which no other division existed between any of the brethren than that necessary one of a raised platform for the president and his associate officers, was the proper place in which Christian brethren should meet for Christian worship.

That no one part in this room was considered more sacred than another, is a point equally capable of demonstration.

When St. Paul reproves the Corinthians for their improper manner of celebrating the Lord's Supper, his rebuke is not against their practice of partaking of it as a meal, but at their sensuality in gratifying their bodily hunger and thirst at this solemn commemorative feast: this passage of St. Paul proves that the Christians then celebrated the Supper precisely as it had been first instituted, all sitting round the table, and Justin Martyr gives similar evidence as to the practice in his day. "On Sunday we all assemble in one place," "both those who live in the city and those who dwell in the country, and the writings of apostles and prophets are read so long as the time permits. When the reader stops, the president of the assembly makes an address, in which he recapitulates the glorious things that have been read, and exhorts the people to follow them. Then we all stand up together and pray. After prayer, bread, wine, and water are brought in. The president of the assembly again prays, according to his ability, and gives thanks, to which the people respond Amen."—Apol. I., c. 61—67.

Tertullian gives similar evidence, and Justin Martyr, in another part of his work, mentions that on these occasions the president presided, sitting, of course, at the head of the table. It is clear, from these passages, that a solemn social meal was taken by all in the church, and that this love-feast was originally part of the ceremony used in commemorating the Lord's Supper. The employment of the term "table" is another evidence of this fact, and in the church of St. John Lateran, at Rome, they

show you a wooden table, which is vouched to be the actual one used by St. Peter.

For the fact, that the communion-table was not placed in the chancel or platform, we have, then, the evidence of St. Paul, who proves incidentally, that the disciples sat or reclined around the table, and Justin Martyr's description goes to the same fact, while the form, arrangement, and use of the primitive churches, show that the table could not have been on this platform, inasmuch as there was not room there for the people to sit around any table so placed, and which, if so placed, would have been in the way of the bishop, whose seat was always at the extreme end of the room; and from this seat, until the days of Chrysostom, of whom it is recorded that he changed the practice, the president preached.

Cardinal Wiseman, in his recent installation discourse, mentions this ancient position of the bishop's seat at the extreme end of the church, and all the ancient churches prove this, and at the same time prove that there could therefore have been no intervening screen or table on the platform between the president and the congregation, who, had this been the case, would have been precluded from hearing or seeing him; and we may be equally certain that there was no screen round the table, because, as it must have stood among the people, the officiating ministers, who were seated at the extreme end of the church, would have been the parties excluded; and we know that when they ultimately usurped the rights of the people, it was these latter who were screened off from that table at which their forefathers had sat in equality.

The cardinal, in his installation address, mentions the fact, that a marble seat had been discovered in a church in the catacombs. Some of these catacombs were old stone quarries, and there is no doubt such an uncomfortable, lumbago-giving material for a seat was chosen from a motive analogous to that which dictated the choice of materials for the palace of the King of the Cannibal Islands, which

"Was built of mud for want of bricks."

And the seat, for a reason equally good, was made of stone for want of wood; but this common sense view does not suit the cardinal, and he says "that so the stability of that seat might denote the permanency of that succession that was to ensue therein," forgetting, I presume, when he uttered these words, that he had written a book to prove that the wooden throne, as he calls it, preserved at Rome, is the undoubted original on which St. Peter undoubtedly sat, but which Mons. Denon, who uncovered it, says belonged to some dog of a Mahomedan, who has left on it the inscription in Cufic characters, "There is but one God, and Mahomet is his prophet." Supposing the relic to be a true one, we may, adopting the cardinal's line of argument, assume that Peter chose for his chair a material which would become worm-eaten and rotten, to show how in like manner those who would claim to sit in that chair, would soon become changed and "corrupted from the simplicity that is in Christ." But there is one point about this famous seat of which we may be perfectly sure, which is, that Peter never would have dreamed of calling it a throne, because it was an apostolic warning to all future presidents over Christian brethren, that they were not to be "lords over God's heritage;" and it is to the neglect of this warning we may trace all the changes in the original use and arrangement of churches, by which in the course of ages they ceased to be places of social worship, and became the palaces of priesthood.

Chrysostom ridicules the idea of a bishop being other than a fallible man, and justly observes, that, occupying a more prominent position than other men, their virtues were more useful as examples, and their vices more dangerous as provocatives to evil. Standing in this foremost rank, they were, in the days of persecution, the most conspicuous among the martyrs, and this naturally led to increased veneration for the office; a veneration which the bishops, who, in peaceful times, suc-

ceeded to that office, very naturally turned to their own account. The more fiercely the blasts of persecution had blown, the tighter had the gospel cloak been grasped, but the sun of court favour, shining so suddenly and intensely, caused many to cast aside their only protecting garment, and to take up lighter and gaudier vestures of pagan weaving. There is ample historical evidence to prove, that to accommodate the crowds of pagans who became nominal converts to Christianity, its pure ritual was corrupted by pagan additions. Surrounded by all the machinery of temple worship, breathing an atmosphere of priestcraft, and envious of the pomp surrounding the priests, and the immense influence they exercised over the people, the rulers of the Christian community were subjected to a perpetual temptation to materialise the spiritual nature of their religion; and as their longings for power could only be gratified by the institution of a material sacrifice, these aspirations soon gave a colouring to their language in speaking of the Lord's Supper; and an accumulation of false precedents was thus gradually formed, which led ultimately to a change as great in the views of the Church relating to it as in the arrangements of the material churches in which the rite was celebrated. A material priest, without a material sacrifice, was of course a transparent absurdity to the ancients. It was in fact a common reproach made by the heathen to the Christians, that these latter could have no religion as they had no altars, a reproach to which the Christians meekly replied, "*Delubra et aras non habemus*," altars and shrines we have none: and no vestige or resemblance to such things existed in their churches; and centuries elapsed ere the accommodation in the language of some of the fathers to pagan prejudices, or the whisperings of ambition, led to the practical change in the churches of wooden tables to stone altars.

There is no doubt that the corrupt and sensual practices of the laity rendered them worthy of being punished by deprivation of their rights for the time; but it so happened that these deprivations, once made, were never restored, and the clergy having got the sole power of making the law, invariably turned it to their own advantage. Thus on one pretence or the other, the people were deprived of the right of electing their clerical officers: after the bishops thought proper to leave their seats at the extreme end of the room, and to come forward into the church, the communion-table appears to have been placed behind the bishop, instead of as heretofore always before him, and as common seats became changed into gorgeous "*thrones*," the people were gradually shut out of the sight of this table, which ultimately became in fact a stone altar, as the fathers had gradually in their writings accustomed themselves theoretically to call it. But the old Basilican churches would not accommodate themselves very readily to these important changes, and the work which has been erected in them, to make the requisite alterations, has no connection with the old structures, forms no part of the ancient construction, and is nothing but a barefaced intrusion. In the countries, however, of new converts, remote from Rome, where no ancient architectural precedents existed to control the builders, their changed views of Christianity produced their natural effect, and the structures therefore erected from the tenth to the fifteenth centuries exhibit, in their plans, not in their styles, with which creeds never had any influence, the progressive development of popery. Even in the churches in this country, which are comparatively so modern, may be traced, the gradual rise of transubstantiation, by the increase in the length of chancels, in the addition to them of screens, which ultimately became, in the later churches, instead of being mere after-thoughts, part of the original construction, and in the invention of credence tables, squints, lychoscopes, hagiocopes, &c., through which the condescending priests graciously permitted the besotted laity to take squints at what was going on in the "holy sanctuary,—all features that had no existence in any "*ancient*" church, and are

very unaccountable omissions in them, if transubstantiation be true.

If your readers wish to see a specimen of the way in which the old Basilican churches have been altered to suit papal views, let them look at the plate given by Letarouilly, in his magnificent work, "*Les Edifices de Rome Moderne*," of the church of Santa Agnese, without the walls, and read the remark he incidentally makes relating to it, viz., that in some recent repairs, on scraping off the plastering, it was discovered that all the side chapels were "*ADDITIONS*." The plate shows this also; and it also shows that the old seat of the president still exists in it, as Cardinal Wiseman truly says, *but the seat is perfectly useless now*, for it is carefully shut out from view by the "*altar*," with its surrounding screens and the modern "*thrones*" in advance of these. Will Cardinal Wiseman dare to recommend at Rome the resumed use of these ancient seats, which Rome, unluckily for her, has "*preserved*," but never uses? I know he dare not do this, because if these ancient churches were occupied, as those who built them intended they should be, down go all the screens and up go the old rights of the people.

I am prepared to stake all I have in the world, my very existence, if need be, on this fact, that if any *really ancient church* can be produced, containing anything in it to favour those views in which Papists differ from us Protestants, then those portions will prove, on strict examination, to be *modern additions to the original construction*.

I said, that all the reformers were with me on this question: this is proved from the fact that they ordered all the screens and stone altars to be taken down, and that the communion should be celebrated on "*a moveable wooden table*," which was to be brought out of the chancel into the nave.

If Mr. Pugin feels disposed to contest these points with me, I will meet him at any time before the Institute: there are plates enough, I imagine, in the library there, of old churches, to enable me, by their aid, to map out for him the progressive steps of those corrupt changes in his church to which I have alluded.*

JOHN ELLIOTT.

NOTES IN THE PROVINCES.

THE new church of St. James, Woolthorpe, near Belvoir Castle, built chiefly by the Duke of Rutland, Lord John Manners, M.P., and other members of his grace's family, has been farther beautified by the recent insertion of several painted windows. Much, if not all, of the old English lettering, and one compartment of one of the principal windows has been done entirely by Lady Adeliza Norman.

—An earnest effort is being made to accomplish the same good work of restoration for the round church at Little Maplestead which has been effected for the like venerable relics of olden days at the Temple, and in Cambridge. The object is to be carried out by subscription, for which advertisements have been issued.

On Monday in last week the Norwich model school for boys was formally re-opened, the school-room having been greatly enlarged, so as to accommodate about 100 more boys. Improved arrangements for warming and ventilation have also been introduced. The enlarged room has a front in the Tudor style, from a design by Mr. Brown, architect. The building is 87 feet in length, 29 feet wide, and 23 feet in height from the floor to the roof. The classroom is 30 feet in length and 16 feet in width. There is now accommodation for 300.

Messrs. Lucas, brothers, having taken the contract for the Norwich Waterworks, they have been lately commenced, and shortly about 200 men will be employed on them. The plan and extent of the works are such, that when completed, the whole city and the hamlets will be supplied with water by its own pressure, and there may be a tap in every house and cottage with the water always on. Thus the foundation will be laid for other sanitary improvements. The works will be constructed so as to be adapted for the best system

* This matter is more theological than suits our pages. Any continuation of it must be confined to its architectural features.—Ed.

of drainage, and so that water may be made to flush sewers, if required, to cleanse the streets, to extinguish fires, &c.—The new church in the Ville of St. Gregory, Canterbury, is rapidly progressing towards completion, the whole edifice being roofed, the plastering finished, with the steps, and other parts of the interior. The arch which divides the chancel from the nave, on which the turret is built, is intended to contain three bells. The edifice is expected to be completed early in the summer.—The church and parsonage of St. Andrew, Buckland, by Dover, are being restored and altered under the superintendence of Mr. F. R. Wilson, architect. The church has a western triplet,—a peculiarity of which there are but few instances.—The committee at Fisherton Anger, for promoting the erection of a new church in the extensive suburb of Fisherton having proposed to erect a new church, a subscription was headed by the Bishop of Salisbury with 100*l.*, Dean and Chapter 80*l.*, and Mr. F. T. Egerton, 150*l.* The amount already subscribed is about 1,300*l.* This sum, however, will not be sufficient to pay the costs of erecting the church, viz., 3,000*l.*—The repairs and restorations in Wells Cathedral are fast progressing; additional workmen having lately been put to work. The Dean and Chapter have been examining the state of the sculptured statues in the west front, to ascertain if any of them are in an insecure state.—About 200*l.* more will complete the fund required for the erection of schools in St. Jude's district, Bristol, with the aid of the Privy Council and the National Society, conditional on the making up of the sum stated.—A numerous and influential meeting of the inhabitants of Clifton has been held to memorialize the Bristol town council for the establishment of a market in that parish. The committee of the Improvement Association have received an offer of an eligible site for 2,000*l.*, and plans have been received from some of the first architects in Bristol, engaging to procure contracts for the erection of their designs at a cost not exceeding 3,000*l.*—The corporation of Warrington have purchased the market-tolls from the lord of the manor, as a first step towards the erection of a covered market in the town.—Funds are being raised by the Rev. H. Marle to erect schools in All Saints' Parish, Liverpool. Mr. Edmund Molyneux has presented 100*l.* towards the undertaking.—St. Marie's Catholic church, erected about nine or ten years ago from designs by Mr. Pugin, says a Liverpool paper, is found, like all the other places of worship here, to be too small for the increasing population and growing importance of the town. It has therefore been decided upon that an immediate enlargement shall take place, and in order that the general style and character of the building shall be preserved, Mr. Pugin has been to Southport and prepared plans for the work. A liberal subscription has been made. The "old church" at Southport is undergoing repairs to the extent of nearly 10,000*l.*

—An enlargement of the Corn Exchange, in Brunswick-street, Liverpool, is now in progress, by the addition to the Exchange of the site of a large warehouse.—The Liverpool Health Committee have resolved to enlarge the corporation baths at the George's pier. Mr. Newlands, the borough engineer, designs to erect four distinct plunge baths—two for ladies and two for gentlemen—of the most capacious dimensions, besides private plunge and other baths, all to be supplied by salt water: by taking in a slip to the north of the baths, a supply of salt water will not only be got for the other corporation baths in different parts of the town, but for hotel keepers and private individuals also. The whole of this can be done at an expense, according to the estimate, of something less than 10,000*l.*—The chancel of St. Peter's Church, Derby, is about to be restored, under the superintendence of Mr. Gordon Place, of Nottingham, architect. The cost of the restoration will be about 250*l.*, already promised by private subscription.—Messrs. Weightman and Hadfield of Sheffield, architects, have been employed to plan and lay out the site for the erection of a Roman Catholic chapel, priest's

house, and school, near Oldcotes. Mr. E. Chaloner, of Goldthorpe, has given upwards of an acre and a half of land, and invested the sum of 4,000*l.* for these purposes.—An active canvass is about to be made for subscriptions at Bradford, for the public park lately projected there.—The following summary of cost and expenditure on the new workhouse at Oldham, certified by Messrs. Travis and Magnall, architects, has been presented to the local board of guardians:—

	£	s.	d.
1st.—Expenses incurred in preparing the land for building upon, viz.—Soil-stripping, removal of earth, temporary foundations required for the building, ventilating tubes, excavation, and draining..	812	6	4½
2nd.—Original contracts made on a base line, given on plan.....	9,960	12	0
3rd.—Extras on original contracts..	269	5	9½
4th.—Additional expenses in walling for foundations, incurred in consequence of the contracts being made from a base line	564	14	1½
5th.—Additional building, not included in the original contracts..	632	15	1½
6th.—Paving, flagging, water-tanks, and laying out the ground.....	459	9	9½
7th.—Half-measurement of contractors' work, architects' commission for plans and specifications, and clerk of the works' salary	905	19	0
Total cost.....	£13,305	2	2½

—The brick and stone-work of the Corn-exchange at Workop is nearing completion. A clock presented by the late Duke of Newcastle is to be fixed in front, the design being altered to accord with it.—The Earl of Zetland, Mrs. Newcomen, and other landowners, have granted leases of their Cleveland ironstone in the neighbourhood of Middlesbrough and Redcar. One proprietor, it is said, has refused 2,000*l.* per annum for his royalty.—Seabam and Stockton, according to the *Gatehead Observer*, have each a water company in course of formation, to supply the inhabitants. Stockton proposes to draw water from the Tees, near Yarm, and bring it along the Leeds and Thirsk Railway and the turnpike-road.

ADAPTATION OF DESIGNS TO SITUATION.

We must all see that the position and contingent circumstances of a case in every way affect a proposed design; but very few young architects attend to this; and that is the reason why so many of their works, though very good compositions in themselves, are nevertheless most unsatisfactory where erected. A student deeply imbued by travel in classic lands with the edifices erected there, brings home his sketch-book, and, attempting the same designs in this northern clime, is much chagrined to find that the effect is not the same as he expected, never taking into consideration national climate, materials, and habits. Again, another student is enamoured with the splendid specimens of Gothic or Christian art in our churches: he goes from village to village and from town to town, and in a short time has his mind full of their own individual beauties, but seldom if ever remembering their individual situation. He erects a church, in a town, with a stunted tower, perhaps a single spire, like what he had admired so much at such a village, and, when finished, he is much mortified to find that no one can see it except at the angle of the street in which it is placed. Few, very few, persons are at all competent to judge of the effect of a design from the drawings of the same; and in committees for the erection of new churches this is seldom ever thought of.

The best method which I have yet found of arriving at any thing like a satisfactory conclusion as to the effect of a design when erected, is to take a few general sketches of the locality, and introduce the structure in that proportion to them in which it will really appear; and, secondly, to make a card-board model of the erection to about one-eighth scale, drawing upon it all windows and other minor features.

C. WYATT ORFORD.

THE ARCHITECTURAL EXHIBITION FOR 1851.

A PUBLIC Exhibition, devoted to architecture, has now been for two years established, and on the latter occasion, met with a success greater in every respect than on the former: the promoters of the undertaking therefore look forward to the coming Exhibition with every confidence that this, the third effort, will stamp it with a character which it has not hitherto attained. The committee are desirous of calling the attention of their brother architects especially to the subject; for, to the previously admitted reasons for exertion, there is this year to be added, that, as London will be overflowing with visitors, it behoves the professors of the art to come forward and achieve for themselves that position to which they are entitled, and which they may readily challenge, if they will only do so with due spirit. The committee, therefore, appeal to the whole body of the profession for their active support, not only by contribution of drawings, but by subscriptions, which are this year particularly required, from the heavy expense which is unavoidably incurred in the rent of a gallery, on account of the unprecedented demand for Exhibition-rooms. According to the present arrangement, the Exhibition will be open for two months during the height of the season (the time and place will be duly advertised), and it is proposed that this year a charge for admission shall be made at the doors, instead of the free admission previously adopted. Intimation should be sent to Mr. Edmeston, jun., 5, Crown-court, Old Broad-street, or Mr. James Fergusson, the honorary secretaries.

INSTITUTE OF BRITISH ARCHITECTS.

An ordinary general meeting on Monday, the 24th ult. (Mr. Cockerell, V.P., in the chair) Mr. Ainslie was elected as associate, and various routine business transacted.*

A description of Abbey Dore Church and Monastery, in the Golden Valley, near Hereford, was read by Mr. Clayton, associate. The principal point of interest in the building is a series of gables at the east end, not restored. In the discussion which ensued,

Mr. Tite pointed to the distinctions between the Gothic architecture of England, France (especially Normandy), Germany, and Spain; as showing that, although the influence of the Freemasons (to which Mr. Clayton had alluded) produced a general similarity, yet that the architecture of each country had its distinguishing characteristics.

Mr. Fowler said the distinction of style might be carried much farther, inasmuch as the churches of different counties in England presented various, marked, and definite characteristics. He alluded to the respective features of the churches in Cornwall, Devonshire, Somersetshire, Lincolnshire, and Northamptonshire, all widely different from each other.

Mr. Fergusson believed that the different monastic orders adopted different styles of building; and that the Cistercian monks did not adopt the use of towers in their abbeys.† He referred to a continental church resembling in a striking manner that which was the subject of Mr. Clayton's paper, and which, like it, was a Cistercian abbey church.

Mr. Garling referred to some churches in Worcestershire, in which the aisle-windows were covered by gables, as were those of the Lady Chapel at Dore Abbey.

Mr. Ashpitel, on the authority of Whitaker, in his History of Whalley, confirmed the statement, that the Cistercians did not employ towers; or if any, very low ones; and said that, as at Furness Abbey, towers in churches of that order would be found to be comparatively modern additions. Mr. Clayton's view of the original form of the east-end of Dore Abbey Church presented such unusual features, with respect to the dormers and the con-

sequently large shed-roof above them, that he was rather disposed to doubt its accuracy.

Mr. Clayton explained that the groining of the Lady Chapel prevented the possibility of any other mode of construction than that shown in his drawings.

The Chairman thought the five gables at the east end of this interesting church might, in a symbolical age, have been meant as an emblem of the crown of thorns. The employment of different styles by different orders of monks was a very curious point; and he would add to what Mr. Fergusson had said on that subject, by observing that the churches and chapels raised by the Dominicans and Franciscans, who were preaching friars, appeared to him to furnish much better models for Protestant churches than the ordinary form of nave, choir, and aisles, now indiscriminately adopted. The provincial differences alluded to were very remarkable, and even in the present day local feelings were necessarily studied by architects, as the meeting well knew. If a house or a church was to be built, the architect was generally invited to examine the best buildings in the neighbourhood; and, generally speaking, people only wished their house to be a little larger, or their church a little handsomer, than their neighbours'; but not in any essential point different.

Mr. Scoles thought the nature of the building materials most readily available had in many cases influenced the local peculiarities adverted to. Thus the abundance of flint in Norfolk and Suffolk had given a distinctive and picturesque character to the churches of these counties.

Mr. Ashpitel, with reference to the introduction of pointed architecture simultaneously in so many parts of Europe (which had been referred to by Mr. Clayton), could not entertain a doubt that it was introduced by the crusaders on their return from the East. There were pointed arches erected at Damascus 200 years before they were known here.

The Chairman expressed a similar opinion, and cited Sir C. Wren's dictum, that "this kind of architecture came from the Arabs."

Mr. Fergusson took the same view, and referred to pointed arches in Christian churches in Egypt, confessedly erected there before the Mahomedan conquest of that country in the seventh century. He added that he believed he had clearly traced the origin of that extraordinary and apparently unique structure, Roslin Abbey, Scotland, to Bourgos, in Spain; in the cathedral of which city, and other churches near its general style, together with all its details and mouldings, was plainly visible.

The meeting adjourned.

EDINBURGH.

YET another "pauper palace" is to be erected here, from funds left by the late Sir Wm. Fettes for that purpose. Rumour says it is to rival Donaldson's Hospital in magnificence, and that the plans are to be prepared by the same architect (Mr. Playfair). It is to be hoped he will choose a purer style for this than he has used in that structure.

The Scottish Academy Exhibition has just been opened. There is a considerable increase in the number of architectural designs above last year. None of them are particularly worthy of note, excepting the view of the Mausoleum now erecting at Hamilton Palace, described at page 50 of the current volume of *THE BUILDER*; and a design for places of public amusement on the Calton-hill, which would form a fine finish to the summit of the hill, in place of the present unsightly magnified telescope that occupies that site.

Villas seem to be getting greatly into favour here: a whole street of them has been built at Greenhill, and forms one of the most incongruous mixtures that can be conceived. They are of all styles and sizes; and though some of them are pretty enough in design, their effect is marred by their neighbours. Unity of style should have been attended to.

A similar incongruity is caused by the want of conformity between the Free Church College and the Royal Institution. This, I conceive,

* At the previous meeting, February 10th, Mr. Alfred Smith was elected Fellow; and Messrs. J. M. Macleure, E. H. Martineau, and T. Harris, Associates.

† This was treated of in *THE BUILDER* some time since by Mr. Sharpe.

will be more apparent when the National Gallery is built. I can never look at the College in question without regretting that the design was not Grecian. A portico, however plain, would have suited the site and adjacent buildings much better than the present tame inelegant Elizabethan towers. We find that the Greeks invariably chose a height for their temples, and the site is one of the best in town for a building of that description. Want of elevation mars the effect of some of our best classical designs.

Mr. Park is exhibiting his colossal statue of Wallace: he is represented nude: his right hand rests on the great sword of the period, his left clutching the mane of the lion of Scotland, which, though greatly irritated, is amenable to control: at his back hangs the round Scottish shield, to be used, as its motto bears, "in defence;" he is crowned with a profusion of laurel. The countenance, expressing self-confidence and disdain for his enemies, is fine; but it appears to me that the muscles of the body are hardly enough developed, and that the legs of the warrior are rather short to be handsome. The work, as a whole, is a fine piece of imaginative sculpture. It is as yet only in plaster; and should it be executed in a more durable material, the sculptor will, no doubt, improve upon it. We hope to see it some day adorning one of the public gardens of our city. DUN-EDIN.

Books.

Hand-Book for Visitors to Harrow-on-the-Hill, with a Directory, &c. Edited by T. SMITH. Wright, Pall-mall.

It is rather singular that till now no separate book devoted to the history and topography of a place so celebrated as Harrow, should have been published. One would have thought that even as a labour of love, and a source of pleasant memories, some of the minor ornaments of its far-famed school at least would have executed long ere now so refreshing a task. We know not whether the present editor be a Harrovian; but if not, those who were or are, and indeed the public in general, are only the more indebted to him for the gift, which we doubt not will also be prized and made good use of by many of the forthcoming foreign visitors at Britannia's grand industrial levee.

Murray's Modern Cookery Book; based on the well known work of Mrs. Rundell, but with all recent improvements, and founded on economical principles and practice, for private families. By a LADY. Murray, Albemarle-street, 1851.

PROFESSING, as we do, to deal with the homes of all, and sensible, moreover, that an essential part of the constructive skill and ability even of architects and builders, consists in laying in a periodical stock of substantial materials in order faithfully to carry out the physical design of the great architect, as displayed in their own temporal construction, it is quite within our comprehensive province to recommend a good cookery-book, and such this will really be found. It is full of sage instruction and advice, not only on the economical and savoury preparation of gastronomic materials, but on subjects of domestic management in general. A more quiet and excellent way to introduce order and economy along with the legitimate pleasures of the domestic meal into all such establishments as may require these essentials, we could not suggest than simply to hand this little work over to the mistress of the house. In turning it over, she would sometimes hit upon what was not sought for, even though very much required. And salutary advice so incidentally and suddenly presented is often far more effectual than when more formally given. The study of it might not be useless to some of the damsels whom we have mentioned elsewhere as filling the Society of Arts last week. It is a pity, as the sensible authoress of this useful work remarks, that "young ladies of our time pride themselves upon knowing nothing whatever concerning those duties which most assuredly ought to be

deemed essential in the mistress of a family and taught as a branch of education." And the head of the family himself has more to do with his helpmate's abilities in this respect than merely in an epicurean sense, for "perhaps there are few occasions on which the respectability of a man is more immediately felt than in the style of dinner to which he may accidentally bring home a visitor," and an appropriate style is not to be attained with mere money or expenditure, but much more effectually by economy with skill. Not alone however by those who need this advice—the "baby-wives"—the few, but by those who can and do manage a house with honour and elegance—the many,—this book will be found a very useful reference.

Building Societies' Directory.

A DIRECTORY and Almanack for 1851; with a Diary of Dates of Subscription, and a Directory of Life Offices, has just been issued by Edingham Wilson, of the Royal Exchange, for the use of all interested in Building Societies. It is an improvement on the last, and must be very useful to those for whose convenience it is designed.

Miscellanea.

ELECTRO-TELEGRAPHIC.—The old company are still pursuing the monopolistic system, it appears, as Mr. Ricardo, the chairman, acknowledged, under cross-examination before the Privy Council, on the recent refusal of the latter to renew their first patent, that he is "making exertions to secure a monopoly on the London and North-Western Railway, to continue for a term of twenty years." There is a shade rather too strong of the overreaching policy in such an attempt to throw the new company on its beam-ends. Crooked tactics such as this are by no means likely to meet with public patronage or approval, however knowing and masterly they may be in their own peculiar style of business. It was elicited in the same cross-examination of the chairman that he could not account for the fact of the price of messages being lower in America than here: in other words, that he could give no reason or apology for his own company's high charges.

THE DERBY WATER SUPPLY.—When the surgeon fails we apply to the physician. To carry out the parallel, when the local press fails we must fly to "THE BUILDER," and glad I am to see that it is usually effectual. Mr. Hawkesley states in your last week's Journal, that the information relative to the Derby Waterworks Company, given in a former paper, was incorrect. Without wishing to open a controversy, I may be allowed to demur to this. Three weeks since an application was made to the company's office for a schedule of prices by a landlord who wished to lay their water on to several houses. No inquiry was made by the official as to rent of houses, but 16s. at once stated as the terms for a tap for domestic purposes, and 1s. 6d. per quarter additional for a water-closet. The charge being thought monstrous, no further notice was taken of it. Some builders, however, afterwards complained of the same during a conversation with this party, and predicted speedy failure of the company, unless houses of the labouring classes were enabled to partake freely of its advantages by charges which they could well meet. Letters appeared in the local papers (since the above occurrence) respecting the hardship to that class who most required the water; and at a meeting of the Derby town council, the subject was also mentioned. No notice being taken of these letters and murmurings, either by the company or their engineer, your reporter mentioned the bare fact in a corner of your Journal, when he was much gratified to behold so speedy and satisfactory a reply. While, however, he thanks Mr. H. for the information, we can assure him that it is news to the Derby folks, who were profoundly ignorant of such an arrangement as this being either in existence or contemplation.

YOUR REPORTER.

LIVERPOOL ARCHITECTURAL SOCIETY.—At the usual fortnightly meeting of this society, held on the 19th ult., Mr. Arthur Holme occupied the chair. A short conversation took place on the subject of desiccating timber. It was suggested that a portion of the time at the next meeting should be devoted to considering the proper situation for the organ in St. George's-hall. Mr. H. P. Horner adverted to a competition going forward amongst the profession for a design for the proposed Palatine Club, and deprecated the suggestion for the use of stucco in the place of brick or stone. Mr. Boulton, in reference to the same subject, expressed himself very strongly against the encouragement of competition such as that alluded to. It was, in his opinion, calculated to degrade the profession, whose services were obtained, by that means, at one-third their proper value. A discussion next took place relative to the durability of Bath stone in buildings. Mr. H. Deacon, of St. Helens, read a paper on the "Manufacture of Blown Glass." Alluding to the works at St. Helens, he said that between 800 and 900 workpeople were employed there, and they had a school for the education of the boys, attended by 117 pupils.

MANCHESTER FREE LIBRARY AND MUSEUM.—The building committee having discussed the plans and estimates for alterations in the building to be adapted to the purposes of the library and museum, and addressed the general committee in a resolution,—"That notwithstanding the large amount required to complete the building, the sub-committee, after due consideration, recommend that the plans now submitted be adopted, and that no time be lost in carrying out the design in its fullest integrity,"—the general committee have ordered that specifications and working drawings be prepared as soon as possible, and that tenders be requested from a limited number of builders. The subscriptions have already reached to upwards of 8,000*l.*; and at one meeting only of the general committee, no less than 181 volumes were presented, many of them in small parcels by working men—joiners and others.

BEVERLEY MECHANICS' INSTITUTE.—On Tuesday in last week, Mr. John Leng, of Hull, read a paper entitled "The history of Beverley Minster, and the desirableness of completing the central tower," in course of which it was stated that the estates vested in the hands of trustees for repair of the fabric and payment of stipends, now produced, after payment of stipends, repairs of estates, and other expenses, about 700*l.* a year net, and that there was an accumulated fund at this moment amounting to about 3,000*l.* At present that sum lay useless and unseen in the cellars of the Bank of England, and why (asked the lecturer) should it not assume a form of enduring beauty in the completion of that sacred edifice for the benefit of which it was bequeathed? There was a strong probability that the Court of Chancery might be disposed to make the present accumulated fund available for the purpose of completing the central tower.

TESTIMONIAL BY THE ROYAL SCOTTISH ACADEMY.—It is stated that the President and members of the Royal Scottish Academy have resolved to request the Lord Provost of Edinburgh to sit for a full-length portrait of his lordship, as an acknowledgment of his services in promoting the erection of the National Gallery on the Mound. The execution of the work has been committed to Sir John Watson Gordon, R.A. The portrait is to occupy a conspicuous place in the new gallery of the Academy.

THE SMITHFIELD-MARKET REMOVAL BILL.—On Saturday the Bill brought into the House of Commons by the Government for the removal of Smithfield-market was printed. The preamble states, "Whereas for preventing the evils attendant on the holding of the market now held in Smithfield, it is desirable that in lieu thereof a more spacious cattle-market, with a meat-market and conveniences connected therewith, should be provided in a suitable place more distant from the centre of the metropolis." There are 37 clauses in the Bill.

LIGHT AS A LOCOMOTIVE POWER!—The Academy of Sciences have been assured by M. Recamier that, in consequence of certain experiments detailed to the Academy, he has been led to conclude that light is capable of being employed as a locomotive power. This would beat steam and electricity hollow, as a contemporary remarks. Only think of "riding on a sunbeam,"—the "fine phrenzy" of the rolling-eyed poet a sober matter of fact! Why M. Recamier should also conclude, as he does, that light is "a physical substance," no less than a physical force, we cannot see. That it is something more than a mere vibration or oscillation—that it is, at all events, a radiative force—operative in "physical substance," may be admitted; but it is too late now, we fear, to retrograde to the idea of material particles. It does not appear very clearly whether M. Recamier means the true ray of light, nowever, or light proper apart from its adjuncts.

EXHIBITION OF GAS APPARATUS.—In consequence of the determination "that no gas apparatus in practical operation can be shown at the great Exhibition, arrangements have been made by the Gas Fitters Association that an important portion of the Polytechnic Institution of London shall be set apart (for six months at least) for the exposition in full operation of any apparatus embracing a novel application of gas, either for culinary, heating, chemical, or manufacturing purposes, and for the illustration of improvements in burners, lighting, ventilation, &c. They have invited manufacturers from all parts to send apparatus consistent with this object. To induce a proper response from inventors, the association must show their determination to prevent this contemplated exhibition from being made the means of puffing one man's inventions and abusing another's.

SOMERSETSHIRE ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—The third *conversazione* of the Somersetshire Archeological Society was held at Taunton on Feb. 17. The Rev. F. Warre commenced by giving a description of female costume—as regards head-dress—from the early ages down to the present period. The Rev. F. B. Portman read some communications, which had been received by the society from Mr. Albert Way, relating to the discovery of some gold ring ornaments found in Dorsetshire, of great antiquity. There were many interesting exhibitions. Among them was a remarkable specimen of wood carving, by a labouring man named Halliday, living at Chilton Polden. The subject is "The Canterbury Pilgrims," after Stothard's picture. It is carved out of the solid block—oak. He has been a turnpike man, and has never seen the practice of wood carving.

LIABILITY OF DISTRICT CHURCHWARDENS FOR PAVING-RATES.—On the 18th ult., at Worship-street, Mr. Arnold pronounced judgment in a case of considerable importance to congregations attending the numerous district churches and chapels erected under the provisions of the Church Building Act. The case arose out of a summons by the commissioners of paving for the parish of St. Luke against Messrs. Sowter and Rydon, churchwardens of the district church of St. Matthew, City-road, for the recovery of 16l. 17s. 9d., arrears of rates alleged to be due by them in respect of that edifice. The magistrate's decision in the case was to the effect that the liability to pay such rates is clearly cast upon the defendants as the existing churchwardens under the Act 6 & 7 Vict. cap. 37, sec. 17, which empowers them in such capacity to do all things pertaining to that office in relation to ecclesiastical matters.

THE NEW RECORD OFFICE.—Tenders have been received for "the new Record Repository," Rolls Buildings, Chancery Lane; and we understand that the offer by Messrs. Lee and Son was the lowest. The amount is a little under 35,000l. Mr. Penethorne is the architect.

THE FIRE NEAR LONDON BRIDGE.—We intended to allude to the circumstances of the destructive fire in Alderman Humphrey's immense warehouse last week; but as there are two or three points requiring more notice than the state of our columns will this week admit of, we must defer mention of it.

ST. GEORGE'S HALL, LIVERPOOL.—It is now said that this noble edifice will in all probability not be opened to the public even in the autumn of the present year. Mr. Holmes, one of the committee, attributes the delay to Dr. Reid's "enormous ventilating and warming arrangements." This, in a letter to the *Liverpool Times*, Dr. Reid explicitly denies.

HALTING PLACES.—A "District Surveyor" points attention to the intolerable evil of a want of conveniences for jurymen at the various courts of law, and, indeed, to the want of them generally attached to public buildings, such as the British Museum, churches, and other places of public meeting, to all of which they might be provided in a way perfectly unobjectionable. Another correspondent, a surgeon, recommends the substitution of glass where slate or stone is now used, the glass not retaining or lodging moisture as even slate does, and being hence more wholesome and cleanly.

THE WINDOW AND HOUSE TAX.—On 19th ult. a very numerously attended and highly respectable meeting of the inhabitants of Marylebone was held, at which six of the metropolitan members of Parliament attended, when resolutions, condemnatory of the late Chancellor of the Exchequer's project for the nominal abolition of the window-tax, were unanimously passed, amidst the strongest expressions of indignation and dissatisfaction. As the Chancellor has since resigned, along with his colleagues, it may be useless to enter at any length at this moment on the questions at issue; and although other meetings were called before the announcement was made that the Government had resigned, it is probable that the latter circumstance will have checked the wide expression of displeasure that exists and would otherwise have been publicly manifested throughout the country.

CAMBRIDGE ARCHITECTURAL SOCIETY.—The second general meeting of the Cambridge Architectural Society for this term was held on 20th ult. the Rev. T. S. Woollaston in the chair. The Hon. R. H. Clive, M.P., was unanimously elected an honorary member, and the Rev. J. T. Beresford, Precentor of Peterborough, Rev. E. Brumell, St. John's, Rev. J. T. Walters, St. John's, and Mr. C. Robinson, Trinity College, as ordinary members. Mr. Denton, of St. John's, curator, called attention to a brass at Wood Ditton Church. A paper on rebuses followed, by Mr. Deck, corresponding secretary of the Oxford Architectural Society.

LABOURERS' COTTAGES.—Mr. Frederick Pollock, a nephew of the Chief Baron, has published a pamphlet, entitled "An Essay and Design for the best and most economical method of building a pair of Labourer's Cottages." Without porches and gutters (the omission would be very undesirable) he makes the cost for the pair 130l. Mr. Pollock gives three bed rooms, and considers it a merit that one of them (for the girls) can only be entered through the parents' room. With a possible advantage in special cases, this arrangement, as a general rule, is decidedly objectionable. The writer properly insists on the importance of providing an oven. Thanks are due to Mr. Pollock for his advocacy of a crying want.

A BARN OF GLASS.—We understand that Mr. N. Tuckett intends to cover a large barn, 110 feet long, and 28 feet wide, on his farm at Hevittree, with glass. The corn can be placed in the barn immediately upon being reaped, where it will have the benefit of the sun when it shines, be protected from the showers, and also dried by artificial heat, if required, and then stacked in ricks under a covered stack-yard.

DARLINGTON SURVEY AND LEVELS UNDER THE PUBLIC HEALTH ACT.—A correspondent says, there were nearly fifty tenders sent in for the work, from various parts of the kingdom, varying in amount from 1,270l. to 55l. The committee decided upon giving it to Messrs. Hebert and Fawcett, civil engineers, of Northallerton and Darlington, for 200l., as they considered the party tendering at 55l. could not execute the work for so low a sum. We should think so, too!

* 1851. Wright, Haymarket, London.

INSTITUTION OF CIVIL ENGINEERS.—On February 11th and 18th the discussion on Mr. A. V. Newton's paper, "An Inquiry into the Nature of Patent Law Protection, with a view to the better appreciation and security of the Rights of Inventors," was renewed, and was continued throughout both evenings.

STATUETTES FOR THE ART-UNION OF LONDON.—Thirty-nine statuettes have been received by the Art-Union of London in reply to their offered premiums. Two of these arrived after the day fixed for receiving them; and one, a remarkably fine work, is inadmissible, being beyond stipulated size.

SCENERY AT DRURY-LANE THEATRE.—We fully agree with two or three correspondents, that Mr. Anderson has redeemed his character by the manner in which the new spectacle of "Azael" is produced. The scenery of the second act, at Memphis, is extremely good, the procession of the worshippers correct, and the disposition of the characters at their orgies in the temple of Isis (beautifully polychromed) well and gorgeously arranged.

IRON AND GLASS BUILDING IN BELFAST.—It is proposed to erect on Queen's Island a small model of the Hyde-park Building for holding all bazaars, fancy fairs, floral and pictorial exhibitions, &c. Mr. John Boyd is the architect, who, at the request of the gentlemen with whom the project originated, has furnished them with a plan of the structure and an estimate of its expense.

SUBSOIL DRAINAGE.—With reference to this subject, our attention has been pointed to a drain and subsoil pipe made some time ago by Mr. Crole, of Lambeth. A small perforated pipe to take the subsoil drainage is affixed to the top of the drain-pipe.

INTRAMURAL INTERMENT.—In reply to a question asked in the Commons by Sir D. L. Evans, Lord Seymour said that the Board of Health had made every effort to bring the new Act as speedily as possible into effect, and he hoped before long it would be in active operation.

THREATENING EMPLOYERS.—St. Clair, who, with fifty others, struck work at the Exhibition Building, and was alleged to have threatened Mr. Fox, has been committed to prison by the Middlesex Sessions, his appeal against the magistrate's decision having been disallowed. The court was crowded with workpeople.

IRISH IRON FOR ENGLISH MARKETS.—The large castings for the great bridge to be thrown over the Wye at Chepstow, for the South Wales Railway, are being executed in Dublin by the Irish Engineering Company, who have also lately made all the castings required by the Brighton Railway Company for their passenger terminus at London-bridge.

WIDE ESTIMATING.—Do pray insert the following tenders delivered on the 13th ult. for new shop-front and repairs of a house at Brentwood. Mr. T. Bray, architect. "May the difference of opinion never divide friendship."

Curtis	£664	0	0
Winter	500	0	0
Hammond	416	0	0
White	410	0	0
Wilder and Tanner	389	10	0

No tender was accepted, as the lowest exceeded the supposed amount.—A SUB.

TENDERS.

Tenders for Public House for Messrs. Young and Bainbridge, Wandsworth-common, Mr. G. A. Young, architect. Quantities furnished.

Lost	£1,480
Meyers	1,197
Brown	1,173
Hayward and Nixon	1,127
Locke and Nesham	1,085
Nicholson and Son	1,078

Tenders for Horbury Chapel Schools. Mr. Tarring, architect.

	ESTIMATE.	No. 1.	No. 2.
Brass and Son	£1,414	.....	£2,005
Chamberlain	1,354	.....	892
Myers	1,298	.....	641
J. Higgle	1,282	.....	613
Haynes	1,283	.....	870
Holland	1,245	.....	879
Locke and Nesham	1,239	.....	583
W. Higgs	1,195	.....	580
Piper	1,188	.....	564
Hopkins and Roberts	1,135	.....	540

TO CORRESPONDENTS.

Army and Navy Club-house.—We have some particulars of the new building in type, but having determined on illustrating the principal apartment of the club, withhold the description for that occasion.

"Mon. V." Brussels (the numbers, unfortunately, cannot be had). "W. F." (gutta serena, found very durable. In the case in question, comparative cost would have to be considered also). "W. A." (will our correspondent send us the particulars?). "S. B." (very expensive). "H. T." (the number of superficial feet could be learnt from the plan we published). "J. S. H." (the paper shall have full consideration). "W. J." "J. J." "A. S. B." "E. B." (we are unable to say). "C. D." "T. B. L." "G. H. W." "H. L." "G. R. B." "The Registrar-General." "C. J. N." (thanks for good intention). "Justice." "Playgoer." "C. J. B." (he must look to what we have published on the subject from time to time. We cannot reply specially). "W. P." "H. and M. D. G." (thanks). "E. R." "Quoniam" (forced to postpone). "K. and P." "E. B. B." "A. B." (not received). "W. A." "Plane Trigonometry." By G. W. Hemming, M.A. London: Taylor and Walton, 1851. "The Desert Isle, and other Poems." By H. T. Brathwaite. London: Pickering. "Hints on House Property." By F. Cross. 3rd edit.

Several communications are unavoidably postponed through press of matter.

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editor, and not to the Publisher.

ADVERTISEMENT.

TO CARPENTERS, BUILDERS, &c.

THE Friends of a Youth are desirous of an Apprenticeship when he may learn the full routine of the above business as IN-DOOR APPRENTICE. A moderate premium only can be given. Address, stating particulars, to Mr. H. CLARK, Devon, Hayter Ward, Northampton, London. The country preferred.

WANTED, a respectable Youth in a Building office. He must write a good hand, and be of industrious habits. Apply by letter in own handwriting—Direct A. B., 12, Charter-street, Middlesex-hospital.

TO HOUSE PAINTERS

WANTED, a working FOREMAN, who can draw, paint, and write, and is competent to manage and take work, and keep workmen's accounts. Apply to Mr. UNWIN, Poland-street, Oxford-street.

TO WORKING FOREMEN OF CARPENTERS AND JOINERS.

WANTED, in the Country, an experienced FOREMAN. One that has been used to Church Work, especially to Frame and Moulded Gothic Roofing, will be preferred. Address to Z. Office of "The Builder," 1, York-street, Covent-garden, Strand, &c. and references.

TO BUILDERS' CLERKS

WANTED, a respectable Person as BOOK-KEEPER, and who is generally conversant with the routine of a Builder's office. One who has a knowledge of drawing and estimate could be preferred. Address by letter only, stating full particulars to Messrs SANDAIS and WOOLCOTT, Builders, 11, South-street, Gray's-inn-road.

TO CIVIL ENGINEERS, CONTRACTORS, AND BUILDERS.

WANTED, by a respectable Person, who wishes to make himself thoroughly useful, a SITUATION as GENERAL PRINTER, or Inspector of Works. He has had seven years' experience in railway works, five years of which he has enjoyed superintending the execution of works and afterwards in managing them. A Builder by trade. Satisfactory references as to competence and trustworthiness can be given. Address, H. B. Jackson, &c. and references.

TO BUILDERS, PLUMBERS, &c.

WANTS a SITUATION, a Young Man, in the above business well experienced. Wages not so much an object as a permanent situation. Has excellent testimonials from his late employers. Address, J. H. B., Queen street, Brighton, London.

WANTED, a Situation as AGENT or of the THREE BRIGHS, by a Young Man, who thoroughly understands his business. To object to the country—Direct J. N. C., 35, Newmarket street, Edgware road, London.

TO PLUMBERS, BUILDERS, &c.

WANTED, a SITUATION as PLUMBER, or THREE-BRANCH HAND, by a Man who is fully competent; has been accustomed to Town work, and is of the country. Can have four years' testimonial from his present employer. Address, O. S. T., Green-street, Grosvenor-square.

TO NOBLES AND OWNERS OF ESTATES.

WANTED, a Situation as AGENT, to improve old and erect new Farm Buildings, Cottages, &c. The Advertiser, 40 years of age, has had good practical experience in the management of buildings, and is well acquainted with measuring, valuing, estimating, and keeping accounts. Address, W. M. Port-oh, Stamford, Lincolnshire.

TO ARCHITECTS, ENGINEERS, &c.

WANTED, a SITUATION as PRINCIPAL MANAGER to an ARCHITECT in town, with an arrangement for future partnership. The arrangement is served London, with architects of distinction, as manager, and has executed works of popularity in Lancashire, both public and private circles; has an excellent connection which can be retained for the advantage of the business; and is also the author of a popular architectural work. The most numerous and highest commendations can be forwarded in communication. The talent and energy of the advertiser being to secure the advantages of the public and societies of London. Private communications addressed to A. B. C., 3 Old Hall-street, Liverpool, including name and address where an interview and satisfactory arrangements can then be entered into.

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A YOUNG MAN, who has served several years to a builder, wishes for a SITUATION to improve himself, where not particular. Address, A. J. B., 25, Market-street, Westminster.

A YOUNG MAN, aged 22, who served his articles in an architect's office, has been employed on many public appointments in London, and has since been, and is now, engaged in making detail and working drawings for, and measuring out on the buildings, under the plan of a parallel wall, clock of the works, wishes for an ENGAGEMENT with an Architect or Builder in large practice. He is a good practical and finished draughtsman, and understands the usual routine of his business. Respectable reference, if required. Address, C. S., No. 3, Poultry-terrace, Vauxhall-bridge-road.

LIGHTERAGE.—To Saw-Mill Proprietors, Timber, Stone, and Stone Merchants, or others, requiring Lighters. The Advertiser, 40 years of age, has been employed in undertaking LIGHTERAGE at prices that defy competition. Address, CHARLES STUART, 34, Commercial-road, Lambeth.

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REDUCED PRICES.—EDWARD SIMMS, late William Claret, of Wilton Road, Pimlico Basin, begs to acquaint Builders and the Trade that he has now on hand, a large assortment of Dry and Well-seasoned OAK and DEAL, PINE, PLYED FLOORING BOARDS and MATCH BOARDING, of all sorts from 1 inch to 12 inches, in the place of a parallel wall, and thickness, and at greatly reduced prices. Also, Timber, Oak, Pine, Sashboards, Sash Sills, &c., prepared by Machinery, Lathes, &c. Apply to E. SIMMS, late W. Claret's, Flooring Manufactory, Wilton-road, Pimlico Basin.

FLOORING.—ALFRED ROSLING begs to inform his customers and the trade generally, that he has now materials, REDUCED THE PRICES OF DRY FLOOR BOARDING, of which he has in stock an extensive assortment. To purchasers of a quantity of freshly prepared boards A. R. is able to offer a great reduction, in order to secure prices, and to effect a saving in the cost of the goods. Mouldings in great variety, and prepared in a very superior manner. South-west-bridge Wharf, Rotherhithe, October, 1850.

THOMAS ADAMS begs to return his best thanks to his customers for the very liberal patronage, and also to inform the trade generally, that he has now in stock, and is prepared to supply, a quantity of freshly prepared boards A. R. is able to offer a great reduction, in order to secure prices, and to effect a saving in the cost of the goods. Mouldings in great variety, and prepared in a very superior manner. South-west-bridge Wharf, Rotherhithe, October, 1850.

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The Builder.

No. CCCCXII.

SATURDAY, MARCH 8, 1851.



HE avidity with which knowledge of past and hidden things is sought for, the extraordinary skill that is shown in the pursuit, and the success which has attended the endeavours, are striking characteristics of the present time. An isolated observation is made; other facts are added; and a theory of a whole is deduced in rapid succession. A bone is found, and the animal is re-created to the sight; a sculptured stone and a few foundations are dug up, and the history of a nation takes a form and completeness which, on the first scanty premises, it would have seemed weakness to expect. One of the most striking instances that can be mentioned of the power of the moderns in this respect is the mastery that has been effected of the arrow-headed inscriptions of Assyrian nations, an interesting account of which is given by Mr. Fergusson in his new work on the palaces of Nineveh and Persepolis,*—a work to which we warmly recommend the attention of our readers.

Looking at these markings, so similar in form, apparently no clue remaining, interpretation might have seemed impossible, and it would probably puzzle most readers to devise even a first step towards the removal of the mystery in which they were shrouded. To describe the process, which led to what may well be considered a triumph of modern science over difficulties, would occupy more space than we can give; but we will indicate roughly the course that was taken. Professor Grotefend gave the key: M. Burnouf, Professor Lassen, and Major Rawlinson opened the lock. Grotefend took, for analysis, two short inscriptions at Persepolis, and found that they were identical in form; that one word occurred three or four times over in each (which was therefore assumed to be a title), and was led by this and other minute facts to the conclusion that it was a genealogy that had been recorded, to the extent of father and son. He next proceeded to try to find to whom these names belonged; and, having arrived at the conclusion that Persepolis was the work of the Achaemenian dynasty, he tried their names in succession. Cyrus and Cambyzes would not fit, for none of the three names began with the same letter. Cyrus and Artaxerxes were equally inapplicable, as the names in the inscription were nearly of the same length, while one of these was twice as long as the other. He then tried the right ones, and they fitted as nearly as could be expected. He next proceeded to prove that they were the correct ones, by testing the position of the several duplicate letters which occurred in the three names, and ultimately produced such a result as left no doubt in the minds of candid inquirers that he was correct. The further steps we cannot afford space to trace: suffice it to say, there is now not a paragraph in all the inscriptions whose meaning can be considered doubtful.

* The Palaces of Nineveh and Persepolis Restored: an Essay on ancient Assyrian and Persian Architecture. By James Fergusson, author of 'The True Principles of Beauty in Art.' London: Murray, 1851.

Mr. Fergusson's book, which has led us to these remarks, is another instance of the fact we asserted at starting. A few sculptured slabs and winged bulls are discovered at Nineveh and Khorsabad, and straightway appears before us the buildings which they composed, perfect and complete. Mr. Fergusson, by his travels and studies, was well qualified for the task, and has performed it very efficiently.

In the first part of his work he describes at some length the buildings of Persepolis,—"The richest of cities under the sun,"—which, although long posterior to those on the site of Layard's researches, he considers of the same type. In the second part he describes and reconstructs the buildings of Nimroud and Khorsabad.

We are contented to suppose that the oldest Assyrian buildings yet discovered, the north-west and central palaces at Nimroud, are contemporary with Abraham, and date about 21 or 22 centuries before our era.* The date of the Persepolitan buildings is many centuries after this. The final destruction of Nineveh took place about the year 600 before Christ. The Great winged Bulls now standing dignified, almost sublime, in the hall of the British Museum, have been covered up till now, and are brought to us whole and unharmed, to verify written history, to enable us to realise and people the past, and to correct the vain-glorious feelings of the present. Look at them, good reader, with the *mind* as well as the eye when you next visit our national repository of monuments. Rome was not founded till centuries after these were worked.

The buildings at Khorsabad, exhumed by M. Botta, on the part of the French Government, are dated by Mr. Fergusson about 1300 years before our era. The specimens brought to Paris, although of the same type as those sent to us from Nimroud by Mr. Layard, show much less power than the earlier works in our possession. In Persepolis our author considers we have the skeleton of a complete system of Eastern architecture,—we have the pillars, the doorways, and windows, but not the walls or roofs. In the Assyrian palaces, on the contrary, we have the walls and their ornaments, but the pillars and windows are wanting; and, by putting the two together, he is able to render both intelligible. Khorsabad offers greater facilities for restoration than Nimroud, and we will take his illustrations of the palace at the former place to elucidate his views.† Fig. 1 is a restoration of the northern angle of the palace-court. Fig. 2 is a section of the principal rooms.

The walls, it will be seen, were exceedingly thick, 16 feet 6 inches, one; 21 feet another, and Mr. Fergusson's main point is this,—that these walls were carried up only a certain height, say 18 or 19 feet, and then that on the top of the wall were placed two rows of dwarf wooden pillars, one on the inner, the other on the outer edge of the wall, which supported a flat terrace roof, composed of mud, and plastered on the top. The larger halls, probably, had pillars down the centre, to help to support the roof; and the central hall, he thinks, must have had a roof higher than the rest, perhaps trusted to a certain extent, as shown in the section. The tops of the walls, paved with

tiles, or floored with wood, had low parapets, and formed a series of upper chambers. By this arrangement, light was admitted to the great halls (tempered by curtains), while both rain and the rays of the sun would be excluded. The theory is very strongly supported, and accounts for the most striking peculiarities of these palaces. The winged lions formed the entrances, and the sculptured slabs, of which so many were found, lined the walls. Above the slabs, the walls were coated with tiles, and specimens of these are to be found in the British Museum. The buildings at Persepolis were probably covered in the same way.

"To a person accustomed only to the colourless stone architecture of Europe, such a mode of building and decorating a building may, indeed must, appear anomalous; but it requires only a slight acquaintance with Eastern art, and more especially with that of Persia, to understand that, even setting aside the evidence of existing remains, it is more than probable that this would be the mode adopted for so ornamental a structure as this one appears to have been.

In all ages and in all countries, Eastern architecture seems to have been much more remarkable for its colours than for its forms; and whether we turn to the Alhambra or to the buildings beyond the Indus, the same fact meets us everywhere. It is no matter how flat or how extensive their plain walls may be: everywhere the most exquisite and delicate ornament is found covering them, and relieved with the most brilliant, and at the same time the most harmonious colouring. They were thus enabled to dispense almost entirely with form or shadow, and trusting only to ornament and colour, to render that beautiful which in itself had no pretension to either beauty or design."

The architecture of the Assyrians depended almost wholly for its effect on its sculptured decorations of men and animals, and the coloured adornments with which they were completed. "Least in importance—in the eyes of the Assyrians—were the pillars and the roof they supported, and the walls against which the sculpture and paintings were placed; all this being almost exactly the reverse of what we find in Grecian, Gothic, or modern art; and whether the Assyrians were right or not in adopting this singular gradation of parts, it is, perhaps, of all the circumstances connected with this style, the most interesting, as being literally, to us, a new idea in art, though perhaps the first and oldest form of art that the young world knew."

Our third illustration is a possible view of the Hall of Xerxes, at Persepolis, without the columns and ornaments which covered its walls, and adorned the roof. The centre hall of this enormous building covered internally more than 40,000 square feet, or with its walls, 55,700 feet. "The great hall at Karnac, the most stupendous building of antiquity, covers internally 58,300 feet, and, with its walls and porticoes, only 88,800, and the two largest temples of antiquity,—those of Jupiter Olympius at Athens and Agrigentum,—cover respectively only 59,000 and 56,000 feet. We have no cathedral in England that at all comes near it in dimensions; nor indeed in France or Germany is there any one that covers so much ground. Cologne comes nearest to it—31,500 feet; but, of course, the comparison is hardly fair, as these buildings had stone roofs and were far higher. But in linear horizontal dimensions the only edifice of the middle ages that comes up to it is Milan cathedral, which covers 107,800 feet, and (taken all in all) is perhaps the building that resembles it most both in

* Rawlinson does not give them so great an antiquity.

† See page 149. The ruins of Khorsabad are situated about ten miles north from Nineveh. The city walls were 45 feet thick at the base and about 35 feet high!

style and the general character of the effect it must have produced on the spectator."

The buildings at Persepolis, we need not again remind the reader, are much more recent than those of Assyria. In conclusion, we have to express our earnest hope that means will be provided for the prosecution of further explorations in the latter country: the value of the discoveries already made there can scarcely be overrated, and Mr. Fergusson is entitled to our thanks for his able and ingenious disquisition, which strikingly assists in rendering this fact evident.

PROFESSOR COCKERELL'S SIXTH LECTURE.

HAVING taken Vitruvius as our text, and discussed the various points of importance in his writings, we have now to consider what the great architects whose writings have formed the subject of this series of lectures have said about interiors, and their scenography, optics, and perspective. The lectures of the Royal Academy being limited to the number of six only, afford but a very scanty opportunity for so much of desirable inquiry. Three times this number of lectures would not be enough for the analysis of the great works written on this magnificent art. According to Vitruvius, nothing was more important for consideration than interior proportion; and there was none in which young architects were more likely to err. Every one knew that the portico of St. Paul's consisted of two orders, one superposed on the other. This produced a beautiful harmony, but to ordinary eyes had the effect of diminishing the dimensions of the columns. A practical joke is related of a young mason about this optical illusion. The interior is known to be constructed with columns exactly the same in size as those of the lower order of the portico, but the young mason, being told this, wagged a bottle of stout that the interior columns were of twice the diameter of those outside. He lost his wager of the bottle of stout, but was thoroughly convinced the proportions of interiors always appear much larger. Vitruvius spoke of forums: we do not build forums now, although the architect's employment extends from Hong Kong to Canada, and thus he has to adapt his works to utility and to climate, and not to construct houses like some the professor had seen, which were intended for Ceylon, but were properly adapted for shooting-boxes in England. If we had not forums now, we had public places such as our own squares, and those in Paris: among these open places might be cited the Circus at Bath, which, although not much noticed, was one of the finest things in Europe. Having three equi-distant openings into it by streets, each of these streets had the vista of the centre of a block of buildings on approaching the Circus. Those which are in Piccadilly and Oxford-street offer no such vista, being crossed by streets at right angles. The Crescent at Bath was also a beautiful feature. Vitruvius speaks of the internal construction of a Curia, a sort of Court of Common Pleas: his directions are very important, as we are now building courts of justice intended for both seeing and hearing; and he proposes that a projecting cornice should be constructed half way up the sides to keep the sound from ascending and being lost in the ceiling. There is an example of this in Trinity College, Cambridge. In the sixth book he treats of the various kinds of courts and apartments and their proportions. He is not very clear on this head, but Palladio supplies the deficiency. More than double cubes could not be recommended for interiors. Guildhall, in the City of London, was an interior of three cubes: it was to be hoped we should have it reformed by the distinguished architect who now presides over the city of London. The 24th chapter treated of ceilings, a portion very much neglected in our times: an excellent example for large rooms might be studied in the Egyptian-hall at the Mansion-house: this Hall was designed by Lord Burlington. It is true that although the nobility

no longer build mansions, there is room enough for the exercise of our art by cotton lords, if we have no longer land lords. Formerly the aristocracy were the greatest patrons of architecture. The English villa was a leading feature of our times; and a little book written by Sir Henry Wotton contained very judicious and sensible remarks: it was the first work written in the English language on architecture, and contained precepts admirably adapted for our purposes. Sir Henry Wotton was the ambassador of Elizabeth at Venice, and acquainted with Palladio. The houses built in the tranquil times of Elizabeth offer us the best examples of villas for England. Inigo Jones introduced the Italian villa into this country, and Lord Burlington renewed it among us, after we had been influenced by the caprices of the Louis Quatorze style. The classical models of Pompeii might replace much of our former arrangement. Sir Robert Peel's house at Drayton Manor was somewhat after this plan of ground arrangement. It is built round an inner court. The entrance is by a corridor, which leads on one of the inner sides of this court to another corridor, or atrium, and placed on the inner side of the court, at right angles with the entrance one. This atrium has a charming effect: the drawing-room at one end opens into it: the dining-room at the other end, and the library in the middle, equally open into it. It was a truly excellent arrangement, capable of great application and improvement, now that there are such resources in the use of glass. The Professor said he would pass over all the affectation of Gothic castles and impregnable towers, open to every intruder: the true character of buildings was much overlooked in this country. In Russia architecture had the character of barracks; in France it was military; and in England domestic. We had churches with two rows of windows to one apartment, giving, externally, the appearance of a building having a ground and first floor.

Wren was a remarkable poet in his art: all his works are of this description,—the theatre at Oxford, his churches, and other buildings. Architects must bear in their minds the poetical idea as well as the structural. It is not, however, a certain power of speech, a certain eloquence called "the gift of the gab," that is the acquirement. Rather, as Plutarch puts into the mouth of a builder, "I am a man of few words; but look at my plans, and you will see I propose to do well what the other talks well." Plan, section, and elevation are very ordinary matters: it is perspective that shows the truth. We should devise geometrically, and produce perspectively. Scamozzi on Scenery has some useful hints. The church of Marburg, as given by Muller in his excellent work, is a striking example of perspective diminution. The elevation is lank and ugly, but seen perspectively, becomes of remarkable beauty. The Adams' works were all to be seen near the eye, and therefore they covered them with small ornaments. The fronts of buildings seen at the end of a vista should have division into small parts to give distance: this is the chief apology for St. Peter's; and Guildhall in the City was unquestionably made into its sub-divisions for the appearance of receding. Distance or space is a natural feeling. In an apartment of four plain walls the eye feels confined: a landscape hung upon the wall is a great relief, and the small panelling in our Elizabethan houses gives space by the numerous divisions. Panelling is a great resource internally, and Pompeii offers beautiful examples, in which the small size of the ornaments have good effect for the foregoing purpose. The staircase at the Vatican, by Bernini, is familiar to all students for the gradual diminishing of the size of the columns on ascending, and their being placed gradually closer together, thus giving a greatly lengthened perspective by these artistic means. The student is recommended to walk through London in summer time, from four until seven o'clock in the morning, when he will have the streets to himself, and he will find abundance of subject for study and observation, quite as useful as travelling abroad for it. In termination of these lectures, the student must be reminded

of the great theoretical writers on architecture, authors whom it is the student's duty to learn. If diplomas were given in the Academy, none should be entitled who had not studied the volumes of Palladio and Alberti. The lecturer had offered the best of his experience during forty years of study: the time will come when the professional life begins with all its cares and anxieties—there is then no time to study but for the work before you. Let no one suppose he has plenty of time, if he wish to become eminent, and desire to fill a niche among the architects of his country. It was a great regret to see the advantages of these lectures so little valued in London, and so thoughtlessly neglected by those for whose benefit they were delivered. Those who studied closely in their youth what their great predecessors had done, and cultivated all the theories tending to success, would find no cause to regret their intense labour and unremitting application, but would each eventually congratulate himself that it was his happy lot to be an architect.

CAST-IRON WORK.

BARBADOES, AND BUCKINGHAM PALACE.

MESSRS. H. and M. D. Grissell, of the Regent's Canal Ironworks, have just now completed a cast-iron tower, forming a lighthouse, for Barbadoes, from the designs of Mr. A. Gordon, engineer to the commissioners. This tower is 83 feet high, 18 feet 6 inches in diameter at the bottom, and 11 feet 6 inches at the top, and is formed of cast-iron plates 7 feet 6 inches high (ten plates in the circumference), 1 inch thick at the bottom, and seven-eighths of an inch at the top. There is a staircase to the top, and it has four wrought-iron floors. The cost of such a work is about 1,800l. The lantern is to be provided by other parties.

The same founders are executing the ornamental gates (under Mr. Decimus Burton) for the central archway in the new front of Buckingham Palace, and the gates and railings enclosing the forecourt. The latter are very plain, and the *fleur de lys* form adopted for the termination of the bars in the gates, gives a character to the ironwork scarcely concordant with that of the building. The gates for the archway are 15 feet high, and 13 feet wide, and consist of handsome scroll work, with two foliated female figures holding the Crown. In each panel are the letters V. R. entwined, and over each the royal arms. Part of the work will be gilt: the castings are very good.

DIORAMA OF THE HOLY LAND.

We mentioned some time ago that Messrs. Bonomi, Fahey, and Warren, encouraged by the success that has attended, and is still attending, their diorama of the Nile, were engaged upon a similar illustration of *The Holy Land*,—a country marked with the footsteps of the Saviour, and full of associations of vital interest. It is now opened to the public in the gallery of the New Society of Painters in Water Colours, Pall Mall, and, if we are not mistaken, will prove one of the most popular works of its class, offering attractions, as it does, to every lover of art, every student of history, every thoughtful Christian. Mount Sinai, Petra (the mysterious rock-cut city), Bethlehem, Tyre, Sidon, Lebanon, Jerusalem,—what names these are to conjure with! As a work of art, it seems to us superior to the Nile: the artists have obtained greater mastery over the medium: some of the skies, and distances, for example, have scarcely been surpassed. The first portion of the diorama consists principally of views of country: midway is shown the Shrine of the Nativity (not quite so effective as it may be made, and probably will be). The second part takes us into the streets of Jerusalem, and brings us closer to some of the buildings, ending with an interior view of the Mosque of Omar, beautifully painted.

We cordially recommend this exhibition to our readers, and should be glad if an arrangement could be made, before it closes, to let all the national and other free schools of the metropolis visit it—but not at the cost of the artists.

NINEVEH AND PERSEPOLIS.



Fig. 1.—RESTORATION OF NORTHERN ANGLE OF PALACE COURT, KHORSABAD.

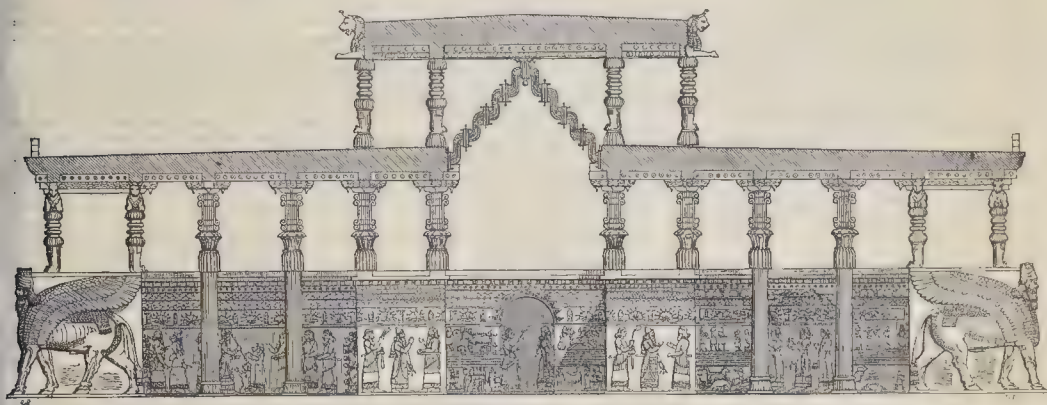


Fig. 2.—SECTION OF PRINCIPAL ROOMS AT KHORSABAD.

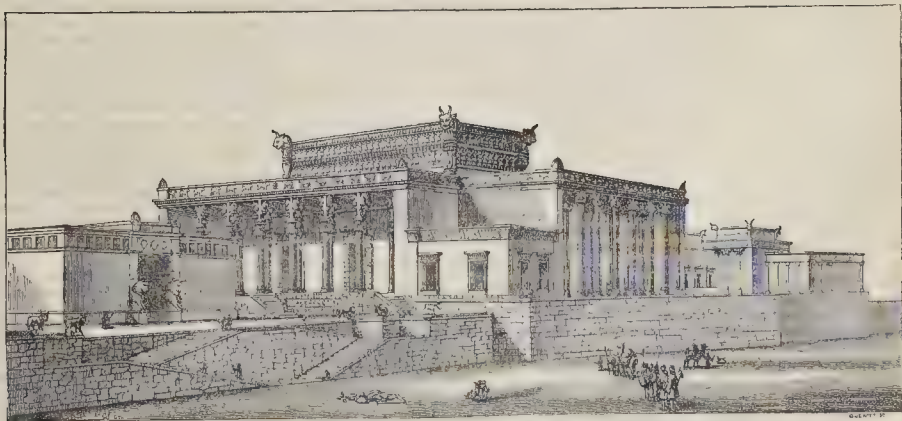


Fig. 3.—RESTORATION OF HALL OF XERXES, PERSEPOLIS.

THE UNITY OF ART.*

BARRY, the painter, in one of his lectures, denies, and I think justly, the truth of the ancient saying, that painting is a silent poem, and poetry a speaking picture. Painting, he contends, is rather a realization of poetry. Here is the imperfection of language: however expressive and perfect as a language, it fails in giving a precise idea or image of a complex object,—a task that painting can perfectly perform. What are words in describing a beautiful face or landscape, compared with the pencil? Many are the cases in which, while one must hopelessly fail, the other is triumphant. Moreover, the difficulties of execution are greater in painting than in poetry: power of conception, or the inventive faculty, is more indispensable to the poet than to the painter; but the latter requires more accurate knowledge of the different objects embraced by his subject than the poet, and greater elaboration is necessary to represent them on canvas, in lines and colours, than to describe them in words. It might, perhaps, by some, be concluded that, for the same reason, the difficulties of execution in sculpture are greater than in painting. But, though a more intimate acquaintance with the form of objects to be represented in sculpture is doubtless requisite, this necessity is more than counterbalanced by the sculptor having fewer elements to arrange: the difficulties of combining breadth of light and shade with harmony of colour, in painting, render the demand upon the intellect of the painter far greater than any for which the sculptor must prepare. But, if the execution of a conception is more perfect in painting and sculpture than in poetry, the latter has advantages in respect of compass. In describing or embodying actions, manners, and sentiments, its capabilities are the most extensive. Poetry has the widest domain, and effects are within the range of its power to which the painter and sculptor can never hope to attain.

Again, everything expressible in painting must be within the field of the visible, while poetry, less confined, has recourse to agents and acts that are invisible: a world of mysterious and sublime imagery is thus at the service of the poet, which the painter's art denies him; and much even of visual imagery, which the poet may use, the painter must forego.

But what is most remarkable in a comparison of the arts is, that the extreme difference in mode of manifestation or diversity of operation should exist between the two elder ones: I refer to those of the architect and the poet,—the rearer of the temple and the palace, and the builder of the lofty rhyme in Apollo's fane; the former hemmed in by material and local restrictions,—the latter free from both: the one shaping out its rules through the obstacles of arbitrary requirement—the other exhibiting the order and grace of harmony as by a divine intuition; the one appreciable only through the media of physical sense,—the other an almost direct communication of soul with soul; the one ascending, as it were, into the region of art from that of physical necessity—the other descending, into it from the loftiest pinnacles of spiritual aspiration.

It is evident from what has been advanced, that a subject cannot be *literally* translated from any one art into another. There are many circumstances in the poet's management of the materials of his subject which the painter cannot adopt: the characteristic differences of their several arts dictate, in most instances, a change of plan, an alteration of the arrangement and position of the materials as given by the poet. Or the subject must be contemplated under another phasis by the artist, who must adopt that mode of treatment which is most consonant with the nature and compass of his art. He must give up many things that the poet may make use of, and with effect. Nay, he must sacrifice, if needful, the literal truth of the reality: for what would give effect in poetry would take from it and interfere with expression in painting and sculpture: this is frequently the case in the matter of drapery,

which, in poetry, is but an ethereal veil; for the poet's imagination has been behind it, and he describes what in sculpture and painting its folds would conceal. There are ideas and sentiments that could be expressed in all the five arts: they might be put in words, in colour, in relief, in structure, in sound; but though a competent mind would recognise them through all their vestments or disguises, yet the subject, being thus differently expressed, would itself be modified by the peculiarities of each organ of expression; and the proof of any one of these results being correct is, that it would call to memory and illustrate the rest. Beethoven being once asked for an explanation of one of his symphonies, replied, "Read 'The Tempest.'"

Upon the whole, poetry is the most excellent of the arts, and the true bard the most illustrious of artists. The painter, and sculptor, and architect, and musician are potentates in their own right; but they must yield the palm of superiority to him,—the Coryphæus of the harmonious and immortal band.

Thus it will, I think, be seen that, however varied its branches, art is one—an unity in diversity—one spirit working in different ways, and manifesting itself under various similitudes; and that the arts are different external phases or expressions of one soul—divers tongues uttering the same truths—variations on the great lyre of one celestial air. Art at the surface only is varied, ramified into branches of different lengths and varied calibre, unlike to the senses: at the centre it is unity of cause—one essence. Like different musical instruments, though they are not all of the same compass nor perfection of intonation, though no two are equal either in comprehensiveness or in nice inflection of sound, yet from any one of them, by a master hand, the soul of music may be drawn.

This brings me to the second main branch of my subject, in which I am to exhibit the consequences of this unity, or, in other words, the use of the doctrine. What is the practical utility of this doctrine of the Unity of Art?

There are two ways that suggest themselves to my mind, in which it might reasonably be conceived possible to benefit the artist; viz., 1st. By giving him an equal mastery over all the arts. 2nd. By giving the professor of any one art a greater mastery over that one. These we will separately investigate.

First, will it give to one man an equal mastery over all the arts? As there are three things, viz., variety, harmony, unity, requisite to constitute a true work of art, so there are three things necessary to produce one,—the hand to execute,—the mind to comprehend,—the spirit to conceive and love.

1st. The hand to execute. In every art there is an amount of manipulative power and technical knowledge, without the mastery of which no outward expression can be given to the inward conceptions; as, in painting, sculpture, and music,—power and facility of handling and touch; in architecture and poetry,—a ready and retentive knowledge of styles, orders, measures, &c. The mastery of these technicalities requires steady and long-continued practice.

2nd. The mind to comprehend. The hand can only work effectively through the mind; and, however perfect the manipulative power or technical knowledge, unless it act under the guidance of a discriminating intellect, capable of understanding principles, the issue, however elaborate in itself, will, as a work of art, be null and void.

3rd. The spirit to conceive and love. The mind can only truly and rightly comprehend when acting under the impulse of the spirit of life and love: without this spirit the artist can produce nothing that will live: with understanding alone he may reproduce the Romans, Greeks, or Italians,—but nothing that contains any spark of himself, or is properly his own—that enshrines either his reminiscences or his aspirations—can emanate from his hand. He cannot invent or create,—his work will be but coldly correct; it will possess no vitality or poetic fire, and can have no intrinsic value.

Of these powers of hand,—mind,—spirit,—the different arts require different degrees, &c.,

they differ from each other as to the necessary proportion of these powers: in one, feeling will be most wanting; in another, intellect will preponderate,—the rest being in abeyance. Poetry draws most upon the intellect,—music on the feeling: in these arts the mechanical part compared with the intellectual and emotional is as nothing; while, perhaps, the greatest and most complete combination of the mechanical with the intellectual that anywhere exists, is seen in paintings. According to the proportion, therefore, in which these qualities exist in the artist, is he fitter for one than for another; or the man that is possessed of a nearly equal amount of these powers is determined in his choice by circumstance. Architecture or painting may hold out bread; poetry, (a well-founded surmise) withhold it; or circumstance may rob one art of a follower, and give him to another. Of this several instances could be given. Circumstances generally call louder for one than another: London is burnt down: a city is to be rebuilt; and the genius of Wren, whose choicest offerings have hitherto been brought to the shrines of philosophy and the mathematics, becomes chiefly consecrated to architecture.

But if the different arts require these qualities in different proportions, then few men, under the most favourable circumstances for an uniform development, could be equal in all: an artist might have sufficient of each to be a proficient in all, but he would shine out more brilliantly in one than in another—in the one to which the proportion of his qualities was the nearest approximation,—supposing him, at the same time, equally devoted by study and practice to all; and he would, therefore, attain eminence in one or the other, according to the proportion in which these powers were possessed by him. We can, however, imagine an artist enjoying in so perfect a degree the powers enumerated as to possess the entire secret of art-unity, and become equally master of each of the arts. This would, however, require such a felicitous conjunction of time, means, and physical temperament, as perhaps rarely, if ever, falls to the lot of humanity. Moreover, under no circumstances perhaps would the attempt at such mastery be politic. Leonardo da Vinci (the Crichton of art), who not only in some degree mastered the entire magic circle of fine art, but also excelled in engineering, chemistry, anatomy, mathematics, and philosophy, has been blamed by all subsequent artists for his non-perseverance as a painter: his versatility has been a subject of regret, under the persuasion that had he taken possession of the one art, he would have carried certain qualities of that one art to perfection, when, as it is, his works are of comparatively little value.

However correct, then, the above assertion, it is not in our power to cite an adequate example of its practicability; but it would not be difficult to bring forward names of many who, celebrated, and deservedly so, in some one of the arts, possessed at the same time a by no means trivial power over some one or more of the others, joined with a delicacy of feeling and correctness of discrimination which leaves us no room to doubt that, had they enjoyed or achieved equal opportunities, they would have attained to equal eminence. To this the objection may be raised that I have laid too much stress upon opportunity, and thereby destroyed the standing ground of genius, which works by inspiration, and makes its opportunities. Remarks which I shall make under the next head will, I trust, be deemed, a sufficient reply to it.

Not to go back, as we might do, to antiquity, we find that many of the greatest architects of the fifteenth, sixteenth, and seventeenth centuries of Italy, as well as several of their forerunners of the preceding ages, gave evidence of great skill in painting, or sculpture, or both. Most of the great restorers of architecture were painters and sculptors. Buono, the architect first named by Vasari, and who lived as early as the twelfth century, was a sculptor likewise, as was also one of the architects of the Campanile at Pisa. Brunelleschi, Palladio, San Gallo, Sansovino, and Ammanati, also exercised the chisel of the sculptor along with the

* See page 116, ante.

scale and compass of the architect; and Alberti, Bramante, and Vignola, and many others, embodied their visions of beauty on canvases as well as on stone;* while many are the great painters and sculptors who were inspired in a high degree by the genius of architecture, and have left works in that art which would alone have gained them renown: among these the names of Giotto, Michelangelo, Raffaello, Giulio Romano, Vasari, Polidoro, Domenichino, Algardi, Bernini, and Carlo Maratti, are conspicuous: indeed, most of the painters of the Florentine school were proficient in the sister arts: Michelangelo was employed by Pope Julius II. in the triple capacity of architect, painter, and sculptor; he was also a poet: Domenichino was appointed by Gregory XV. architect of the Apostolic Palace: many professed all the three branches, and are called by all three at the present day.

The love and taste, also, for music and painting, to an equal degree, have in many instances centred in the same person. Handel, who first gave to the sacred volume the celestial voice of music, was a lover of pictures, and, for many years before his death, frequented, for the sole purpose of viewing them, all collections for sale: Corelli was also an enthusiastic admirer of the pictorial art: Geminiani, in the latter years of his life, was absorbed in painting, which he declared he loved better than music: Leonardo da Vinci, Sir Godfrey Kneller, Domenichino, and many other celebrated painters have been no less excellent in the practice of music: Guido Rheni was celebrated for his skill on the flute: Du Fresnoy was poet and painter: Milton, it is well known, had a fine ear for music; and Sir John Vanbrugh, the architect of Blenheim House and Castle Howard, was a popular poet and dramatist.

I believe, in short, it will be found that an

* There is, perhaps, no art that is honoured by a wider circle of amateurs than painting: as far as my observation has extended, but a small proportion of architects are of the number. It would be well if it were otherwise, for architects would certainly find their account in the study of painting, and, indeed, of sculpture, but more particularly of the former. The study and exercise of painting can be but of little or of no use to the lawyer or merchant in his profession; but they must be of the greatest use to the architect. The three arts of form can, perhaps, never be united again in the mind and hand of one man; but the study of painting and sculpture could well be combined with that of architecture in forming the mind of the architect: no time devoted to these branches would be lost: every step of his progress in them would tell upon his artistic discernment and capabilities. He would acquire a greater grasp of thought,—a greater breadth of mind: it would bring him nearer to nature, the prime source of his art, whether in the study of form, chiaroscuro, or colour, and, teaching him the right use of precedent, prevent it having undue hold upon his mind. Few architects, I fear, in laying down the general plan of a building, or in choosing the principal forms, are sufficiently influenced by considerations of breadth of light and shade: it is as absolutely necessary to the production of an edifice worthy to be classed with works of art, as it is to the composition of a picture. Without attention to this subject, there can be no brilliancy of effect in any part or repose for the eye. Chiaroscuro is the very life of architecture: let provision for it be neglected, as is too often the case, and the building is an architectural nonentity, however liberal on its surfaces has been the hand of the decorator.

I believe that complete detachment of any one of the arts is unphilosophical, and should not be permitted; that it is the worst way of arriving at a clear knowledge and full mastery of principle. I believe, too, that the painter and sculptor would acquire an advantage in a study of architecture: besides the light it would throw upon their own arts, some practical knowledge would be gained which would be found useful in most walks of the artist. But the advantage these would reap from a study of architecture would not be equal to that gained by the architect from a study of painting and sculpture. I believe, in fine, that one of the best methods that could be devised at the present day to revive the somewhat drooping powers of architecture, and give fresh impulse to its career, is connecting it more with painting and sculpture. Sir Joshua Reynolds's eulogy on Vanbrugh was chiefly based on the fact that he composed like a painter. Moreover, the knowledge of these arts would enable the architect to see how all three could be most advantageously combined in the formation of one grand work; for they are all essential to a complete building, as a knowledge of them, more or less, is essential to a complete architect.

At the same time, it must be observed that no art should be governed by another. It is for a greater union of the arts that I contend, not a subjection of one to its fellows: they are to stand in sisterly relation, not in that of master and slave. There have been times when architecture was governed by painting and sculpture, and its spirit often languished under the yoke. Painters are too apt in building to sacrifice to the picturesque or other peculiarly decorative details in matter, and most consonant with its spirit, to the marbling of the innate beauty and greatness of architecture.

I know that modern refinements have increased the scale of architectural decoration, and it is incumbent upon the architect to acquire. Yet the fine art department must not suffer on this account. We must, by every available means, secure the power to express our sentiments and give utterance to the ideas and feelings of the time in our works, and thus maintain the position, and support the dignity, of architecture among the arts of design.—S. II.

artist would more readily excel in corresponding qualities of all the arts, than in all the qualities of one art; i. e. that the chain of connection is stronger between these similar or analogous departments of different arts, than between the different departments of each art. Success in the latter demands an exertion of a greater variety or extent of mental powers than in the former, which requires the same identical faculty for their management. This will explain why, though the greatest artists excelled only in one quality of an art, so many successfully attempted the mastery of a plurality of arts. We have Michelangelo eminent in design; Raffaello in expression; Correggio in harmony; Rembrandt in breadth; Titian in colour; but eminent in these only, while the two former, and many others, were also great in other of the arts of form. The truth is, it is in corresponding qualities of different arts they excelled: Michelangelo's forte was design, and his greatness in this manifested itself not only in sculpture, but in painting and architecture.

Our second inquiry is,—Will it give the professor of any one art a greater mastery over that one? In the production of a true work of art, the three powers of hand, mind, and spirit before enumerated, move in unison, and the work completed is the naturally resulting expression of that unison, just as the common chord in music is the expressed result of the sympathetic harmonic vibrations, resulting from the given sound of the primary or base note. But, in tracing the history of individual artistic progress, we meet with such continuous vibrations of circumstance and power acting and reacting one on the other, that, if we leave out of our consideration the doctrine of the unity of art, we are driven to the conclusive dilemma, either that circumstance is the director of art, or that art is the dominator of circumstance—a conclusion in which, from the constant recurrence of the extremes of its vibrations, nothing is concluded; for scarcely can we cite an instance of art-growth under an atmosphere of favouring circumstances, but the very exertion of the memory necessary for such purpose calls to mind some opposite instance of art-power or genius, forcing its way through every obstacle and discouragement,—

"Breasting the blows of circumstance,
And grappling with his evil star."

From this dilemma the unity-of-art doctrine, I think, frees us, by teaching, that in what manner soever the vital germ may originate (and this is a mystery beyond the mental horizon), having been once implanted, its inevitable tendency is to the light. The mind, in this respect, resembles many or most plants: set a plant in the recess of a window, and it grows towards the nearest window pane or compartment through which the light enters: cover that pane or opening, and it grows up and curls over it to the light above: screen it from the direct light, it grows towards the reflected; and so with the art-soul: if circumstance put out the eyes, and say, "Thou shalt not see," the art-soul perchance hears, and a musician is born; or it thinks and feels, and the poetic fathers hail the advent of another son; or does circumstance, less utter in her proscription, lay a forbidding hand on colour, and say, "Not these:" the art-genius grows towards form, perchance, and instead of a Titian or Murillo the world gains a Canova. Or, again, does circumstance hem round the art-soul with certain mechanical requirements and formularies of style suggestive of an architectural career: it rises still to the light, and grows up an Ictinus or Palladio.

In fine, as the plant, so long as it retains its vitality, grows under, or round, or through every obstacle, and still towards the light, making its way wherever light appears, so does the art-genius grow up through whatever avenue or crevice circumstance has left open, and still into the life of art; and, moreover, as with the plant, so with art—the development of the innate life is the ultimate destruction of the circumstantial obstacle: a sheet of pasteboard, by excluding the light, may give the growth direction to the upspringing acorn; but let the young oak once feel his innate

strength and forest dignity, and what shall hamper him then?

"Light is light which radiates,
Blood is blood which circulates,
Life is life which generates."

And many-seeming life in art, as in all else, is one: and as the planets, though shining with a different hue, shine in the reflected splendour of one central sun, so do the arts, through their respective media, give back a reflection of the glory of the central unity of ART; and as the astronomer is guided and strengthened in his optical deductions from planetary observations, by his knowledge of the source of light, so should the follower of any one art derive power and clearness of insight from a perception of the centering unity from which all the arts sprang, and to which they all tend.

SAMUEL HUGGINS.

FIRES IN THE CITY.

THE frightful loss to the community caused by constantly recurring fires, will, it is to be hoped, gradually force upon owners and builders the necessity of adopting modes of construction best adapted to prevent such costly catastrophes as those we now so often see. Only a few weeks ago we were gazing into the extensive ruin in Mark-lane, and now there are two other immense gaps so caused: one in Tooley-street (an enormous warehouse), and the second in Paternoster-row (a tallow-melter's).

In each case it is through mercy that the fire did not further extend: had it done so from Paternoster-row, our metropolitan cathedral and architectural glory might itself have fallen a prey to the flames.

The area of the warehouse in Tooley-street is very large, and, looked at from the top of the adjacent building, filled with fallen iron columns, and charred timbers, sprinkled with half-burnt hops, looking like gold dust, has a striking appearance. Amongst other points, the necessity for enforcing those clauses of the Buildings Act which limit the size of such buildings is made evident.

An adjoining warehouse belonging to Mr. Goodchild was saved by what at the moment doubtless seemed an annoyance. Some time ago the owner of the destroyed building built a 4½ inch wall against the south wall of the former to block up some windows considered to be improperly formed in it. If this had not been done, the second warehouse could scarcely have escaped destruction. Such incidents should prevent us from repining.

Who can foresee results?

The extent to which the upper part of the front wall of the building that is burnt is forced outwards by the heat is so great that it can scarcely be believed.

NOTES IN THE PROVINCES.

THE chief stone of a new church in course of erection in the Marsh district of the parish of Stratford was laid by Lord Ashley on Tuesday in last week. It is to be called Christ Church, and will be composed of brick, faced with rag stone. The spire will be about 100 feet high. Mr. Johnstone is the architect and Mr. T. Burton the builder. Schools in connection with the church were finished some time since.—The Maidstone Town Council have received and adopted the report of the committee on plans for baths and wash-houses. The plan selected was that of Mr. Whichcord, the county surveyor. The buildings are to be erected in the Fair Meadow, the front elevation facing towards the bridge. There will be three first-class and fourteen second-class bathing-rooms for men and six for women; three private baths for gentlemen and three for ladies, at suitable prices; a swimming-bath, containing 14,000 gallons of water, and fitted up with twelve or more dressing-boxes. In the washing department there will be sixteen stalls, with tubs, drying-closets, vessels of boiling water, &c.: the cost, it is supposed, will exceed 4,000*l*. The work, however, will be done by contract, and the usual specifications are being prepared. Owing to arrangements suggested by the town-clerk, according

to a local paper, there will be no addition to the rates in order to realise the requisite expense.

—The subject of erecting a new townhall, public rooms, and a corn exchange at Hastings is under consideration of committees of the town council and others who are to confer on the subject. —The new district church of Holy Trinity, Bracknell, was consecrated on Wednesday last week by the Bishop of Oxford. The church is a small structure in the Pointed style, consisting of a nave and transept, and chancel, with a spire: the external ornaments and decorations are numerous, but within, the building is very plain: the roof is open and of carved oak beams: the sittings are open and designed to accommodate 300 persons. The architects were Messrs. Coe and Godwin. —The chancel and other parts of Banwell Church have been renovated. The whole of the windows have been filled with stained glass: three of them are obituary windows.

A monumental cross, to be erected in Malpas churchyard, has just been completed by Mr. Bigglestone, of Church-street, Hereford, from a design by Mr. Thomas Cranstone, architect: it is about 14 feet high. The style is of the Decorated period (circa 1350). A pierced cross-flory, with the ball flower ornament surrounding the centre opening, is elevated upon a capital ornamented with ivy leaves, which rests on an octangular shaft, rising from a truncated cone, on one face of which is the inscription in Lombardic character. The base of the cone is surrounded with a circle of ball-flowers; and the angles of the cone terminate upon the shaft in carved finials. —The *Hereford Times* suggests that the great west window of the cathedral in that city should be filled with stained glass by the Bailey Testimonial Committee, in fulfilment of their trust. A serious defect in this noble edifice might thus be obviated. The centre trefoil light in the eastern end of the choir is to be fitted with a painted window, to which purpose a sum of 150*l.*, placed at the disposal of the late Dean Merewether and Canon Huntingford, is being applied. "We some time ago suggested the erection of a memorial window," says the paper just named, "to the memory of the lamented clergyman, but for whom this glorious fabric would probably have, ere now, become a heap of ruins; and we are happy to learn that the idea had also occurred to some members of the Merewether Testimonial Committee. It has been adopted, and a window—at a cost of about 400*l.*—is now in course of execution." The works for putting the Cathedral-cloze, which has long been an eye-sore, into something like order, have again been set in motion, a number of workmen being employed in the immediate vicinity of the Dean's residence. —The Pontypool waterworks are progressing rapidly, superintended by the engineer, Mr. Hardie. The contractor, Mr. Farmer, has laid the pipes in the principal streets; and it is expected that the work will be finished for opening by 1st May. —The want of adequate accommodation at Nottingham for agriculturists lately induced the Midland Railway Company to resolve on building a warehouse large enough to contain 14,000 quarters of corn. They advertised for a builder to erect one eight stories high, with room underneath to allow laden wagons to enter under cover with their freight. Mr. George Thompson, builder, of Derby, obtained the contract to carry up such warehouses, 110 feet in length by 75 feet in width, the foundations to be formed of stone and concrete, the walls of brick, &c. The buildings are now in progress, to be finished by July next. Nearly one million and a half of bricks, besides other building materials, will be consumed in the erection and finishing of these great stores. —The church of St. James, Ogley-Hay, is progressing rapidly towards completion. The amount already subscribed exceeds 1,600*l.*, but 2,200*l.*, at least, will be needed. Mr. Minton has offered tiles for the chancel floor, and other presents have been made, besides money, towards the work. —It has been determined to erect a new workhouse at Wakefield. —The Grimsby docks are advancing without loss of time. The walls of the two locks will soon be finished, and the

top-stones of the dock-walls brought on. Several of the massive oak-gates are on the eve of completion. Excavations for the piers are going on rapidly: nearly all the foundations are in. Near the locks, the arches from pier to pier, for the dock walls, are proceeding, as are also the internal excavations for the docks. —The Bishop of Durham has given 50*l.*—a second donation—towards the restoration of Rothbury Church. —The centre tower of the venerable ruin of Lincluden College, to which, until recently crowned by a vigorous young pine, it owed so much of its picturesque appearance, has fallen, according to a *Dumfries paper*, from the foundation, and the pile to the north-west is in a very precarious condition.

—Active measures are in progress for the erection of public baths and washhouses at Glasgow, although the Act facilitating such erections does not as yet apply to Scotland. Upwards of 800*l.* have been subscribed, and mostly realised. The council have agreed to give the subscribers a site on the public green, but have, rather inconsistently, if not also suspiciously, refused to give any title to the site, which accordingly has not been accepted.

—A proposal for erecting a new Roman Cathedral at Nether Buckie, on the borders of Banff and Morayshires, has at length assumed an active shape, the contract having been prepared by Messrs. Reid, of Inverness and Elgin, architects. The new building, says the *Inverness Courier*, will rival the architectural glories of some of the other religious buildings of the Church of Rome in Scotland, now slowly mouldering into ruins. —It has been resolved by the Deacons' Court of the English Free Church at Inverness, that the new church projected there shall be erected according to the original plan submitted by Messrs. Mackenzie and Matthews, of Elgin, architects. The design has been engraved. The spire will be 130 feet in height.

ENGINEERING AND ARCHITECTURAL DOINGS IN IRELAND.

THE unfinished new road from the sea at Ballaghkeene to Enniscorthy is to be completed: a new bridge and the necessary gulleys are to be erected on same: the quantity of work to be executed in the roadway will be about 380 perches: the probable cost will be 570*l.* The new intended road at Bargo, leading from Enniscorthy and Taghmore to the new pier of Kilmore is to be completed: it contains about 1,637 perches, and the amount will not exceed 1,709*l.* The unfinished works on various other new roads are also to be proceeded with in the county of Wexford, and plans, maps, and specifications have been prepared by the county surveyor for tenders.

The contractor for the Waterford and Limerick Railway, Mr. Dargan, has his workshops erected at Caher, and men will be immediately set to work on the line. This company has lately received from Government a loan of 300,000*l.*, and it is expected that the line will be open to Clonmel before the end of the present year.

The Poor-law Commissioners have decided upon erecting a new union workhouse at Kilmachomas, and are about to receive tenders for the execution of the works, according to the drawings, &c. of their architect, Mr. Wilkinson.

The Poor-law Guardians of Clonmel have determined to erect a new workhouse there, and have advertised for a loan of 10,000*l.* for that purpose.

Mr. Dargan, the railway contractor, has engaged a great number of persons, who are at present working on the Waterford and Limerick line, between Caher and Clonmel. The railway is intended to pass over part of the Cashel-road, and also over the river Lim. Three bridges of large span will be constructed for this purpose.

The road leading to the station of the Midland Great Western Railway, at Ballinasloe, is being widened, under the direction of Mr. Kempster, county surveyor, and Lord Clancarty intends building some first-class houses along the road. The town commissioners have determined to extend their main gas-pipe to the railway.

The Dean of Waterford is about to make improvements in his deanery: the church-yard in the Cathedral-square is to be inclosed, and the apartments for clergymen's widows to be remodelled.

The castings for the great bridge over the Wye, at Chepstow, for the South Wales Railway, as we have already noted, are in progress of execution by an extensive firm in Dublin, which is the first instance of castings of magnitude being made there for similar works in England or Wales. The Irish Engineering Company are the parties referred to, and they have lately constructed all the castings for the Brighton Railway Company, required in the extension of their passenger terminus at London-bridge, and upwards of 200 tons of castings have been exported to England from their foundry within the last two years.

The large viaduct over the valley at Craigmore (a description of which has appeared in *THE BUILDER*), Belfast Junction, remains to be completed, but the works have been far advanced. The quantity of masonry already executed on this viaduct amounts to 128,000 cubic yards, the entire being of the best white granite. In consequence of the uncertain strata on which the viaduct is being erected, excavations had to be made to the solid rock, for the piers and abutments, so that upwards of 30 feet of the building is under-ground. The highest part of the viaduct will be 140 feet above the level of the stream. The engineer-in-chief is Sir John McNeill.

The directors of the Newry and Enniskillen Railway have made arrangements with Mr. Dargan for the construction of a junction line, with the Dublin and Belfast Company, at Gorch Wood; and it is to be completed in every respect, exclusive of rails and sleepers, for the sum of 11,000*l.* The contract for the portion of the Londonderry and Enniskillen Railway, between Strabane and Newtownstewart, has been taken by Mr. McCormick, and the works are at present in active progress.

A new church is to be erected at Ballovey, Mayo, for the Protestants of that district.

Extensive alterations and additions are to be erected at the Roman Catholic church of St. Francis Xavier, Dublin, according to the drawings of Mr. J. B. Keane, architect.

At a competition in Philadelphia, the designs of Mr. J. T. Mahony, of Cork, architect, for the proposed St. John's Orphan Asylum, were lately received, and the premium of 500 dollars was awarded for the same.

IRON BUILDINGS NOT A NOVELTY.

SIR,—It is a great mistake to suppose that buildings of iron are a novelty in England. This class of building has been known in our colonies for many years. In 1844 and 1845 my own firm constructed in London, and afterwards erected at the Mauritius, under the superintendence of Lieut.-col. Lloyd, then the resident government engineer, a military station consisting of officers' quarters, 2,400 feet area; an hospital, 3,000 feet area; and a lazaretto, 5,200 feet area,—all perfectly fire-proof, together with large covered tanks for supplying the station with water. The buildings having at that day something of a novel character, I will describe them: they consisted, first, of a cast-iron cill-plate, running entirely round the building, and this plate may either be laid upon a concrete foundation, a brick sleeper wall, or bolted to cast-iron piles previously driven for this purpose. Upon this cill were raised cast-iron stanchion-like uprights of letter H section, which at the same time formed the door and window jambs, and carried the wrought-iron plates forming the walls: on the top was bolted a cill-plate from which sprang the roof: upon the external and internal flanges of the stanchions were bolted wrought-iron flat sheets, forming, as it were, hollow or double walls of iron. The roof was of cast-iron, in a segmental form, spanning from wall to wall, but supported also in the centre by the columns and partitions, dividing and forming the rooms. The upper rib of this segmental roof girder was fitted with

wrought-iron purlins T section, and roofed with cast-iron plates in a similar manner to that so ably employed by Mr. Barry at the Houses of Parliament. On the bottom flange of the girder were fixed cast-iron ornamental bearers, which carried a wrought-iron sheet ceiling, thus dividing the ceiling into ornamental sunk panels. The apex of the roof was covered with a cast-iron ridge roll so as to keep out the weather, but so formed as to leave an open ventilating space the whole length of the roof, the object being, as in that hot climate the heat upon the roof would be so great as to rarely the air in the ceiling space, to allow it to pass out at the opening left in the ridge roll, and to draw a succession of cooler and passing air through the hollow walls, which would thus tend to keep the rooms cooler than they otherwise would be. The desired effect was fully produced in these buildings, and they are now standing secure, notwithstanding the many violent hurricanes which they have encountered, and which are peculiarly incidental to that climate: even in England, in the height of summer, we could maintain a temperature some seven or ten degrees lower than in our brick-built offices. The sashes, jealousies, and doors, as they were dwelling-houses, were all made of mahogany to protect them from the white ant, and at the same time render them lighter in the hand than iron would be: with this exception, and the glass in the sashes, the whole of the building was of iron. HENRY GRISSELL.

FOREIGN INTELLIGENCE.

Anniversary of the Cologne Cathedral Building Association.—On the 17th February the Committee of the above Society held a meeting in the large Town-hall, for commemorating the day of its founding in the year 1842. The president, M. Esser, stated what had been done since for the restoration of the splendid building, mostly by private contributions, in a turbulent and disquiet period, and urged them on to further exertion, as he hoped that three years hence the cathedral would be completely roofed in, the temporary most incongruous wall separating choir and nave removed, and thus the vast interior appear full in all its grandeur. He requested the meeting to state their opinions how this aim could be best achieved.

The Art-Academy of Düsseldorf.—The new Secretary of State for Public Institutions of Prussia, M. de Raumer, has, in an especial note addressed to the above Academy, expressed his determination to foster and encourage that establishment to the best of his abilities. Accordingly, the Rhenish papers have put forth a brief *exposé* of the claims of the Academy on public support. The Rhenish provinces have, in previous epochs, produced specimens of art which can vie with any produced in other parts of Germany—nay, Europe. The recent times have been equally fertile for Rhenish art, as Beethoven and Cornelius, in music and painting, struck out new spheres and systems for these art branches. The Academy of Düsseldorf has excelled many others far better supported and founded.

Permanent Art Exhibition at Paris.—Circulars have been lately issued for the holding of a meeting of the painters, sculptors, architects and engravers residing in Paris, for the purpose of establishing a permanent exhibition of the works of living artists. It is to begin a few days after the annual public exhibition, and to close before the opening of the latter. It is proposed that half or quarter of a franc should be charged as entrance fee, and that the tickets be used for a lottery. The money obtained for these tickets should be employed in buying objects of art, which would be then put up as lots, &c. The Paris artists hope, that by this expedient they would increase their means of publicity, without the shackles of any committee, and also find a more extended sale for their works.

Excavations near the Forum Romanum.—Amongst the oldest ruins of Rome are those huge substructures of the *Tabellarium*, or states archives, which lie at the hill of the capitol above the Forum. This building was

erected by *Latinius Catulus*, A.U.C. 676. At present the palace of the senators is built on it. Some years since, excavations were made in this locality, and a staircase in good preservation was discovered leading down to the Forum. The municipality of Rome have, of late, ordered new excavations, under the direction of M. Vescovati, which, being made on an opposite part of the ruins, have led to the discovery of another staircase, which also descends to the Forum. It ended behind the so-called temple of *Vespasian*, at the building of which this entrance was probably closed. It is remarkable that the steps are quite new, and appear never to have been used. On one of the landing places, a cippus, made of peperino, has been found, on which the name of *Consul Fannius* is inscribed. On account of this material being seldom used but in the early part of the Republic, some of the Roman antiquaries have referred this name to *Fannius*, the author of the famous law against luxury, A.U.C. 593; but more accurate research has proved that it means a colleague of *Consul C. Gracchus*, A.U.C. 632.

Scientific Congress at Paris.—It is a novel feature of the French provincial societies that they assemble every year in general congress at the Luxembourg, Paris. On the 20th ult. the first meeting of this year's session was opened. A paper of M. *Chennevière* on the catalogues of pictures and statues of public collections, excited great interest, and led to discussion, the results of which will be important.

Great Dyke Works at Odessa Harbour.—These works, which have lasted since 1843, are now completely finished. Their chief object is to prevent the harbour from being filled with sand. It forms now a nearly square basin, with an opening of thirty fathoms, by which vessels may enter safely from the north-east. The new dyke is 144 fathoms long, 4 fathoms wide, and rises 1 fathom above the usual level of the sea, whose depth at the end of the dyke, and in the entrance, is 14 feet. The cost of the structure is above 100,000 silver roubles, and has been executed after the plans of M. *Van Der Fleis*, late engineer of the harbour of Odessa.

Order of the Concours for the great Prizes of the Academy of Arts, Paris.—Great prize Engraving: entry of articles, May 10; return, Sept. 1; public exhibition, Sept. 3, 4, and 5; decision by Academy, Sept. 6. Great prize of Painting, May 26, August 19; public exhibition, August 24, 25, and 26; awarding, August 27. *Architecture*, May 6, Sept. 13; exhibition, Sept. 17, 18, and 19. *Sculpture*, June 16, Sept. 8; exhibition, Sept. 10, 11, and 12; decision by the academy, Sept. 13. The prizes for the studentship at Rome, and the works which have obtained the great prizes, will be exhibited to the public from Sept. 28 to Oct. 5. The national awarding of prizes to the successful competitors (*couronnement*) at the Institute, will take place on Oct. 4.

THE IRON TRADE continues much in the same dull state as when we last noticed it. The mad system of making up for slack demand and unremunerating prices by increasing make and pushing a more extensive trade is still going on, so that superfluous stock cannot be diminishing even though others have the wisdom (a virtue of necessity in some cases, however) to reduce their manufacture. Its increase, under present circumstances, as remarked in the *Birmingham Gazette*, is a practice most inimical to all permanent improvement of the prospects of the masters as a class. The prospects of the pig-iron trade, says a Glasgow trade letter of last week, are at present most gloomy. Owing to the great production and the large stock on hand, transactions are altogether confined to the supply of the wants of foundries and shippers. The prices are still lower than they were last week: those quoted are 42s. 6d. to 43s. The *European Times* quoted the prices of bar, pig, and other iron in the previous week as delivered in Liverpool, at—merchant bar, 51. 5s.; nail rods, 51. 15s.; hoop, 61. 15s.; sheet, 71. 10s.; Scotch pig, No. 1, 21. 11s.; No. 1 pig, in Glasgow, 21. 4s.

THE REFORM OF OUR NATIONAL COSTUME.

A SHORT time ago you published a very excellent address from artists and others interested on the subject, recommending a gradual change in the male costume of this country, from the inconvenient and unpicturesque one which at present prevails, to a style more in accordance with the objects of their art. I have no doubt that most people felt the justice and propriety of that appeal to good sense and true taste, and few, I think, will refuse their support to a prudent and well-digested plan of reform in this particular. But it appears to me that suggestions of what that reform should be, or at least should commence with, ought not to be left to tailors and hatters, who will neither be forward in beginning, nor have taste enough to carry out, what the proposers of this change are desirous of seeing done. It must, in my opinion, be the artists themselves who must suggest the changes they seek to effect, by putting forth graphical designs of such a modification of the present style as will be practicable at first; and I believe the best method of actually bringing the same into use, will be for the artists themselves to be the first to adopt their own designs. Let them, then, avail themselves either of a special pamphlet on the subject, with woodcuts of their ideas as to hat, coat, or any other part of dress they desire to alter in form and fashion, and then let them appear themselves clad in garments made according to these designs. If they are but more convenient and less absurd than what we now wear, let them not doubt their new modes will be speedily adopted by others. I fancy there are not a few who have already determined to work out small and unobtrusive reforms for themselves, and, among them, I have myself determined never again to buy a hat of the chimney-pot order. I should be glad to see what the artists would propose for the protection and adornment of my head; but, if they be not quick, I must work on my own design, and I shall, at all events, venture so far as to reduce the height by at least two inches, add to the brim in proportion, and give the profile a more graceful curve over the head. Pray, do what you can to get the painters and sculptors to make public their notions of what the reform in costume ought to be, as they have made public their wishes that a reform should take place. AN AMATEUR.

COLOUR IN NATURE AND DECORATION.

THE balance of complementary colours in the combinations of hues in landscape, or the various objects of nature, are seldom maintained by corresponding tints or hues of the same relative key and brilliancy, or confined to the narrow basis contained in the report of Mr. *Crace Calvert's* lecture at the Society of Arts. The arrangements of colours in nature, and the works of the greatest colourists, are infinitely varied by contrasts of tints and hues of different degrees of strength, the difference in force being compensated by the increased relative quantity of the lighter tints, or more subdued hues, by which the harmonic proportions of the three primary colours contained in the various tints and hues are restored. It is important in the investigation of principles that we do not fall into the same error respecting colour that Hogarth did regarding form, of mistaking an element of truth for the whole truth, and confining our admiration to a partial beauty. G. B. MOORE.

THE ARMY AND NAVY CLUB HOUSE, PALL MALL.

IF our readers will refer to page 518, of our fifth volume, they will find that in October 1847, we gave a perspective view of the exterior of the proposed Club, and a general description of the arrangement of the plan. The building being now completed,* we give some further particulars of the arrangement and decorations. We may first repeat that the architects were Messrs. *Parnell and Alfred*

* In the few days during which it was open to the inspection of visitors at the invitation of the committee, about 12,000 persons visited it.

Smith, who have produced for the club a commodious and elegant mansion. We shall take the apartments in the order in which the visitors were conducted through the building.

The entrance is by a *loggia* on the east side leading into a *vestibule*: from this is reached the *members' coffee-room* on the north,—an elegant apartment recessed in the centre. The dimensions of this room are 81 feet 6 inches by 30 feet 6 inches, and the recess is 8 feet 9 inches deep in addition. Of this room we give a representation. The *grand staircase* is 40 feet by 26 feet, and has two flights of stairs. An open fireplace is cleverly introduced beneath the first landing between the branch flights of the stairs. A saving of room is made, and a novel effect gained, by the access from the upper landing to the library on the one pair being made by means of a quadrant landing in the angle. Considering the height of the story, the stairs seemed to us somewhat short, and the railing of them might with advantage have been richer.

On the one-pair story there is a *writing-room*, 40 feet by 32 feet 6 inches, the fittings of which are of satin wood; the *visitors' drawing-room* 16 feet 6 inches by 25 feet 9 inches; the *members' drawing-room*, 23 feet 3 inches by 28 feet 3 inches; and the *library*, 49 feet by 28 feet 3 inches.

On the upper floor we have a *non-smoking card-room*, 15 feet 6 inches by 23 feet 3 inches; a *non-smoking billiard-room*, 24 feet 3 inches by 23 feet 3 inches; a *smoking card-room*, 26 feet by 18 feet; a *smoking billiard-room*, 24 feet 3 inches by 31 feet 6 inches; and the *smoking-room*, 39 feet 6 inches by 33 feet. In these smoking-rooms the great desideratum—ventilation—appears to have been attended to. Outside the smoking-room is a balcony and verandah, forming an agreeable lounge.

Following the prescribed route, the visitors descended a secondary staircase to the ground-floor to the *visitors' dining-room*, 45 feet 6 inches by 29 feet; and the *house dinner-room*, 30 feet by 20 feet. In the decoration of this apartment Mr. Sang has been successfully employed: the ceiling has an effective centre-piece, and the walls are divided into panels containing baskets of fruit, grapes, &c.

We dive to the kitchen (to which we will presently return) to say it is 40 feet 6 inches by 34 feet, and that the walls are lined, to a height of about 9 feet, with glazed Dutch tiles. Then ascending once more to the ground-floor, and crossing the front hall, the *morning-room* is reached; the size of which is 71 feet by 27 feet 6 inches.*

Besides the rooms enumerated, there are apartments for the officers and servants of the establishment, lavatories, and all other conveniences. And now, having thus given an outline of the general arrangements, let us speak a little more in detail of the decorations of each room.

The enrichments of the ceilings of the various rooms are all in *carton-pierre* and *papier mâché*, and reflect great credit on Messrs. J. Jackson, of Rathbone-place, by whom they were executed. They are beautifully drawn and modelled, in very high relief, and are sharp and crisp, as if cut by the hand. The ceiling of the coffee-room is divided into three parts, by a raised skylight in the centre: the end compartments are divided into coffers of irregular design. The whole of the enriched mouldings in the coffers afford the means of ventilation. The beams are panelled and enriched with guilloche and pateras in much relief. The ends are supported by consoles associating the walls with the ceiling,—breaking over the general entablature which surmounts pilasters in scagliola, standing on pedestals. The compartments are filled in with flowers of particular freshness of design and energy of execution, avoiding the monotony so frequently seen of mere circular masses within rims of mouldings.

* The morning-room is the largest apartment, as being that in which most time is spent by the members. Again, the library is much larger than the drawing-room; and in this arrangement experience has dictated the dimensions in opposition to custom, for a far greater number of members of a club will be found in the library than the drawing-room. The library and the drawing-room are in some degree connected by the introduction of a large sheet of plate glass in the dividing partition.

Enrichment of the morning-room (where effect has been chiefly striven for) is carried out in admirable style. The ceiling consists of an oval and circles, enclosed by bands of foliage, fruit, and flowers, in very high relief: the spandrels are filled in with foliage. The cove, which is pierced for the windows of mezzanine story which does not exist,—a blot in the design,—breaks about 5 feet into the ceiling, as well as 4 feet 6 inches on wall, and is divided by upright bands (ranging with pilasters and trusses on walls) into panels, in each of which is a design of boys and foliage, with birds: the spandrels present birds and mouldings: the flowers down the bands in cove are very varied in design, and highly relieved.

The soffits of the lunettes are freely executed, and fresh in design and execution. The cornice below breaks over the pilasters, and runs across the window. On this are placed the window draperies by which the light is obscured.

The writing-room has a centre flower, with circular bands of enrichment, spandrels, and margins: the cornice round the room has a frieze composed of dolphins, tridents, shells, and bulrushes: the mouldings are highly enriched, and very clearly brought out.

The visitors' drawing-room, as well as the club drawing-room, with the library, are enriched in the style of Louis XV.: the ceiling enrichments in these rooms are highly relieved, particularly some bands of flowers over reeds, and alternating with foliage, &c.: the cove is richly ornamented, as well as the cornice: the walls of these rooms are panelled in a simple style.

The upper part of the principal staircase is surmounted with a large cove (sustaining a horizontal light), which is divided into compartments by bands, which assort with the pilasters under entablature. The angles of the cove contain shields in very high relief, enclosing the arms of the club, with palm and laurel and oak accessories. The principal feature in the staircase are some large caryatide figures, executed in entire relief, as consoles. The archivolts, mouldings, &c. are throughout of *carton-pierre* and *papier mâché*. A string-course is continued from the level of the first-floor, in which a design of dolphins, shells, and bulrushes is introduced with good effect, gradating the enrichment to the more quiet tone of the lower part, which is simply panelled with bold mouldings and raised panels.

One observation in going over this house will probably occur to most visitors, and that is, the small extent to which any attempt has been made to identify the structure (by the decorations) with the services in which its owners and occupants are engaged.

Little or no colour is employed throughout, form being mainly depended on; and the aspect of some of the rooms is, therefore, colder than we should desire.

The furniture is handsome,—mostly of walnut wood, manufactured by Messrs. Gillow. The book cases which line the sides of the library are fitted up (we may mention as a useful hint) with spring silk blinds, which are pulled down in front of the books at night, or when dusting is going on.

The door from the staircase into the library is masked by blank book-backs, to range with the other cases; and here the wit of the club has been allowed to explode: the letterings present a series of jokes,—many of them very good ones, and will afford something to talk about to a new member. Let us take a few examples:—"Creak on Patent Hinges" is in its proper position, and so are "Handle on the Art of Turning," and the "Rape of the Lock." The "Law of Substitutes," the "Art of Deception," an "Essay on Wood-bird," a treatise "Sur les Sorties Impreuses," and "Pasley on Passages of Communication," may all be found there; "Viner on Stoppages in Transitu," "Blackstone on Fictitious Entries," "Le Livre Fermé," and the "Blockade of the Sublime Porte," very properly come together; and there are six goodly volumes of "Rien de Tout,"—the only words of truth amongst them.

Considering the food for the mind, we must

not be led to forget the provision that has been made for food for the body, so let us return, as we promised, to the kitchen.

The chief agent in the extensive cooking apparatus at this club is steam, which is supplied from one cylindrical boiler of wrought iron, and from thence is conveyed to the various steamers for dressing meat, fish, and vegetables of all descriptions: it heats the water in three *bains-maries*, for keeping hot sauces and soups of all descriptions without the possibility of their burning: it boils the whole of the water for the use of the kitchen, scullery, and offices: it maintains, at a high temperature the apparatus for cleaning the coppers; and it heats the various closets and tables (of which there are nine) that are used for warming the plates and dishes and keeping hot the *cuisinier* when ready for the table.

The roasting apparatus consists of two open fireplaces,—one of six feet in width, for the cooking of the larger joints, &c.; and the other, a small fire-place exclusively for poultry and game.

The ascending current of air in the larger fire-place is made use of for working a revolving apparatus, consisting of four distinct movements, which are so arranged that any one may be worked quite independently of all the others, and at any distance from the fire, according to the size or kind of joint to be roasted. The great advantages of this roasting machine over the ordinary smoke-jack, are, firstly, that all spitting is avoided, and, as, in this case, the spits would have required to be seven feet long, and of great weight, a very great saving of labour is effected, and the mutilation of the meat prevented; secondly, that the gravies of the various meats are preserved separately, and each is basted with its own gravy.

Great care has been taken to keep the various departments of the cooking distinct and perfect in themselves, thus: the chief cook has his hot plate and broiling stove, his stewing-stoves (to which in two cases gas has been added, rather as a useful auxiliary than a substitute), his *bain-marie* for sauces, and one distinct for soups, as well as a small tinned copper sink, with hot and cold water, and a large oven for baking.

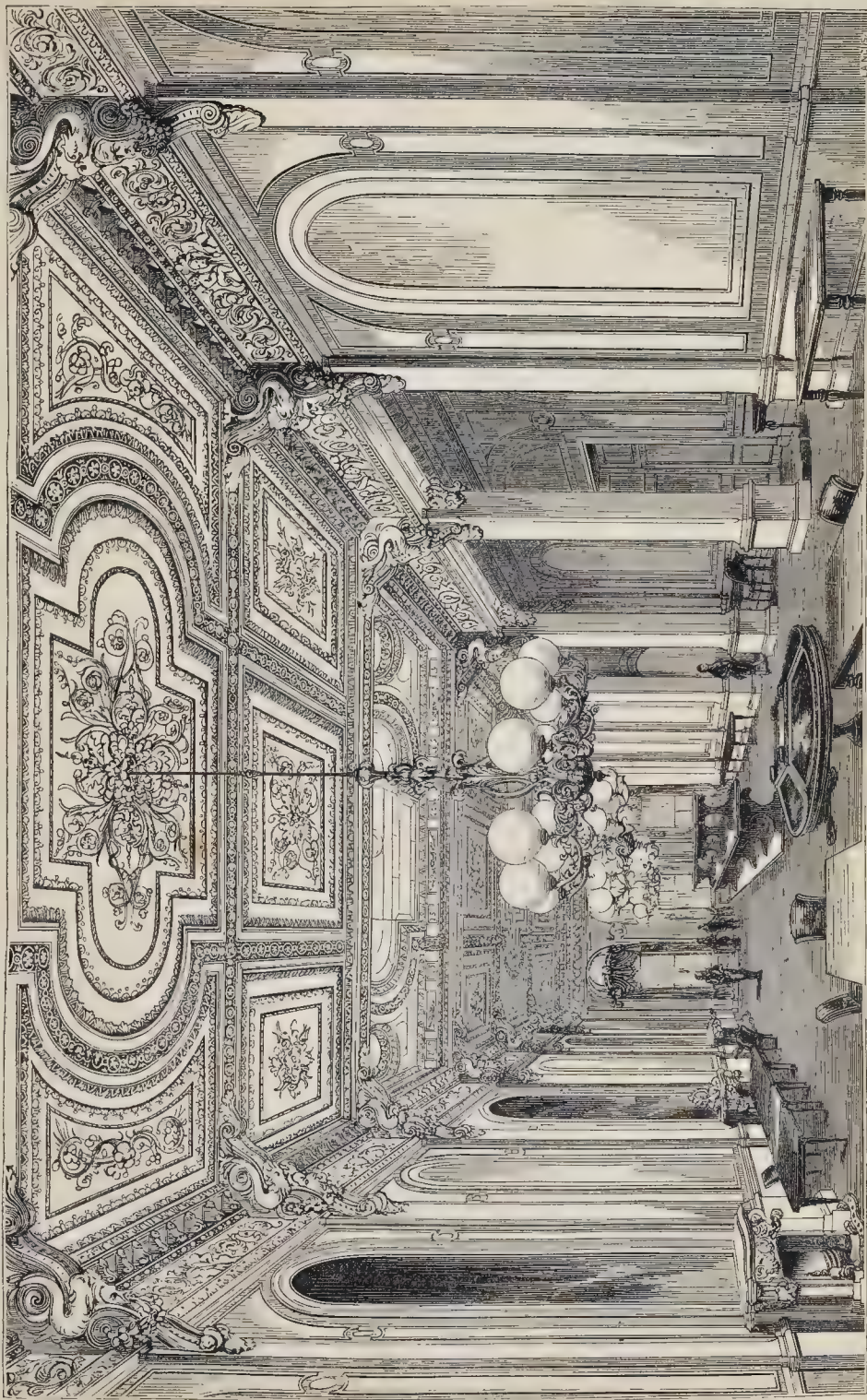
The fish cook has a separate plate for broiling fish, a distinct *bain-marie* for the sauces, and steamers for boiling the various kinds. The stoves for broiling chops, steaks, and kidneys, which form a very material element in club gastronomy, are also kept quite distinct, and under the control of a separate cook. [What can we want with wives?]

The vegetable cook is confined to the scullery, where she has her hot plate for boiling the vegetables (which fire also heats an oven, in which the servants' dinners are cooked), and also her steamers for steaming them.

Each department of cookery is provided with its hot closet for heating the dishes, and also a hot table for dishing up the various condiments when ready for the table. There are also distinct departments with fixed washers, provided with hot and cold water for washing the china, the vegetables, and the coppers. The whole of these matters have been executed by Mr. Wm. Jeakes. The orders for dinners are passed from the coffee-room through a trunk to the clerk's desk in the kitchen, and are taken up by a lifting machine, by which means the dirty china, &c., are brought back. Communication of orders is also effected by means of speaking pipes from the clerk's desk to the various waiting-rooms.

On the mezzanine floor are the lavatories and four bath rooms provided with hot, cold, and shower baths, the whole of which are heated by a small boiler in the basement, which also warms several of the bath and dressing-rooms, and supplies a large closet for heating the towels and linen.

The carcass or shell of the building cost 18,500*l.* (Mr. Trego, contractor). The interior cost 16,500*l.* (Messrs. Smith and Appleford, contractors);—in all 35,000*l.*, exclusive of the fittings. The comparatively small plot of land on which it stands has cost the Club 52,000*l.*, and the total expenditure may be called, in round numbers, 100,000*l.*



THE COFFEE-ROOM, ARMY AND NAVY CLUB.—MESSRS. FARNELL AND SMITH, ARCHITECTS.

STATE OF SOME OF THE LONDON ROADS.

The infamous condition of parts of the New-road, and general bad condition of many of the metropolitan roads known more particularly as macadamised roads, is to be referred to the total want of anything in the shape of science displayed in their construction or reparation. What is put on one week is scraped off the next*: the result is lavish expenditure and imperfect roads; to say nothing of the wear and tear of horses and vehicles (no small consideration), resulting from the barbarous plan adopted of shooting broken pieces of angular granite upon the road, and leaving their ultimate consolidation a matter of accident. That roads should be made ready for traffic, and not left for traffic to make them, is, I take it, a first principle.

1. The surface of the road should present a flat ellipse: this tends to keep the road dry, and allows the sun and wind to have a greater effect in evaporation.

2. The entire road formation should not be less than 2 feet 6 inches in depth.

3. The whole should be drained, and form one cemented mass.

4. The upper surface should be dressed with the hardest stone, such as basalt or granite, in cubes not exceeding 2½ inches, grouted together, and left to consolidate.

A DISTRICT SURVEYOR.

“* And then, when all this has been effected, the water company’s men will come and destroy it for you; and, as soon as the damage done by them has been patched up, a new gas company, or the Commissioners of Sewers, will probably find it necessary to walk in and disturb once more the road’s equanimity.”—ED.

TESTING THE EXHIBITION BUILDING.

SIR,—Will you permit me to say that the mode of testing the gallery floor last week, concerning which so much was said by the papers, is to my mind far from satisfactory, inasmuch as the inclined planes at each end of the beams formed struts to them, and converted the whole into a species of Queen-truss. I have no doubt that the beams are strong enough for their work, and so far as I know no question has ever been expressed with respect to them; but, Sir, the parts of the construction that have been objected to—viz. 1, the insufficiency of the diameter of the columns, causing inability to resist lateral pressure; and 2, the insufficiency of the connections of the beams with the columns, do not appear to have been tested at all; the model floor having been placed at a height of some 12 or 14 inches from the ground, leaving completely untouched the questions above alluded to, and besides not experiencing the vibration which there is in the real galleries 30 feet from the ground. Possibly the parts in question have been tested, though not in a public manner: if so, I shall be glad if this letter produce a reply to that effect.—B.

“* We received many letters on this subject last week, but avoided noticing them, not desiring to seem always in collision with those who have the conduct of the structure. We need not tell our readers any more than the parties themselves that the trial proved very little. We feel no surprise, like some of our correspondents, that the directors of the work made the experiment in question as a first step, but quite participate in their astonishment that it should be trumpeted far and wide through the press as a test of any value.

ARCHITECTS’ BENEVOLENT SOCIETY.—We would direct our readers’ attention to the announcement elsewhere, that the annual general meeting of this society will be held at the Freemasons’ Tavern, on the 12th instant, when the chair will be taken at 3 o’clock.

LAMBETH RAGGED SCHOOLS.—The schools erected in Lambeth by the munificence of Mr. Beaufoy (and to which we have on other occasions alluded), were publicly opened on Wednesday last. We shall pay them an early visit.

* Chalk, lime, and fine gravel might be worked in: at present there are no binding ingredients.

CONSTRUCTION OF THE BORDER BRIDGE OVER THE TWEED.

INSTITUTION OF CIVIL ENGINEERS.

On February 25, Mr. William Cubitt, President, in the chair, the paper read was “A Description of the ‘Royal Border Bridge,’ erected over the River Tweed, on the line of the York, Newcastle, and Berwick Railway,” by Mr. G. B. Bruce.

This viaduct, the total length of which is 2,160 feet, and the extreme height 129 feet, consists of twenty-eight semi-circular arches, each 61 feet 6 inches span; and the whole is constructed of stone, with the exception of the inner part of the arches, which is of brick laid in cement. It is divided into two parts by a central abutment, which enables the land arches to be completed, and, along with a temporary timber bridge, to be brought into use for public traffic, before the completion of the river arches, which necessarily occupied a considerable period in execution, owing partly to very substantial coffer-dams having been requisite for the river piers, but principally to its having been thought advisable to pile the foundations of most of these piers, as the bed of the river was liable to be scoured away by the rapid stream. The piles, both of the coffer-dams and of the foundations, are mostly of American elm, as it was found that the heads of the Memel piles required to be frequently cut off and re-booped, when driven by Nasmyth’s steam pile-driver, which was almost entirely used, both on account of expedition and of economy; for it was proved, that whilst the hand ram only gave one blow in four minutes, the steam pile-driver gave sixty blows in one minute, and that the cost of the former was two shillings per lineal foot, whereas that of the latter was very little more than one shilling per lineal foot. It was also remarked, that the force was more advantageously employed in the case of the steam pile-driver, as, on account of the ram being heavier and the fall less, the piles were not so frequently split.

The piers had an ashlar facing, and were filled in with well grouted rubble, having occasional through courses of ashlar, and an ashlar tie in the centre of their width from top to bottom. Great care, it was said, was taken in the preparation of the mortar and the grout used in this work, and after a variety of experiments, the plan finally adopted was,—in the case of setting lime for ashlar,—to grind quicklime dry by itself, in a common mill, and then to mix it with coarse, sharp sand, screened out of gravel taken from the bed of the river, in the proportion of three of sand to one of quicklime: this was then put under cover until required. Lime to be used for grout was also ground dry, and along with it was ground slag from an iron furnace, then gravel from the river was mixed with it without being screened, the proportions being quicklime one,—slag three quarters,—and gravel two and a quarter. The mortar when used had absorbed a sufficient quantity of moisture from the atmosphere and the sand, to prevent its being too hot for use; and yet, as it had not been previously mixed with water and wrought into a paste, it retained its original setting power. This mortar required to be used very soft, and the stones to be well wetted, and as the sand was very coarse, thick joints were necessary, but in a few weeks it set as hard as Roman cement. All the lime used in this work was from the mountain limestone of the Scremerston and Lowich districts of Northumberland.

The centres, which were stated to have been of peculiar construction, were supported entirely from the piers, so as to prevent any accident happening, if the scaffolding were injured, either by the heavy floods of ice to which the river Tweed is subject in winter, or from the vibration caused by passing trains; as, when the idea was first entertained of having a temporary bridge, the intention was merely to add to the contractors’ scaffolding, and to make it serve for both purposes. This intention was, however, abandoned, and an entirely separate timber bridge was erected, on the east side of the stone bridge, at a cost of 14,340*l*.

The total cost of the “Royal Border Bridge”

was 120,000*l*, and of the whole contract, one mile in length, in which it was comprised, 207,000*l*, including an embankment, which had to be made entirely from side cutting, and which contained probably 760,000 cubic yards.

SEYSSSEL ASPHALTE AT WOOLWICH.

At the Royal Carriage Department, Woolwich, the authorities are working early and late to get the many alterations effected by the period of opening the World’s Fair. Messrs. Fox, Henderson, and Co., are employed to do the extensive range of iron and glass roofs, and the Asphalté of Seyssel Company have contracted for the roadways through the several streets. In the application of this material a railway and engine are employed, which, running under the iron roofs above named, give the place the appearance of a railway-station.

DRAWING WATER FROM LONG DISTANCES.

THE question put by your correspondent as to the capabilities of a suction-pump for fetching water upon a level a distance of 800 feet is, I think, worthy a few practical remarks, which I would respectfully place at the disposal of THE BUILDER.

Water and all fluids, like every other gravitating medium, when put in motion, are subject to the operation of two influences—*inertia* and *momentum*; and these forces operate upon all qualities of matter in the ratio of their relative specific gravities. Iron bears to water a proportion of about 7 to 1; therefore, it will take the same intensity of a force to overcome the inertia of a column of water 800 feet as it would a bar of iron about 115 feet long, whether such motion be horizontal or vertical. So also with regard to the momentum of the mass when in motion. Now, to start this bulk of water and stop it again *instantly* at every stroke of the pump is a perfect impossibility: it must have time, and this periodic duration becomes greater as the column of water gets longer, irrespective of its diameter. If a pump be worked at a *maximum* speed, and the water have to be fetched a great distance, this period of time becomes very perceptible; and hence the difficulty which arises even in fetching it at all, without resorting to other means. Take an instance. We want to fetch water 800 feet, say. Put down an ordinary suction-pump used for general purposes: it will not fetch the water at all. Increase the size of the pipes, the result will be little better. Double the size of the pump, or make it double-acting, or put two pumps working opposite: drive any of these at half the original velocity, and we shall gain something towards fifty per cent.; and, after all, the pump will work very imperfectly. And why? because the water has not time to start and stop its motion throughout the whole length of the pipes the instant the pump-bucket changes the direction of its motion. Hence a shock at each extremity of the stroke, one caused by inertia before the water begins to move, and the other produced by the momentum of the mass of water when it is in motion. The result is, the water is always too late: it will not start with the plunger, and thus the pump works imperfectly with much noise and labour, and under serious disadvantage. To take a real case. A 5-horse engine, working two single-acting pumps in opposite connection is required to fetch water at an “effective speed” a distance of about 60 feet. As long as the pumps work slowly, all is right; but the moment they get above a certain tardy velocity, the delivery of water becomes imperfect, and a series of percussive shocks in the suction-pipes and machinery at once commences. The vacuum in the pipes necessary to balance the depth of water in the well becomes doubled at the commencement of every stroke: the plunger ascends, but the water has not time to fill up the space left; hence at every return-stroke there is a severe shock, because the pump’s motion is opposite to that of the water. Thus an accumulation takes place, and the *vacuum* that existed an instant ago in the suction-pipes, is now a pressure of 10 to 12 lbs. per inch.

The result of all this is, the pump works very imperfectly, and, if driven at anything like a proper speed, will not work at all: the clocks and joints are soon injured, and the whole apparatus is forthwith voted a waster.

Let us next see how this is to be remedied.

We must either by the general resort make one pump four to six times larger than it ought conveniently to be, and work it proportionally slower, or introduce an equally expensive application, and have three lesser pumps in neutral connection, driven by complicated machinery. By this latter arrangement we produce a continual stream in the suction and delivery pipes, and thus annihilate completely these two most provoking evils. My improved pump, alluded to by your correspondent, is designed to accomplish the same object in a much cheaper manner. Here we have the simple application of one single-acting pump instead of three, but producing "a constant and undeviating stream" throughout the entire length of the pipes,—hence its capability to fetch or force water any required distance, without shock or concussion.

The pump is thus enabled to work at a much higher velocity, without inconvenience, as the water is already in motion, and better able "instantly" to follow the ram,—and more effective, inasmuch as the pump gets completely filled at every stroke, and the plunger displaces its entire bulk of water without noise or shock, or any perceptible injury to the working parts.—W. E. CARRETT.

PUBLIC DRESSING ROOMS.

THERE is a new trade, for which the metropolis seems fully ripe; and one not unworthy the attention even of the capitalist: the necessity has for some time been growing; and the eventual circumstances of 1851 not merely suffice to afford a favourable opportunity for bringing it into operation, but they positively render it most urgently necessary.

When surface sewers were superseded by subterranean ones, and raised and flagged *trotoirs* obviated the demarcation of the footway by means of posts, the calling of the street shoe-black in London died out; for its population was not then so dense, nor its traffic so great, as now,—conditions which would then have saved the occupation of the shoe-black, in spite of those other influences conspiring against him. In Paris he cannot yet be dispensed with, but manages to live on, even in competition with those shops in which the pedestrian can, for a trifle more, get his boots and trouser-feet made smart, in better style and with more comfort.

The shops referred to are fitted up with wall seats, at such height from the floor as that the operators can perform their avocation with ease,—an iron rail being provided for the feet, and serving also as a step for mounting the seat by: along these wall seats, and with their feet resting on these iron rails, the customers may be seen sitting in opposite rows; while men, similar in grade to the inferior attendants in our boot-warehouses, are busy polishing them off. To the Frenchman, who dines at the *table d'hôte* or the *restaurant*, and, when the duties of the day are over, solaces himself awhile at the *estaminet*, and then hies to the *Variétés*, or the *Comique*, without once entering his lodging since the morning, such places must be indispensable; and when it is considered how much the habits of a large portion of the male population of London are assimilated to those of Frenchmen, so far as regards living out, it will be obvious enough that similar accommodation in our metropolis could not fail to be appreciated.

In consequence, however, of Paris affording separately another description of accommodation, rendered necessary by the same habit of out-door life, and for which an outcry has been raised in London, which is becoming daily more and more urgent, the places proposed to be established should be of a more complete description than the mere shoe-blackening shop of Paris; and it is suggested that they should in every respect possess the requisites of "Public Dressing-rooms," or, as our French neighbours might term them, "Cabinets du

Toilet,"—the hairdresser playing his part in the scene, equally ready to shave his customer, or to lend the instrument of his office to those having scruples at being taken by the nose.

That the system of living out will prevail in full force among the vast multitude who come to the Great Industrial Fair there cannot be a doubt; and the existence of such places of resort, apart from those of refreshment, would therefore prove a boon of high importance. The expense of fitting up and operation, considered with reference to the probable extent to which they would be encouraged, would, in all likelihood, render a very small charge per visit remunerative: as to their arrangement, it is a matter of detail unnecessary to be here entered into; but any shop having a saloon in the rear, with water-supply and drainage, would be capable of conversion to the purpose.

JAMES WYLLSON.

METROPOLITAN COMMISSION OF SEWERS.

A SPECIAL general Court of Commissioners was held on Friday 25th ult. for the purpose of receiving the estimate of Mr. F. Forster, as to cost of drainage of northern portion of metropolis. The Lord Mayor took the chair. Mr. Forster, in submitting his detailed plan to the Commissioners, adopted their instructions, and divided the northern district into two separate areas, for which different means are required to be adopted. He presented his estimate for these works, which was read by Mr. Woolrych, the secretary, and may be abridged as follows:—

	ESTIMATE.	
	Miles.	Yards.
Main high level sewer from pumping-station, east of Lea, to western terminus at Grand Junction-road, Uxbridge-road...	7	1,202 ...
Branches: Hackney-brook branch, from junction at Cambridge-heath-road to Kentish-town...	6	1,433 ...
Copple-row branch, to Baker-st. Piccadilly branch, from Gray's-inn-road to St. James's-street, Piccadilly ...	1	1,636 ...
Branch from Gray's-inn-road to river Fleet at Old St. Pancras-road ...	1	290 ...
Branch from Rathbone-place to Park-crescent, New-road ...	1	617 ...
Main low level sewer, from pumping-station, east of river Lea, to Park-walk, Chelsea (exclusive of Victoria-sewer, already finished) ...	7	1,040 ...
Branches to main lower sewer, viz. branches to Isle of Dogs ...	4	260 ...
Branches from Bridge-street, Westminster, and along Mill-bank ...	1	1,317 ...
A branch from Grosvenor-canal into Fulham and Hammermill district (its produce taken by Metropolitan Sewage Manure Company) ...	1	1,200 ...
The extension of high and low level lines by two parallel sewers from pumping-station to outlet at Barking Creek, including aqueducts (two miles) over North Woolwich Railway, reservoir at Barking Creek, and outfalls with penstocks, gates, and machinery, and also dwelling-houses for foreman and labourers ...	4	1,200 ...
The pumping-engines at station east of Lea viz. three 600-horse power engines, with houses, sheds, pumps, and machinery ...		96,800
Total miles ...	37	1,757 ...
Total length of sewers, 39 miles: about 15 miles through principal lines of thoroughfare, executed by tunnelling, and remainder mostly by open cutting. Expenses of land, houses, &c. not included in this estimate.		298,162

Sir H. De la Beche stated that application had already been made for the sewage for agricultural purposes. The expenses of the works would be distributed over a period of thirty years, at a rate of 3d. in the pound. The commission would require increased powers of borrowing the money required. Alderman Lawrence regretted the deficiency of the estimate as regarded compensation, &c. Lord Ebrington considered the estimate an engineering document. The estimate was approved. The gross amount required, exclusive of compensation, will be 1,080,000l.

BATHS AND WASHHOUSES IN SOUTHWARK.—The Vestry of St. George the Martyr have appointed a committee to inquire as to the adoption of the Act 9 & 10 Vict. c. 74, in that parish.

THE QUALIFICATIONS FOR THE INSTITUTE OF ARCHITECTS.

Will you permit an old subscriber to your most admirable journal to call your attention, and that of the profession, to the present system of admitting to the degrees of Associate and Fellow of the Royal Institute of British Architects? Either the diploma it confers is, or is not, an honourable distinction: if it is, it should not be given to those who are utterly unworthy of it; and if it is not, then, in the name of common sense, of what use is it at all? Why the distinctions of student, associate, and fellow; why the force of ballot; and why the "incorporation of 7 William 4?"

This reflection has been forced on me from the inspection of some designs submitted in competition not long since for a small public building: one of these was from a member of the Institute (for the names were attached to the plans), the others were not; and that from the "M.R.I.B.A." was not only the worst of all, but so despicably bad altogether, that I have no hesitation in saying it was never surpassed in badness in the palmy days of Compo and Bernasconi. That you may not think I exaggerate, I need only say that it included a Gothic hall about 30 feet by 60 feet, lighted by squat lancets 4 feet wide, with brick splayed jambs, and 14 inch walls, and you will be quite able to appreciate the *genus* of the production, and realize the deformity of everything else about it. I leave you, Sir, to comment on it: here is the fact; but I cannot help thinking that the Institute will gain but little respect in the estimation of true lovers of art, if they permit M.R.I.B.A. to be appended to such miserable abortions as these. Why cannot the diploma of the Institute be as honourable to an architect as that of the Royal Academy itself? Whose fault is it that it is not?

Its propriety was very much shocked that any one of its members should condescend to measure brickwork for a builder, and yet it gives its honours to those whose efforts the merest tyro who had a soul for art would shame.

I do not mean to say that no one should be admitted who had not carried out great works: far from it; but I do think that a body professing to be at the head of a fine art, should at least see, before it confers its titles on a man, that he is capable of making a decent design for an ordinary building. W.

THE SUPERSEDEMENT OF STEAM POWER.

NOTICES to quit have been so often unavailingly served upon this useful public servant, that one tires of giving heed to what steam itself seems to take so coolly; but really the threats to expel it by main force are following, so thick and fast, one on another, and there are so many startling realities amongst those "lying wonders" one is ever now in the midst of, that at length we should not wonder at all to find the field of steam, and such everyday material forces, occupied, all of a sudden, by others much more akin to those of ancient magic than of modern matter-of-fact. We have all heard of enchanted regions through which the boldest and most vigorous knights were prevented, by invisible forces, from advancing even a single step,—of magical circles which could not be broken either out of or into, and so on; but wonders such as these are already nothing extraordinary to any one who has witnessed Dr. Faraday's astonishing experiments in diamagnetism, in which invisible forces are actually shown to resist all endeavours to cleave the mere impassive air with the human arm, and to make such efforts both laborious and exhaustive, even without metallic intervention such as that of copper discs or swords or saws, the difficulty of cutting the air with which, the Doctor also illustrated in such a way as would astonish the most able-bodied sawyer, or most errant knight. In short, the suspension of Mahomet's coffin between earth and heaven, so well illustrated by the rise of the bar of iron into the centre of the electro-magnetic helix, and its suspension there in the air, to the

defiance of the law of gravitation, is a stale type of magical incantation compared with the wonders now within the limits of realised and actual science. But it is at least very questionable whether such a prelude as the present be not wasted on the "mechanical wonder" which we intended it merely to introduce. That mechanical wonder, as it is called, is just one of those thousand and one rumoured novelties in power to supersede steam which have seldom or never as yet turned out to be anything else but smoke: in fact, one of them did actually consist in the turning of smoke itself to account, if we mistake not. In the present instance, a Mr. McCrackan, of Warwick, draper, announces, it is said, "a new mechanical propelling engine, of six to eight horse power, to supersede steam power, whether stationary, locomotive, or marine; and also to supersede horse power on common turnpike roads. It requires neither coal, air, nor any chemical compound to give the power; has neither funnel, boiler, condenser, tank, nor tender, and appears very unlike any machine hitherto invented. The expense of the engines will be less than those of steam: the cost of working will not be a twentieth part, and a much greater amount of speed may be obtained by them than by the best steam engines now in use."

BRITISH ARCHÆOLOGICAL ASSOCIATION.

At a meeting on February 26th, Mr. J. Heywood, M.P., president, in the chair, several interesting exhibitions of antiquities were furnished, including a very fine tilting helmet, discovered near Sevenoaks, in Kent. This, in many respects, resembles the helmet of Edward the Black Prince, at Canterbury, but Mr. Planché considered it somewhat earlier. A communication was read from Mr. F. A. Carrington, containing an account of some unknown monumental figures discovered at Wanborough, Wilts; with suggestions as to identifying monumental figures when there is neither inscription, heraldic device, nor tradition. By means of the costume and reference to records, Mr. C. considered that the effigies are those of *Emelina Longespée*, and *Maurice Fitzmaurice*, her husband, who lived in the reign of Edward I.—Mr. H. S. Cumming read a paper on the pestle and mortar, giving not only the ancient history of these universally used implements, but describing the various forms in which they appear at the present day in different parts of the world.

The president informed the meeting that the council had made arrangements for the members to dine together at the Freemasons' Tavern, after the annual meeting on March 12.

Books.

A Supplement to Godson's Practical Treatise on the Law of Patents for Inventions, and of Copyright in Literature, the Drama, Music, Engraving, and Sculpture; and also in Ornamental and Useful Designs, for the purposes of Sale and Exhibition. By PETER BURKE, Esq., of the Inner Temple, Barrister-at-Law. Benning and Co. 1851.

MR. GODSON'S treatise on the law of patents and copyright has been for years a standard book of authority with regard to those important subjects. Unfortunately, just as the patent and copyright law was about to become of more moment than ever, the author died somewhat prematurely. He had, at the time, attained a high position in his profession, and, no doubt, subsequent editions of his work would have derived further benefit from his extended knowledge and experience. Although but a short time has elapsed since the last edition of Mr. Godson's treatise, so much change has occurred in the law of patents, and especially of copyright, that the book, unless modernized, would be actually valueless at this very period when the approaching great exhibition renders patents and copyrights all-important. Mr. Peter Burke has, therefore, made this supplement, which fully restores, and, indeed, enhances the utility of the original production. That portion of his

labour which was devoted to copyright, Mr. Burke thus speaks of in his preface:—

"With the latter half of the supplement, containing the law of copyright, it became necessary that more should be done, in consequence of the many changes recently occurring in that branch of our jurisprudence. The editor, has, therefore, entirely revised and remodelled the matter touching on copyright, so that this supplement, in effect, embraces the whole law on the subject, new or altered, as it now is, whether in regard to literature, music, the drama, engraving, or sculpture, or to designs, useful and ornamental, for the purposes of sale or exhibition. These extensive changes, it cannot but be observed, have happened in every instance for the better. Rich and abundant fruits have already come of the efforts of those salutary spirits of Parliament, the Broughams, the Talfourds, the Bulwers, and others—distinguished actors themselves on the great stage of knowledge—who have thus reformed the copyright law. Nor will the good they have done stop here. The country has yet to experience the incalculable benefits likely to arise from the fair protection of its industry and intelligence, from the due fostering of its genius, and the liberal encouragement of its letters, its music, and its arts. For the perfection of such a system, little now seems wanted, as far as copyright is concerned; and it is only to be hoped that in a short time the law of patents may have to boast of a reformation equally prosperous and beneficial."

Mr. Burke enters very fully into the law of literary and dramatic copyright. When writing on the former, he is particular in explaining what abridgments may be made without incurring the danger of piracy. In referring to the drama, he raises a curious question as to whether a dramatic author has or has not perpetual and exclusive property in the representation of a play which has not been printed and published. The fine arts, and especially the copyright of useful and ornamental designs, form a prominent feature in this supplement, and necessarily so, since the subject comes home, in 1851, to sculptors, artists, designers, engravers, and indeed to every one. Mr. Burke has adopted a very plain style of writing in this supplement, evading, as much as possible, the technical verbiage of the law, so that any person will be able to easily read and comprehend the book.

On the Dwellings of the Poor, and the Means of Improving them. By MONTAGUE GORE.

Second Edition. Ridgway, Piccadilly. 1851. THE subject of the present little pamphlet cannot be too often urged on the attention of all who have influence, of any kind whatever, that may tend to remedy so immense an evil as the miserable state of dwellings inhabited by the poor, especially in towns, and, above all, in this town of towns, the metropolis,—scenes in which, of the most shocking description, are here faithfully exposed. The author, amongst other suggestions, urges the opportunity, which has already been adverted to in our columns, for erecting new dwellings for the poor, which now exists in the vicinity of Farringdon-street, towards Clerkenwell. The project for building workmen's cottages along the lines of railway centering in the metropolis, has never come to anything yet. Mr. Gore does not fail to recall attention to this, as one of many schemes that might do good, though certainly not to those most essentially and immediately in want of improved dwellings, who are the very poorest of all, and totally unable to benefit directly by such a scheme. Indirectly, however, the state of even these might thus be much improved.

Rudiments of Chemistry; with Illustrations of the Chemistry of Daily Life. By D. B. REID, M.D., F.R.S.E., &c., &c. Fourth Edition. Ballière, Regent-street. 1851.

THE object of this little work is to facilitate the introduction of a course of chemistry as an elementary branch of education in all schools and academies, and thus to lay a foundation for the young pupil's future progress in science, and in the more important of its practical applications in the economy of daily life and the useful arts, by awakening his mind to the nature of the material world in which he is placed. To this end we have no hesitation in recommending this treatise as one exceedingly

well adapted to the purpose. The author has clearly kept that special purpose in view throughout in his judicious collation of facts, and illustration of affinities and principles.

We have occasion to know, what the author also states, that in schools where trials have hitherto been made of elementary and simple courses of chemistry, the pupils have evinced the utmost interest and curiosity in the prescribed experiments. Such courses, too, have become especially necessary, as the author remarks,—

"For young persons intended for professions where a knowledge of physical science is necessary, as, from the great progress now made in all its branches, without some previous training in elementary schools, it would be as impossible to expect the medical man, the engineer, the architect, the manufacturer, and all who are professionally interested in science, to obtain that amount of information from the usual course of education which is now required, as it would be for any one to maintain a proper rank as a scholar or a mathematician, were he never to enter upon the study of classics or mathematics till he should join a university."

First Report of the Committee of the Macclesfield Public Baths and Washhouses. 1851.

This report is prefaced by some observations of the Rev. E. Weigall on the necessity and advantages of such establishments, which well merit an extensive circulation in other towns besides Macclesfield. The baths and washhouses there are already more than self-supporting, as a surplus of 64*l.* odds appears in the current year. The number of bathers during the year was 38,522. Of this number 21,748 were those who bathed for 1*d.* The number of washers during the same period was 2,707. Of these 2,237 were cottagers and lodgers. Upwards of 500 persons have already learned to swim—a benefit itself of no little importance.

Miscellaneous.

PRINTING PRESS PAPER-FOLDERS.—A Mr. E. N. Smith, of Springfield, Mass., is said to have perfected a newspaper and book-folding machine, now in successful operation under the management of an Association at Boston, U.S., called "The American Paper-folding Company." The machine consists of the combination of a number of wooden rollers and metallic cones, so arranged, that by means of tape guides the printed sheets are made to pass in different directions between the rollers, each change of direction giving a fold to the sheet, until at last the sheet is discharged, evenly folded in the form desired, and neatly pressed. The sheets fall from the machine into a proper receptacle, where they form an even pile. One of these machines is in operation on the Boston Transcript's steam press, and another is at work in New York. The amount of work that such machines will ultimately have to do in the States alone may be estimated by the alleged fact, that in the various newspaper and book-binding establishments there, no less than 500,000 persons are employed in folding alone.

PRINTING PRESS POWER AT BOSTON, U.S.—Through a 2-inch lead pipe a stream of water is introduced into a meter 24 inches square. The fall of water between the Boston reservoir and this meter is about 100 feet. This 2-inch stream discharges eighty gallons of water each minute, and in passing through the meter gives a three-horse power, more than sufficient for driving the press. It is less hazardous than a steam-engine, requires no attention, and is always in readiness. A daily paper is printed by help of this simple power.

POSTING NAMES OF STREETS.—A gentleman from the Whitefriars Glass Works, says the *Sheffield Independent*, has an improved mode of representing names of streets on public lamp-posts, so that the locality should be known by night as well as by day. The system is patented, and consists simply in impressing, by a peculiar process, the name of each street upon glass while in a state of softness.

THE MORMONS' CITY.—Three years ago the Mormons arrived in Salt Lake Valley, in the "Rocky Mountains," and their progress in laying out a city, buildings, fencing farms, raising crops, &c., is truly wonderful, and is another striking demonstration of the indefatigable enterprise, industry, and perseverance of the Anglo-Saxon race. *The New York Inquirer* says, "The city is laid out in about twenty different wards, and covers an area of three square miles. It already contains about 1,000 houses, nearly one story and a half high, built of adobe, or sun-burnt brick. A fine stream of cold water rushes down from the mountains, which is distributed in ditches through every street in the city, through the gardens, and to the doors of the dwellings, where it is used for culinary and other purposes. The ground whereon the city is built is sloping, which affords a great fall for the water, the current through the ditches running at the rate of about four knots an hour, and keeps up a continual supply of fresh water from the mountains. The valley where the city stands is quite handsome, running east and west. The city is situated about three miles from the Timpanogas Mountains on the east, within five of the Utah outlet on the south-east, and within twenty miles from the range of mountains on the south, within twenty-two miles of the great Salt Lake. Its population is about 5,000, that of the valley 10,000, exclusive of the city. The Mormons are now building an extensive stone house, two stories high, and its dimensions are 40 by 90 feet. Most of the city is fenced, every half-square mile being under one enclosure, almost every foot of the ground (except where the house stands) being occupied with grain and vegetables. There are several stores kept here. Mechanics of different trades are busily engaged."

MOTION BY GALVANISM.—It is announced in the *Madras Spectator*, Sept. 13, that a person in that town has discovered a substance which he calls *fibre* (what it is remains a secret), which, under galvanic action, contracts suddenly to one-fourth of its length, "its power being equal to 100 lbs. on every square inch of its sectional surface." The inventor has constructed a model engine, to show the application of the new motive power. A reciprocating beam attached to an ordinary crank, with fly-wheel of about 4 feet in diameter, is fitted at each end with a cylindrical piece of the fibre, insulated by a plate of glass. Near the frame is a small galvanic battery. Operations are begun by giving a shock from this battery to one of the pieces of fibre, which immediately and violently contracts, drawing the beam down on that side, and of course communicating motion to the crank and fly-wheel. So soon as the centre has been turned, another shock given to the opposite piece of fibre continues the motion, and the shocks being alternately repeated, the fly-wheel soon gains an enormous speed.

IMPROVEMENTS IN BELL-HANGING.—A variety of improvements in the fitting up of bells, &c. have been introduced by Messrs. Bryden and Sons, Rose-street, Edinburgh, models of which are to be sent to the Great Exhibition. The first is an index dial bell, with eight indicators: one bell only is thus required for any number of apartments. The "manifold bell-pull" is a contrivance by which one pull is made to ring bells in eight or any greater number of rooms: when the pointer is placed opposite any name on the dial-plate, and the knob pulled, the bell is then rung only in the room indicated. Another contrivance is the circular telegraph bell, by means of which any one or all of eight different clerks or workmen may be called.

RAILWAY JOTTINGS.—From the annual report of the Commissioners of Railways recently issued, it appears that 625 miles have been added to the 5,996 miles of railway open at the commencement of last year in the three kingdoms: of these, 477 have been opened in England, 104 in Scotland, and 44 in Ireland. The whole length authorized up to December, 1850, those abandoned inclusive, was 12,182 miles. The number of employes has been diminished from 12'3 per mile in 1848 and 10'27 in 1849 to 9'56 in 1850. Including

those engaged on lines not opened for traffic, an aggregate of upwards of 190,000 persons have been thrown out of employment previously had on railways since May, 1847. The total number of persons killed upon railways during the past year has amounted to 216, and of persons injured to 256. Several explosions of the boilers of locomotive engines have been reported to the commissioners as having taken place. The most fruitful cause of accidents on railways is want of punctuality on lines where trains are run according to fixed timetables. The Commissioners approve of excursion trains. They have adopted the rule, however, of approving them only as regards the third-class fares: they think that first and second class fares, as well as third, might be less than one penny a mile. They do not object to any improvement in the construction or fitting up of the third-class carriages calculated to afford greater convenience or comfort to the passengers; but it appears to them that persons willing to pay a higher rate of fare for first or second-class accommodation, when they have the choice of third at lower fare by same train, cannot properly be considered as the *bona fide* "poorer class" to which the Act has reference.—In the Court of Queen's Bench on Saturday, in Banco, judgment was given in *The Queen v. The Midland Railway*. The Court were of opinion that the rate must be a local one, restricted to each parish, according to the net receipts derived from the line in that parish, after the usual and proper deductions have been made; and that it would be manifestly unjust to divide the whole receipts of the line amongst the different parishes, by which a parish through which the line is worked at a loss would have the same benefit as a parish in which it was worked at a large profit.

ELECTRO-TELEGRAPHIC PROGRESS.—The project for the formation of a second line of electric telegraph from Liverpool to London we understand is receiving a large measure of support.—From the evidence laid before the Privy Council relative to Wheatstone and Cooke's patent, it appears that the Electric Telegraph Company, so far from being a disastrous, is an exceedingly prosperous enterprise. During the first five years of its career the company received for patent rights from railways, 122,285*l.*; profit repairs, 7,301*l.*; profit on erections, 40,747*l.*; or a total profit of 170,333*l.* Profits on its commercial telegraph were, during three years, 20,179*l.*; and during 1850 the profits on the same line, after payment of 33,447*l.* expenses, were 10,086*l.*, or 10 per cent. on the 104,229*l.* paid-up capital of the company.—A memorial to the directors of the London and North-Western Railway Company, praying the directors not to grant the exclusive use of the London and North-Western Railway to any single telegraph company whatever, but to allow other telegraph companies to have their wires along these lines of railway, has received the signatures of many of the leading merchants and bankers of Liverpool.

OUR SCENE-PAINTERS AND OUR STREETS.—At the dinner given to Mr. Macready on the 1st instant, whereto a crowd of the leading spirits of the age congregated to do parting honour to a great actor and accomplished man, his Excellency Mr. Van de Weyer, in the course of his speech proposing "The Artists and Sir Charles Eastlake," said,—“We all know how linked together are all the arts, and when dramatic poetry unites to painting, sculpture, architecture, and music, it conduces to the most ennobling pleasure that the mind can enjoy. Alluding to the relations of art with the stage, allow me to make one incidental remark. It is impossible for the foreigner who visits your theatres not to be struck with the extraordinary talent, the real genius, displayed by your artists in scenic decoration,—the richness of the imagination, the colouring, and the beauty of the architecture,—the last of which qualifications I have often wished to see transferred from your stage to your streets, where, I must confess, there are some architectural enormities which doubtless weigh as heavily upon your soil as I dare say they do upon the mistaken artists who perpetrated

them.”—Sir C. Eastlake, in his reply, said, he fully concurred with him in his remarks on the subject of theatrical decorations. He also agreed in his recommendation that the architectural scenery of the stage should be transferred to our streets, and might remind them, too, that that practice was common in Italy in the highest period of her art.

THE SCULPTURE AT WELLS CATHEDRAL.—One of the large statues, weighing nearly a ton, on the west front of Wells Cathedral, fell from its niche last autumn, not long after the judges had left, the day of assize, and was broken into a multitude of pieces: so thoroughly shattered was it, that the authorities there concluded that its restoration was impossible, but called in Mr. E. Richardson to see what could be done. Piece by piece it has been carefully bedded together, and cramped and bolted; and the statue of (it is said) King Edward, son of Alfred, is erect again, and nearly ready for replacing in its niche. It measures 8 feet 6 inches in a sitting position, holding apparently a grant or deed on the right knee, the right hand resting upon it, while the left is holding the fastening of the mantle. The extent to which the interior of this cathedral has been renovated, and the generally sound state of the exterior, excepting the west front, will, it is to be hoped, induce attention to this beautiful and unique example, before further reductions take place by decay and similar accidents to that above described.

THE TRIGONOMETRICAL SURVEY.—The Royal Society of Scotland have fallen into an error with regard to the Irish survey having been "brought to a close" in 1843. The work is not even yet finished, and there is no likelihood of its being so for the next dozen, perhaps twenty years. A large number of men under a captain of the Royal Engineers are still employed on the revision of the northern counties, which were first published in rather a skeleton form. The force employed there now are supplying the omitted detail, and I believe *contouring*, which latter operation has to be conducted over the whole country.—A SUBSCRIBER.

RANSOME'S BRICKMAKING MACHINES IN INDIA.—The *Delhi Gazette* and the *Friend of India* give some account of certain difficulties with the native caste of brick moulders in preparing about 100,000,000 of bricks for the great works at Roorkie; and of the way in which these difficulties were overcome by Col. Cantley, who purchased of Messrs. Ransome and Parsons, of Ipswich, one of "Hale's patent" machines, of which that well-known firm is both the manufacturers and the patent proprietors. The machine in question not only succeeded admirably, turning out upwards of 10,000 perfect bricks every day, or doing the work of 12 brick moulders, but brought the fractions natives to their senses, and made them both more willing and more industrious in the face of their tremendous rival. Other machines, however, were made, from Messrs. Ransome's model, in India, and also set to work. The saving to Government by the use of these machines on this single undertaking alone is estimated at nearly a lakh of rupees; and it is thought that "Any enterprising individual who would construct and work a few of these machines in Bengal, would bring down the price of bricks, to the great benefit of the public, and not less perhaps to himself."

ILLUMINATING GAS-STOVE.—The idea of the atmopyre, first given in our columns, appears to have been followed out at Scarborough, in a design, by Mr. G. Knowles, of a gas apparatus, for the simultaneous supply of light and heat. In form his invention resembles the cylindrical-shaped stoves in ordinary use. The burners are placed between two cylinders, the outer one of glass and the inner one of glass or polished metal, acting as a reflector. The heat produced is sufficient, it is said, for all ordinary purposes, and is tempered and the air purified through a water cylinder, so as to be comparatively innocuous and agreeable when respired. The expense of combustion is stated to be 3d. in twelve hours (gas at 6s. 8d. per 1,000 feet). The design has been registered. The *Scarborough Gazette* gives further particulars of this invention.

SCHEDULES FOR THE CENSUS.—Amongst the searching forms of inquiry by means of which a vast amount of most useful and important information, besides the mere amount of the population, is to be gathered out of every nook and corner of the land on 31st inst. there are schedules, copies of which the Registrar-General has forwarded to us, and from which it appears that separate returns will be called for of the statistical details of all sorts of schools, churches and chapels, and literary and scientific institutions. The schedules have been prepared under the direction of one of her Majesty's principal Secretaries of State, and are of a very comprehensive and special description, with columns or spaces for all such particulars as the name, cost, date, and mode of erection and endowment, free and other sittings and attendance, pew rents, fees, dues, offerings, &c. in churches and chapels of every denomination; the name, class, and dimensions of schools, and number and age of scholars, number and class of boarders and teachers, income, endowment, fees, and expenses, &c.; and from literary and scientific institutions their character and rules, number of volumes in libraries, nature and extent of museums, number and class of lectures, terms of admission, number of members and visitors, &c. &c.

PROJECTED IMPROVEMENTS AT LONDON- BRIDGE.—At a Court of Common Council on Friday last week, the report of the Navigation and Port of London Committee on the subject of steamboat and other traffic at London-bridge was read. The committee state that they had instructed Mr. S. W. Leach, engineer, to prepare plans of accommodation for the embarking and disembarking of passengers at the east and west sides of the Surrey end of the bridge. They were of opinion that it would be very highly conducive to the public convenience if such accommodation were afforded. Together with a plan agreed to by the committee, and estimated to cost £1,220, that of Mr. Dawson, proposing an arched thoroughfare through the abutment of the bridge, and under the roadway, from the upper landing on the west stairs to the corresponding landing on the east stairs, was laid before the Court with the committee's opinion that the same would be a great public accommodation; and that, if made, the platform and brow on the east stairs would be unnecessary. Mr. Dawson's plan was defended by Mr. Deputy Stacey, and also by Mr. Dawson himself, who said that the opening at the abutment suggested to the Court would prove an accommodation of the greatest importance, for the attempt to cross from one side of the street at the bottom was dangerous in the extreme. A professional friend of his estimated the expense at 800*l.*, and no doubt the cost would be a mere trifle in comparison with the accommodation, which would, in fact, obviate the necessity of putting the City to the expense of a pier. The report was ordered to be printed.

WEST DRAYTON CHURCH.—On Tuesday, the 4th inst., the Church of St. Martin, West Drayton, was re-opened by the Lord Bishop of London, having undergone a substantial repair and restoration. The whole of the church has been refitted with open seats of oak, those in the chancel having ends with carved poppy heads. A new stone pulpit has been added, and the paving relaid with tiles. The tower still remains a memento of the former decayed state of the church; but it is intended to restore this portion of the building as soon as funds can be raised. Mr. C. Innes was the architect: Mr. Fassnidge, of Uxbridge, the builder. The total outlay about 1,100*l.*

PEARL TESTIMONIALS.—At a meeting of the metropolitan committee on 1st inst. it was unanimously resolved,—1. That the list be closed on 31st inst. 2. That a statue in bronze be erected in Westminster. 3. That a sub-committee be appointed to select an artist, to secure the best site, &c.; and that the Earl of Aberdeen, Viscount Canning, Viscount Hardinge, Lord Ashburton, Right Hon. Sidney Herbert, M.P., Right Hon. Sir J. Graham, M.P., and J. Wilson Patten, Esq., M.P., be requested to constitute the sub-committee.

—A correspondent of the *Preston Guardian* suggests that the Blackburn testimonial should be a cylindrical column, to be erected on the summit of Billinge-hill, north of Blackburn, and overlooking the town, where there is plenty of good stone at hand. This column to be surmounted by a colossal statue of Sir Robert in the white limestone of Westmorland, which, he remarks, can be worked as fine as marble, and is much better adapted for outdoor statuary than marble, from its superior resistance to atmospheric action, smoke, and moisture.

ART-LECTURE AT MANCHESTER.—Mr. J. A. Hammersley, the principal master of the Manchester School of Design, delivered an interesting lecture on Friday last week, "On the Operatives of this Country; their Interest in Works of Art and Objects of Beauty." In concluding, the lecturer lamented the general absence of enthusiasm from the English mind. In this quality he thought we were excessively deficient. He did really wish we had a greater number of people amongst us who would just come under the possible charge of being mad. It did appear to him we were exceedingly even and smooth in this country; and wanted breaking up into knots and corners, and being a little bit more individual and eccentric. Amongst other things, he desired that we should be enthusiastic enough to advocate the present and other similar questions with something like warmth of heart, instead of, as at present, seeming to be afraid of speaking, thinking, and acting.

A METROPOLITAN CHAMBER OF COMMERCE.—It is a very strange circumstance that while not only most continental towns of importance, but the capital towns of Scotland and Ireland, and all our own chief provincial towns throughout the three kingdoms, have practically felt and proved the utility of chambers of commerce, the great centre, not only of all these national satellites, but of the commerce of the whole civilized world, should still be in a state of class immaturity and unorganization; and that, while the international commerce of the world is concentrating itself in the great "Chamber" at Hyde Park, the commerce of London should have remained till this eventful year without a representative head of its own. The commercial organization of our metropolis ought to have preceded that of any town in the kingdom, and, at all events, ought to constitute the leading head of its whole commercial system. It is satisfactory to know, however, as we now do, by a letter from Mr. Lionel Rothschild and Mr. John Masterman, that this singular defect is likely to be forthwith remedied by the establishment of a Metropolitan Chamber of Commerce, which ought, if possible, to be organized and in a working state while the representatives of the commercial wealth and industry of the world are here assembled. Its maturation must, of course, be a work of time, but at least its more obvious and called-for committees might be very speedily appointed. In its ultimate completion, *tribunals* of commerce are contemplated, but the more immediate objects of its promoters are of a less ambitious and more readily attainable order.

CHANCELLERS AND EARLY CHURCHES.—**SIR,**—Will you kindly inform "N. J. Elliott," that I have neither time nor inclination for personal discussions, but my work on the subject of screens will be published this month, and if Mr. Elliott thinks it worth while to go to Dolman's, the publisher, and get a copy, he will find an ample refutation of his assertions.—A. W. PUGIN.

WIDE ESTIMATING AND SINGULAR COMPETITIONS.—I beg to forward you the following list of tenders delivered on Monday, March 3, to the Commissioners of Paving at Portsmouth, for constructing a Camshot on Point Beach:—

Bellingham, contractor	£135 0 0
King, builder	130 0 0
Hendy, ditto	98 0 0
Abraham, ditto	90 10 0
Childs, sailmaker	83 0 0
Latter, carpenter	65 12 0
Crampton, coal merchant	56 10 0

Who will next compete?—C.

DESIGNS REGISTERED.—W. A. Biddell, St. John's-square—alarm door and window wedge; J. Hadley, Worcester—sole to cover tires of carriage wheels; J. Morrison, Sheffield—tap for high-service pressure. The following are provisional registrations:—W. Leuchars, Piccadilly, double-action lock; T. W. Tipler, Rugby, portable fire-escape; W. M. Bywater, Piccadilly, water meter.

BARNSELY WORKHOUSE COMPETITION.—The successful competitors for the new union workhouse about to be erected at Barnsley, are Messrs. Lockwood and Mawson.

GAS FITTERS.—Tenders opened by the board of guardians for gas fittings for Birmingham New Workhouse. Messrs. Drury and Bateman, architects.

Chambers, Birmingham	779 0 0
Glenn, Jno. London, contractor for the building	639 0 0
Birmingham Gas Company	497 17 9
Birmingham and Staffordshire Gas Company	491 12 7

TENDERS.

Tenders for fitting up thirteen Arches of the Eastern Counties Railway, erection of Granary, Cab Lodge, Smith and Wheeler's shops, Dwelling-rooms, Offices, &c. at Mile-end, in the County of Middlesex, for the Eastern Counties Cab Company, received 26th February, 1851. Messrs. Church and Son, Woolwich, architects.

The quantities supplied by the architects.	
Denton	£8,740 0 0
Laynes	6,140 0 0
Edmund Smith	6,037 0 0
Kirk and Parry	5,969 0 0
Ward	5,963 0 0
Taylor and Son	5,947 0 0
Williams	5,902 0 0
Follock and M'Leenan	5,560 0 0
Hill and Son	5,530 0 0
William Hill	5,442 0 0
Tansett	5,305 0 0
Smith	5,300 0 0
Knight and Son	5,260 0 0
Pauling	5,154 0 0
Curtis	4,944 0 0

Tenders for erecting a Villa, with all Stabling and other Offices, &c., at Sutton. Mr. Cross, architect.

Thos. Burton	1,459 0 0
G. Brown	1,145 0 0
James Starkey	1,125 0 0
P. Donnelly	1,073 0 0

TO CORRESPONDENTS.

"Cracks in Wood."—S. Y. says, "I have a large figure carved in wood (Lime or Sycamore), the surface of which has rendered somewhat seriously. I am fearful lest the mischief should extend. If any of your correspondents can inform me of a treatment that will prevent this, without discolouring the wood; and, at the same time, whether there be any material that can be introduced into the shakes and effectually conceal the injury already sustained: an important service will thereby be rendered to an old and very constant reader."

"Modelling Wax."—"W. P." asks for a receipt for good modelling wax. "Johnny," S. B. "R. B. T." "R. W. L. C." (shall appear); "G. W." "W. E. O." "J. W." "E. L. T." (declined with thanks); "E. A." (ditto); "J. B." (we do not know when Limehouse church will be opened); "H. M." "T. T." "B. C." "Architect." "An Essay to Pulling." "J. T." "S. R." (write to the Registrar, Somerset House); "E. J. C." "W. B. T." "J. T." "W. L." "J. J. G." "G. W. X." "Wickham." "T. H. W." "W. H." "G. Z. G." (balls and crates are removable fixtures, under ordinary holdings); "C. B. A." (shall hear from us); "G. G." "A. K."

"Books and Addresses."—We have not time to point on books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor." All other communications should be addressed to the Editors, and not to the Publisher.

ADVERTISEMENTS.

BILLS OF QUANTITIES.—DAY & SON, Lithographers to the Queen.—Lithograph Bills of Quantities with the greatest despatch, and at a vast saving on the prices generally charged. 17, GATE-STREET, LINCOLN'S-INN-FIELDS.

BILLS OF QUANTITIES.—Bills of Quantities, &c., LITHOGRAPHED with celerity, attention, and economy. Maps, Plans, &c., reduced or enlarged, and every description of Architectural and Engineering Drawings executed in the most superior manner, in plain or tinted Lithography. ASHLEY and TUCKER, Lithographers and Draughtsmen, 18, BROAD-COURT, LONG-ACRE, LONDON.

BROOKS (from Dollond's), OPTICIAN and MATHEMATICAL INSTRUMENT MAKER, respectfully solicits from the public a continuance of their patronage. Having had upwards of twenty years' experience in Dollond's, they may say that all articles submitted by him are of the most perfect character, and at moderate prices. SPECTACLES, Telescopes, Microscopes, Opera and Race Glasses, Sextants, Quadrants, Compasses, Barometers, Surveying Instruments, Balances, Scales, &c., of every description. 41, Ludgate-street, St. Paul's.

LIGHTNING CONDUCTORS. R. A. NEWALL and CO.'S PATENT COPPER ROPE, OF ANY LENGTH IN ONE PIECE. 3 1/2 lbs. (inch diameter, 7/8 in. per 100 feet). Offices and Warehouse, 13, Strand, London.

STEAM-ENGINES FOR AGRICULTURAL and other PURPOSES.—MESSRS. CLAYTON and SHUTTLEWORTH'S well-known Portable Steam-Engines can be seen at DEANE, DEAY, and DEANE'S Agricultural Implements Warehouse, New-lane, London-bridge. The above engine obtained the prize at the Exeter Meeting of the Royal Agricultural Society, July, 1850.

The Builder.

No. CCCXXXIII.

SATURDAY, MARCH 15, 1851.



THE Ministry having returned to office, Lord Seymour's Metropolitan Buildings Bill will be proceeded with. As might be expected, it excites considerable interest within the limits to which it refers. Several important bodies have appointed committees to consider it,—the Institute of Architects, the Builders' Society, the Master Carpenters' Society, the Metropolitan Sanitary Association, &c.; and it is to be hoped that Lord Seymour will postpone the second reading to give them time to make their respective reports. Our readers are already in possession of the heads of the Bill,* and we now propose to examine it more in detail, and to suggest such alterations in it as seem to us desirable.

Having long ago urged that the referees should sit in open court (as police magistrates), and give prompt decision in ordinary cases, we view with satisfaction those clauses of the Bill which provide for the establishment of such a Court. Since the publication of our brief analysis of the Bill, we have received many communications on the subject from general practitioners, district surveyors, and builders, and all, without exception, express the same opinion on this head. This provision alone has, in truth, secured for the proposed measure a much greater degree of favour than was awarded to previous proposals. The constitution of the Court is another question; and upon this the majority of our correspondents agree with us in thinking that, as ninety-nine out of a hundred questions which are likely to arise, will have reference to facts connected with building operations, these would be better determined, in the first instance, by an architect than a lawyer, and that it would be found more convenient to impose the duty of hearing upon the architect, constituting him the judge, and giving him the assistance of a lawyer, to draw his awards and advise on points of law, when they arise. In the analogous case of an ordinary arbitration connected with building matters, this is the course most frequently pursued; and our experience goes to show that an architect always decides the questions referred to him in one-half the time, and at one-half the expense that a lawyer would.†

Those who drew the Bill seem scarcely to be aware of what a large amount of unrecognised labour, involving duty of a most invidious character, will devolve upon the architectural referee, who is introduced (clause 16) with a *whereas the questions arising [in a Building Bill] MAY BE OF A TECHNICAL NATURE!* Why what are the questions—nine out of ten—that do arise? He is to *advise* the said judge, who, if he is a wise man, will act upon the advice given, and the architectural referee will be an irresponsible despot; and if he is a fool (that is, the judge) he will affect an opinion of

his own, and the architectural referee will enjoy universal abuse, as the judge's reputed adviser and supposed suggester of his judgment!

By sections 80 and 81 of the new Bill the architectural referee will have the power of controlling the mode of construction to be adopted in *all* the public buildings of London: this, in the hands of a capricious or incapable person, would be a very dangerous power. Perhaps it would be desirable to provide in the Bill for the appointment of two assistant architectural referees, who, in the event of any difference between the principal architectural referee and the person employed to design the building, might act as a court of appeal, or on any very important occasion might be called in in the first instance to assist the court with their judgment. A salary would not be necessary, for it would be a distinction to hold the appointment, and they might be paid by a fee when their services were required. As it now stands the practice, as it regards construction, of all architects and builders within the metropolitan district, will be under the autocratic authority of the architectural referee, to whom Providence grant good discretion and a tough hide!

The power proposed to be given to the judge is very great,—greater than it should be. By clause 37 he may *rehear* any cases, "whenever the ends of justice or the objects of the Act would, in his opinion, be promoted by so doing," and may rescind or alter any order that may have been made previously by him. This would leave suitors in great uncertainty, and should be modified, at all events, to the extent of limiting the time within which the rehearing might take place.

Clause 38, which gives the judge power, with consent of all parties, to refer matters to arbitration, gives the appointment of the arbitrator to the judge, and, moreover, which seems to us very objectionable, empowers him, "on application to him (*query*, by whom?) within such time as shall be limited by the rules of practice," to *set aside the award!*

No appeal can be made against any judgment or order of the judge, except on a special case drawn up by the judge himself.

As to the costs of the court, nothing is settled. These would require looking after.

Relative to notices, a great improvement is proposed. The Bill provides that all forms and notices are to be prepared by the judge, as from time to time they become necessary, and that the notices emanating from the Metropolitan Buildings Office are to be served by the bailiff of the court. Great inconvenience (from which we have often personally suffered) has arisen by the present arrangement, which compels the parties carrying on proceedings to use the notices scheduled to the Act, though they are sometimes quite inapplicable, and not only to prove the service of their own notices, but also to do the like by all the documents coming from the Metropolitan Buildings Office.

Clause 29 is very objectionable, and should be expunged.* It would be most

* No person shall be entitled to appear for any other party to any proceeding in the said court, unless he be an attorney or one of her Majesty's Superior Courts of Record, or a barrister-at-law instructed by such attorney on behalf of the party, or, by leave of the judge, any other person allowed by the judge to appear instead of such party; and no person, not being an attorney admitted to one of her Majesty's Superior Courts of Record, shall be entitled to recover any costs, fees, or sums of money for appearing or acting on behalf of any other person in the said court.

unjust to compel suitors to employ a solicitor in every case, when his architect, who would probably be forced to appear, could usually manage the matter for him much better. It is no answer to say, that by permission of the judge a person not an attorney may appear: all must know very well that in practice the clause would amount to a prohibition of such a course, and that it is intended to do so is made evident by the provision that no person but an attorney can recover costs for so appearing. We trust that determined opposition will be offered to this clause on all hands.

Throughout the Bill, the abnegation of the rights of the architectural profession is apparent.

In comparing the new Bill with the Act now in operation, with regard to the *schedules*, it seems to show great and radical improvement. The distinction between the first and second class buildings, which has been the cause of much difficulty, is abolished, and all those parts of the schedules connected with this distinction, and with the thicknesses of the walls, have been proportionably simplified. There is also a considerable extension in the area of the first-rate house (as we mentioned in our first notice), and an extension also of half a square in the area of the fourth-rate house; both which alterations will be found of great advantage to the builders and the public. In the latter case we should be glad to have it still further extended: the previous restriction has had a very injurious effect in a sanitary point of view.

Again, the party and external walls are made uniform in thickness, which will be found convenient; and it seems (although we reserve our opinion on this head) that generally the schedules, while they embody the modifications which have been found necessary from time to time, are, upon the whole, both shortened and simplified.

Some alterations will be required in the party-wall sections of the Bill, for, as they now stand, it is not at all clear how or by whom walls are to be surveyed, in case of difference between the building-owner and adjoining-owner, which usually occurs.

The table of fees is now so framed, that, by the general rules which accompany them, an end will be put to those accumulations of charges which have sometimes been made for different works executing in the same buildings at the same time, and which have brought so much scandal on the district surveyors. By the introduction, in table 2, of the words "not exceeding," it will be manifest, both to the public and to the surveyors, that these are to be considered *maximum* charges, and to be allowed only where the *quantum* of work done will justify their being made.

Throughout the Bill, considerable discretionary powers are given to the district surveyor, who will be able to decide at once what in each particular case is to be done, instead of sending the builder, as heretofore, to the official referees upon every trifling departure from the strict letter of the Act, which may become necessary. Thus, the partial rebuilding of irregular buildings for the purpose of public improvements; the raising of existing walls, sound but not of the required thickness; the materials to be used for projections from external walls; the formation of recesses in party-walls; and the erection of buildings on

* See page 131, ante.

† An intelligent builder, writing to us on the subject, says,—“Let there be a law judge, if they like,—but let all questions affecting construction or the skill and knowledge of an architect be sent to the architectural referees (three instead of one), and make it a point that their opinion be adopted, instead of the judge having the veto upon things he knows nothing about.”

forecourts, beyond the general line, are all left to the discretion of the district surveyor.

We may mention that the surveyors appointed after the new Act comes into operation are to reside, or to have their principal place of business, each in his district. And this will bring us to the provision in the Bill quietly to transfer to the Office of Works the appointment, not only of the architectural referee and the assistant surveyor, but of all future district surveyors, and which gives them power to dismiss at pleasure any district surveyor, and to consolidate or alter the limits of districts, thus depriving the magistrates of the metropolitan districts of a privilege which they have long exercised. We cannot view this change favourably, and hope it will not be persisted in. It is true that, under the present arrangement, connection and influence will enable an inferior man (nevertheless qualified) to succeed in opposition to one with stronger claims on the public and better qualified for the office, but without friends. Still by dint of canvassing he may, perchance, ultimately succeed. Under the proposed arrangement, however, it is to be feared that the appointments would be confined wholly to a *clique*, and that men unconnected with the office would have no chance of success.

Centralization, without obviously great advantage, should be opposed.

Our readers will remember that an inquiry into the proceedings of the present Buildings Office was instituted some time since by the Office of Works. The gentlemen to whom this was confided were Mr. J. Mellor, barrister, and Mr. Joseph Gwilt, architect. Their report, on which, as we suppose, the present Bill was framed, has been printed for the House of Commons, and will soon be open to us, when we shall probably see the reasons which have influenced the proposed changes. We add two communications relative to the Bill, one from a general practitioner, and the second from a district surveyor, whose view of the proposed constitution of the Court is somewhat different from our own.

COMMUNICATIONS AS TO THE NEW METROPOLITAN BUILDINGS BILL.

The new Bill to supersede the present Metropolitan Buildings Act, seems, speaking generally, well digested and drawn, and only requires correction and modification to make it, in my opinion, work well and beneficially for the public, and infinitely superior to the present Act, which is so complex and ambiguous that it constantly creates doubts, delay, annoyance, and unnecessary expense; and in some cases it is rendered wholly nugatory by the differences which arise between the architectural and legal Officers who have to adjudicate thereon. For instance: a doubt arises between two parties: the matter is referred to the official referees; the whole of the business is gone through before them and the registrar, and the award of the former is tendered to the latter to affix his seal: he differs on a point of law, and refuses to attach it: the matter is then sent to the Commissioners of Works and Buildings for their decision, and very often they confirm the view taken by the registrar: thus all the proceedings are upset at last, instead of at first, as they should have been. The Bill proposes that the Metropolitan Buildings Office should assimilate to a County Court, a judge (a barrister of seven years' standing) to preside, to determine, first, whether the subject-matter be within the jurisdiction of the law, and the preliminary proceedings be correct; and then to decide on the matter of fact, with the advice of the architectural referee: thus, to a great extent, illegal awards will be avoided,

and the public will not be inconvenienced by unnecessary delay and useless expense as at present. *Vide* *voce* hearings in all petty cases: arbitration where necessary: trial by jury of five in case of easements or otherwise where required, and the opinion of the Superior Courts readily obtained by the judge if needed. Proper officers would be attached to the Court to afford information, and serve the necessary summonses, and parties aggrieved as to charges made for party structures, excessive fees, &c. could speedily obtain redress: all this, I am persuaded, would work well.

The schedules attached to the Act are more distinctly classified and are much more clearly defined and simplified than the present—the annoying distinction between the dwelling-house and warehouse classes would be abolished—the thickness of walls modified—the extent of the first and fourth rate houses very properly enlarged—a greater discretion would be given to the district surveyors, much, I should say, for the benefit of the public, by preventing frivolous references, and a still greater discretion would be given to the Commissioners of Works and Buildings by sec. 70, as to modifying the strict rules of the Act in special cases, and also generally, if requisite, to prevent undue injury, loss, and inconvenience to any parties concerned, and the fees of the District Surveyors would also be modified, inasmuch as the words “not exceeding” are inserted for certain works instead of a positive amount as at present.

All public buildings would be placed under the supervision of the architectural referee, and he would be bound to certify, if required, before the works proceed, whether they might or might not be carried out as proposed, instead of the present most objectionable practice of refusing to do so and reserving the right of objecting when the works are done.

Schedule K provides that all buildings and their appendages must be constructed and maintained in a safe and secure manner, not only in reference to the public, but to the inmates, which, as regards the latter, is an excess on the present law, therefore greater responsibility would be thrown on the architectural referee and district surveyors. The majority of the latter consider that such a responsibility with regard to public buildings would be too great for the small amount of fees which they would be entitled to; they therefore would willingly resign this supervision and the fees attached thereto to the architectural referee, who would be paid by salary in addition thereto, and therefore would be properly remunerated for this responsible duty. It is considered also that it would be better to refer these buildings to one person than to the district surveyors in their respective districts, as it would secure a uniformity of practice as to the necessary substantiability, &c. The only defect which is apparent in this portion of the Bill is, that a provision is not made for a ready appeal against the decision of the architectural referee to two other referees, or to the Commissioners of Works and Buildings, in case of his exercising any arbitrary rule of practice.

As to the necessity for law being paramount, I will give an instance. I had a case where a stone pedestal to an area enclosure of one owner was alleged to be injurious, by the adjoining owner, to his house, inasmuch, *inter alia*, as it would be used as a urinal: the official referees decided in his favour. The registrar objected on a point of law, namely, that the person committing the nuisance would be the delinquent in the eye of the law, and not the pedestal, therefore the award was bad; and the whole of the proceedings, which occasioned much trouble, fell to the ground. * *

Lastly, I repeat that the Bill appears to me well drawn as a whole. I sat on Lord Morpeth's committee, the result of which was the proposed Bill of 1849; and also as a district surveyor upon all the committees connected with our association, and have given the matter most mature consideration; I therefore have not hastily arrived at this decision: there may be some things in the Bill upon which it may be unnecessary to legislate, but, as they are all more or less under the law at present, and

have been put there by the Legislature, it is not for me to make any remark thereon; so I leave that matter in your hands, and subscribe myself,
A DISTRICT SURVEYOR.

It is evident that the attempt to supersede lawyers, and to establish a court of reference, will not be allowed to succeed in our law-loving and law-ridden country. After a trial of five or six years of our architectural court of reference under the present Act, it is found, or assumed, that it will not work pleasantly, and it may safely be inferred, without seeking for other causes, that the differences which have arisen upon the points of law between the official referees and the registrar have given ground for the proposed demolition of the present edifice, and for erecting on its ruins an architectural county court, corresponding in design with the courts which the reform movements in the law have lately forced into existence. Such is the result of the awful words, “it is not strictly legal;” and as these, to an English ear, suggest processes of endless vexation, from the bailiff's limbo to the hopeless Inferno of Chancery, we are all willing to submit to any infiction which the learned professors of law recommend, to avoid the chance of becoming acquainted therewith, and in hopes of obtaining uniformity of judgment and infallible decisions. Whether, however, these can be obtained by the proposed system; whether the autocritical decrees of a single judge will inspire more confidence, and give greater satisfaction, than the careful investigations and opinions of three professional architects, is now to be tried; but when in almost all the other courts of law we see the decision of one judge often overruled and set aside by his superior court; when a Vice-Chancellor's opinion one day is declared, by the Chancellor, on the next, to be contrary to equity; and when, as we have lately seen, the whole bench of judges split into adverse opinions upon a purely legal case, one cannot feel perfect confidence or security that even in the proposed court the legal decisions will be more strictly legal than they are or might be under the present system.

It would be presumptuous, however, to give a decision upon the merits of the two systems, or to call in question the judgment of the Commissioners of Woods, &c. in proposing the new Act, without being acquainted, as they must be, with all the causes of failure under the present Act. It is understood that such an inquiry has been made by them, and as this inquiry forms the basis for the proposed changes, which amount to a *supersedes* of the official referees, and is almost a penal Act against the whole architectural profession, depriving it of official station, the evidence which has been taken on the subject should be laid before Parliament.*

The merits or demerits of the proposed Bill, and the discussions that will principally arise thereon, are all the results of the suggested appointment of a single judge combined with the arrangements of a County Court. In these respects it has gone a wide step beyond the Bill proposed last year by Lord Carlisle, which, while it established a single judge, retained the then architectural referees. This shadow of a Bill but precluded the coming round of a fully-developed legal court, and, if it is really necessary to revise the present Act, with a view to reform the working of the court, if the present Bill is not merely one of those diabolic or dissolving views of change with which the profession has been annually amused, the building interest in general must now come to a decision, either for adopting the principle of the proposed court as now suggested, or recommending the principle suggested by Lord Carlisle.

The advantages of a single judge with an open court and magisterial jurisdiction, are obvious in many cases, and will probably be acquiesced in, on the whole, as an improvement upon the present system. The objections to the details of the Bill are also equally obvious, and must have struck every professional reader of the abstract which was published in THE BUILDER in a late number. The ap-

* This has since been done.

pointment of a deputy judge seems inconsistent with the principle of the Bill, as every one would be desirous of obtaining the highest legal authority which the Act affords, and would be discontented with a secondary jurisdiction. The single "architectural referee" standing at the elbow of the judge and indocinating him with his own peculiar professional opinions is not a picture which will please many litigants. The proposal that such architectural referee shall alone have the supervision of all public buildings, and that consequently architects even of the highest standing will be legally compelled to submit to his *dicta* on all points of construction, instead of having, as at present, the opinion of three professional gentlemen, is almost an insult to the profession at large.

Lord Carlisle's Bill, retaining the three referees, has several points of superiority to the proposed enactment. The judge in the latter Act has certainly the power of sending a case to arbitration by consent of the parties, which is no more than they could do themselves without the Act. Lord Carlisle's Act provided the court of reference ready formed for the purpose.

By Lord Seymour's Bill a jury of five persons may be summoned to try cases of rights and easements, cases, of all others, the most unfit for jurymen (who would probably be shopkeepers) to decide. Here, again, the fixed court of reference would be more appropriate, and would be able in a short time to collect and adjudicate on such a number of cases as would be a means of definitely fixing the right and laws of the subject,—a point which can never be obtained from jury verdicts without the revision of a superior court.

In the proposed Bill there is a right of appeal on all matters of law to one of the superior courts on a case drawn by the judge himself. Such appeal is strictly necessary, but the right should be extended to other cases even at the risk of increased litigation.

The alterations in the schedules require the careful examination of the district surveyors, upon whom the responsibility devolves of executing them in a satisfactory and complete manner; and it is to be hoped that they will enforce the principle of non-interference with private rights, and endeavour to confine the regulations to the real objects of the bill, for preventing fire, maintaining party-walls, and enforcing obvious sanitary measures in the construction of houses.

T. L.

THE GEOMETRIC PROPORTIONS OF ANCIENT ARCHITECTURE.*

If we consider what are the conditions necessary to be fulfilled in every case in which beauty is aimed at in a building in order to produce that half sensuous, half intellectual gratification which in modern language is expressed by the term æsthetic enjoyment, we find that three principal conditions are essential. The first of these is stability or balance inclining to the safe side; but a perfectly well built and perpendicular wall may fully satisfy this requisite in so far, and yet have no claim whatever to beauty, merely because it is *safe*.

The second, therefore, is, that the first condition, viz., security, should be combined with indications of insecurity met by sufficient support, so that the imagination and intellect should be at once aroused to the consideration of this contention of forces. Of this nature are projecting mouldings, cornices, &c.

The third is, that in relation to, and subservient to the two first conditions, ornament suggestive of other ideas, connected with the intention of the building in question, should be added, in order that it may directly address itself to the intellect and imagination in other respects.

It will be evident that the last condition here entirely depends upon the previous fulfilment of the two former, for where the general proportions, as well as those of the individual parts that indicate construction or points of balance, are unknown, the superfluities cannot

be rendered perfectly congruous with the whole. For its accomplishment, therefore, the highest genius is required, and in its failure the greatest amount of ignorance is displayed.

If it be true that ornamentation must be as subservient to the two first conditions as it was studiously rendered by the Greeks, then a perfect knowledge of the balance of forces in as far as the entire building is concerned, will be required in the first instance, and a truly artistic and poetical conception of congruity and intention in the second.

It is this combination of mechanical knowledge, and artistic feeling and education, that has rendered the highest class of architectural design so very rare in the world's history.

The discovery of the works of Vitruvius, at a period which otherwise might have given rise to a new and grand style of architecture, supplied a set of arbitrary rules which have for centuries proved a complete barrier to the investigation of fundamental principles. There exists in most minds a much stronger tendency to take for granted what they hear boldly stated than to think for themselves: rules are more easily received than principles, and well asserted quackery ever finds more and more strenuous believers than the most elaborately proved truth. So it is with the pure empiricism of Vitruvius; and his method of dividing the lower diameter of the shaft into sixty degrees, by which to measure every other proportion, is still universally followed. This could not have been the case had he possessed even the slightest acquaintance with the methods pursued by the architects of the buildings he describes, and which all admire; for he would then have known not only that this is the very worst, because least certain, proportion of the order he could have selected for his metre, but he would also have been aware that no metrical method could possibly represent the various proportions found in the different styles by numbers. This authority is now, however, on the wane, since it has been discovered that the best Grecian models do not correspond with his rules. Several very ingenious attempts have lately been made to discover general laws of proportion to supply this want; but while it enhances our admiration of the skill of the ancients to find that their works correspond with laws of which those who designed them were ignorant, all these theories have this defect in common, that, although they prove the correctness of the proportions adopted, they could not have originated the forms. What we have to look for is a *method of construction* at once simple and practical, which, though founded on mathematical principles, may yet be sufficiently intelligible to those ignorant of mathematics to enable them to use it.

The want of such a system has resulted in the general adoption of a mode of teaching architecture most perfectly calculated to discourage originality of thought, and to bend the mind of the pupil down to a slavish submission to merely asserted authority; whereas, if taught in a right spirit, all the elements of this art being the purely mechanical forces, it ought, of all others, to produce the most directly practical thinkers. The pupil was taught to copy capitals and bases of columns detached from their shafts, and to retain these and their measurements as invariable rules, without, perhaps, ever being shown an example of the order drawn in its complete proportions,—so that, it was impossible he could even conceive their proportions in reference to the entire building.

He learned rules, but of principles he necessarily remained utterly and entirely ignorant.

Educated as an anatomist, in the full belief that if we have but the capacity to understand them, and the patience to investigate the works of the Creator, we shall find no less to admire in the wonderful adaptation of the different organs to one another, and as parts of the entire frame, than in that of the excellence of their individual structures; and, considering the architectural monuments of Greece among the highest attainments of human genius, which, in so far as they went, were perhaps the nearest approach in perfection to the works of the great architect of the universe, I

felt inclined to investigate them in nearly the same spirit of humility with which the physiologist would proceed to study a part of the animal frame with the uses of which he was unacquainted: to assume them as perfect, and to deem no part useless, superfluous, or unmeaning, and no proportion adopted without a reason.

Conducted on these principles the investigation has resulted, as I trusted it would, in the discovery of a system as remarkable for its simplicity as for the universality of its application.

Architecture in Greece is evidently an imported science, as there exists no evidence of any intermediate step from the rudest to the most perfect works, such as may be found in the more primitive countries—Assyria and Egypt,—and to show whence it was derived and how its principles originated it is necessary to examine the mode of building prevalent in these countries. Their climates were arid and timber scarce; the walls were formed as they are there at the present day, of dried mud: the roof, also of dried mud, rested on horizontal rafters: the walls were made as high as the timbers of the roof were long, and the mud roof being thick and heavy, required support. In the façade of an Egyptian temple, the natural arrangement of scaffolding to support the roof that formed a square with the walls, would suggest not only the proportions, but even the fanciful ornamentation of the columns by which the scaffolding was to be replaced. This square space might be divided by upright posts into two, or three, or four rectangles, each calculated to receive a column; but three was the usual number in Egypt, and the attention of freemasons is directed to the remarkable manner in which the methods to be pointed out correspond with the traditional symbols of masonry,—such as the three steps of masonry, Jacob's ladder, the tessellated pavement, &c. &c.:—all this, the lecturer considered, went far to prove that though their meaning had been lost for full 2,000 years, the symbols and traditions had been wonderfully correctly handed down from perhaps a much more remote period, and directly from Egypt. The square formed between the flat roof and the walls early became a rule in masonry, which was never afterwards greatly deviated from. The architecture of Greece differed from that of Egypt in form, but not in principle, showing that the Egyptian order of priesthood, that represented by our architects and civil engineers, taught principles as well as practice, and that their Grecian disciples, though bound down by all the mysterious vows of secrecy still to be found among freemasons, were able to emancipate themselves from the thralldom of rule that oppressed everything in Egypt, and to devise new applications suited to a climate in which it was necessary to guard against rain as well as heat. They introduced the sloping roof and the frieze for this purpose, and thus gained additional space for the introduction of appropriate ornament.

Now with regard to the construction of the Parthenon, deemed one of the most perfect of the Greek temples: finding that its façade, including the pediment, occupies a space of nearly two squares set side by side, let us work in one of these squares by dividing it equally into four parts horizontally, and then again perpendicularly in like manner into four: it is thus chequered or tessellated into sixteen small squares, which, regarded perpendicularly, resolve themselves into four tiers, each composed of four squares:—take away the topmost row of small squares from the roof and cornice, and there remain four tiers, each composed of three squares high. These severally indicate spaces in which to erect a column with its entablature. Now, let us dismiss this chequered square from present consideration and confine our attention to one of those spaces containing three small squares, upon which its own portion of the roof will rest. It will be shown that a few leading proportions of the order may readily be found within this space, and as it would be impossible to demonstrate more in this cursory manner without fatiguing the audience, I will ask you to believe me when I

* The following is a part of a lecture delivered at the School of Design, Manchester, by Dr. Charles Bell, one of the members of the Council of the School.

tell you, that by pursuing the same method further, every, even the most minute, proportion and moulding of capital, frieze, triglyph, and cornice, may be drawn without a model so accurately, that it shall perfectly correspond in every respect with drawings made according to actual measurements of the building. Let us then represent one of these spaces by drawing on a large scale a rectangle three times as high as it is wide for the Doric order.

The topmost line represents the bottom of the cornice or weight of the roof to be supported, and the long sides represent upright beams of scaffolding. If we draw the diagonals of this rectangle (and call it X No. 1) we form, as it were, a joint stool for the ends of the weight to rest on. Through the centre of X draw a horizontal line to the sides of the rectangle: it divides the rectangle into two. Draw the diagonal of the upper half and call it X No. 2. It will be found to cut X No. 1 in two points, and these intersections invariably give the true diameter of the shaft in its upper third both in this and in all the orders. Now pursue the same course with X No. 2 as we did with the first X, by drawing a horizontal line through its centre: this cuts off one quarter from the whole rectangle: draw the diagonals of this uppermost quarter and call it X No. 3. Where X No. 3 cuts X No. 1 is invariably the line of the architrave. We have thus found two important proportions, viz., the lower part of the entablature, which in itself constitutes a weight in addition to the roof, and have also found a leading measurement of the shaft of the column. To show that the latter proportion is a true one relatively to the weight of the roof and the length of the column, bisect the uppermost line of the rectangle which we said represented the weight, and join its centre by two lines with the angles at the base or ground line. This represents a conical support for the middle part of the weight of the roof, and it will be observed that this passes exactly through the intersections of X No. 1 with X No. 2, showing that that part of the shaft concentrates, as it were, the principal lines of pressure and of support between the base line and the roof. Now divide the rectangle by letting fall a perpendicular from the apex of this triangle or cone upon the ground, through the centre of the column, and join the lower end of this perpendicular with the two ends of the line of the architrave drawn through the two intersections of X No. 1 with X No. 3: this will represent the bearing on the base of the lowest point of the entablature or weight pressing downwards and inwards, and where these lines cut the lower limbs of X No. 1 will be the diameter of a straight-sided column or pilaster of the order at that point: join these points with those found in the upper third of the shaft on each side, and produce them downwards to the base and upwards to the horizontal line (drawn through the middle of X No. 2), you will thus form the shaft of a column (without entasis) which will answer the minutest measurement of the actual column of the Parthenon; for, if perfectly correctly drawn, and the base be divided into sixty parts, you will obtain a measure by which to test every other proportion by authority—such as the height of the shaft, the diameter of the neck, and the distance between any two columns or intercolumniation (by doubling the distance between the base of the column and the side of the rectangle). If you now draw lines from the apex of the tall triangle to the ends of the line which divides the rectangle into two, you will find that they cut the upper limbs of X No. 3 in the exact line of the bottom of the frieze, and give the just width of the triglyph. In like manner every part of the order may be found till all is completed, and then, when compared with the model, the compasses will prove the accurate correspondence of some thirty or forty different proportions with the actual measurement of this splendid monument.* In examining this method, it is particularly deserving of attention, that every ornament introduced in the lines of pressure and support, such as the triglyph capital, &c. and every fillet of the cornice actually represent

the contention of the opposing forces of gravity and support represented by intersections of these lines. The entasis, or bulging of the column, is esteemed such a point of dispute and difficulty, that I must shortly indicate how it is produced before I leave the Parthenon. For reasons connected with the science of optics, this was made chiefly conspicuous in the corner columns, which are seen against the light; whereas pilasters close upon a wall were made straight, and columns but little removed from one nearly so. To form the entasis, divide the lower half of the rectangle into three equal parts, or half squares, by horizontal lines, and join the ends of these lines with the opposite superior angle of the original rectangle. Now divide the upper third or square of the rectangle into four equal parts by horizontal lines. X No. 1 joins the top of the rectangle with the centre of the line which divides the rectangle into halves, or fourth half-square from the bottom. Now join the extremities of the next or second line from the top with the middle of the third line from the base; then those of the third line from the top with the second from the base; and, lastly, the third quarter (below the line of the architrave) with the middle of the base line: the intersections of these lines give a series of points which, when severally joined vertically, and produced, as before described, for the straight-sided column, will result in a beautiful parabolic curve or entasis, which falls on the same point of the base line as the pilaster.

Hitherto we have only considered one order of architecture, the Doric; but the same principles, slightly modified as respects the cornice, when a base is introduced for the column to rest on, will enable us to construct every other, and so perfect is the method, that we find the ornaments peculiar to each order grow out of the intersections of these and other lines, so that the allotted number of flutes in the shaft, the proportions of the capital and frieze, &c., and even their very forms and ornaments, become almost a necessity instead of being left entirely to the guidance of the taste of the architect.

The proportions of the columns and entablature, technically termed "the order," are, however, very subordinate to those of the building as a whole; and to want of consideration of the principles on which this is regulated in reference to the site it is designed to occupy, we owe most of the errors fallen into by modern architects, who have adopted Grecian models for our public buildings.

A tall narrow tower on the top of a hill makes but little appearance, its elevation being trivial compared with that on which it stands; so also a long low line of building on a plain is mean, considered architecturally. The Greeks well understood the effect of contrast. In proportion to the height and distance of the intended site they extended the width of the building, to give it dignity and importance; and the Parthenon on the top of the rock of the Acropolis, accordingly received two squares for its façade; but look to the unhappy effect of placing proportions designed for such a site on a level with the eye, as exhibited in the Manchester Exchange portico, far too heavy and massive for their situation. The inhabitants of the plains of Ionia, with no better sites for their temples than gently swelling knolls, felt this, and gave generally the proportion of a square and half to the façade, or rather two squares divided into five, omitting to fill up the two external spaces with columns: with this modification the height of the rectangle in which the column was formed was four instead of three times its width, and the proportions peculiar to the early or Athenian Ionic pillar were thence derived; and for columns *in antis* the still more perfect proportion of four and a half squares, the whole being well adapted to be viewed from a moderate distance. For a confined space in a city and on level ground, a still taller proportion was required for the elevation; and thence arose the Corinthian order of a square divided into six parts, or two squares, omitting two spaces or sixths at each end, giving rectangles of five times their width, in which to form their tall columns, subject, however, to modification.

The warehouse of Messrs. Hargreaves, a handsome Corinthian edifice in Meal-street, Manchester, well shows how little these proportions suffer from being viewed in that narrow space; whereas the new Scotch Church in Grosvenor-square, in the same style, and beautiful near at hand, appears almost ugly from Oxford-road, and suffers greatly in comparison with an inferior but better placed building, the Charlton Townhall, of Doric proportions.

A PICTURE ON GLASS.

We have recently seen a picture enamelled on glass, by Mr. Edward Baillie, from Mr. John Wood's "Shakespeare Reading one of his Plays before Queen Elizabeth and her Court," which is intended for the Great Exhibition. It is 6 feet by 5 feet. It exhibits a high degree of finish, and is painted in a style rarely attempted in this country, being, in truth, not "stained glass," but a *picture on glass*, with qualities peculiarly its own. It must have cost much time, anxiety, and trouble: the artist must have had strong faith and energy to enable him to carry it through on speculation. We hope his labour and skill will not pass unrewarded. On the left of the picture is Sir Walter Raleigh (statesman, seaman, soldier, chemist, and historian): the next is Lord Southampton; and then comes William Shakespeare. The Queen is the central figure, dressed in the gorgeous style for which she was well known. Lady Hunsden, Lady Nottingham, and Lady Southampton, make up the group.

The ruby glass in the different parts of the picture is of different manufactures: the curtain at the back of the Queen is Belgian, the dress of Sir Walter Raleigh is French, and the carpet and shoes of Shakespeare, &c. are English. The secret of making this colour was for a long time obscure, and every attempt to produce it was a failure. We may remark that in ancient recipes for making ruby glass, the metal "gold," precipitated by a solution of tin, is given as the colouring matter: modern science proves that ruby for window glass cannot be produced in this manner: a specimen, however, of the colour produced by gold is shown in the upper dress of Queen Elizabeth, which is coated on one side only: the colour where the hands, jewels, &c., occur is, previous to enamelling, removed by fluoric acid.

The term "enamelled," on glass, used in describing this picture, which perhaps is better understood by the following remarks. In ancient or mediæval figure painting, the effect of light and shade is produced simply by covering the surface of the glass with a coat of brown, after which the high lights are etched out, then the darker shades are painted in: such parts as are required to be yellow are stained on the back, also the flesh tints, and for this purpose once burning is generally sufficient.

Enamelling on glass includes, in addition to the above-mentioned process, the use of orange, red, blue, rose colour, &c., as required to produce the life-like effects of a portrait: these being highly vitrified on the glass become portions of it, similar to the enamelling on copper, with this difference, that the colours used for glass are of a transparent nature, whilst those used for copper are "body colours," being shown on a white ground. When we say that the heads and principal parts of this picture have been burnt five times, it will show the time, risk, and trouble entailed on the painter by this style of art.

This picture is composed of nearly eighty pieces of glass, which are fitted into a copper frame: the joinings are almost imperceptible, and, with the exception of Shakespeare's legs and feet, do not interfere with the effect of the whole.

ARCHÆOLOGICAL INSTITUTE.—On the 6th inst. the usual monthly meeting was held in Suffolk-street. Sir John Boileau presided. Many interesting objects were exhibited, and several papers read, including one on the *Bulla* (a Roman neck ornament), by Mr. Yates.

* To what extent is Dr. Bell acquainted with the investigations of Mr. W. P. Griffith in this path?—Ed.

THE SPIRIT OF PRECEDENT IN DECORATION, AND NOT THE LETTER, OUR GUIDE.

If we should go so far as some would have us, and admit that classic and mediæval forms and proportions must remain unchangeable, I think that the same rule will not hold good in decorative art; for as most of the classic and mediæval forms are necessitated by the constructional peculiarities, they are in some measure confined within the limits of mechanical laws, while, on the other hand, decoration is governed by the taste, the imagination, and sense of beauty and fitness, whose larger and freer sphere alone can put any limits upon it. Even among those who admit and practise new combinations and beauties in general arrangement and composition, and whose works show how much thought and patient care has been bestowed upon them, we find too often that their details have scarcely a feature that is at best more than an imitation of ancient work. The first pleasure experienced on contemplating a good building, where this heedlessness of detail (as a thing worthy of close attention) is manifested, will be found to be chilled, when we look closely into the design; for, with the general composition, the evidence of thought and design ceases, the hand becomes feeble, and is content to take up conventional forms, and to follow in the old dusty track, by a copyism that blindly follows what others have previously laboured to produce. In the impression that a building leaves on the memory of those who are able to appreciate the art that has produced it, and even on less educated minds, will be most frequently found the criterion of its real merit; and just in that degree that the designer's mind has been master of his whole work, will it be capable of conveying to others the poetry of his art.

The architect writes his mind on stone and wood; and whether it be mean or noble it is stamped there for present and future generations to read. How then will the work of that one be looked upon who is content to hand down the subterfuges and imitations of degenerate taste appended to his design? They are to his building what artificial flowers would be if grafted on a living stem: like these his ornament can only be beautiful because it imitates what is more beautiful, and it falls infinitely short of it, because wanting all true life. If, then, we continue to copy what at first was the artist's expression of what he saw in the natural forms around him, we not only lose the teaching of nature, but generally miss the artist's interpretation of it as well, and the work becomes our version of his genius.

The mediæval architects were remarkable for their heedlessness of precedent in this respect: their fixed laws were in construction and general design chiefly, and great latitude seems to have been allowed in the best ages of pointed architecture. We forget when we take these details on trust, that their chief beauty is in the efforts they show to follow nature with no intermediate teacher; and at that very point where they leave her for another their art begins its decline. We cannot look at the details of any of our cathedrals, or even of our smaller churches, where the stems of vine and ivy trail in the hollow mouldings, and the boss, like a bunch of flowers, grows from the arched roofs, where the garlands mantle the capitals of the pillars with their foliage, and faces gaze from walls and arches, and not feel that the workman did not go to the buildings he had seen for his ornament, neither did he count the cost of his work and try to put up something that would cost less time, thought, and money. His was a labour of devotion, a sacrifice willingly rendered back to Him who gave the power to conceive it. His models he gathered from the green earth or the living creature in the imaginings of his mind and the histories of Scripture or the emblematic legends of saints. All are types of some thought, even of evil passions and hatreds as much as of devotion and praise, for among the numerous grotesque figures are many that speak plainly enough contempt and irony, and rivalry the most bitter; and some of the faces are the very impersonations of wickedness. Instead of scoffing at the rude-

ness of these, it would be better for us if we were to strive to follow their earnestness; for, manifold as their defects are, few can so forcibly embody an expression or a meaning, and too many now work without having any meaning to embody, but are satisfied with the so-called correctness of their style. The very foliage often seems to be typical. In the oak and thorn and ivy leaves are the emblems of the thick forests that grew round the monks' dwelling-places in their first simplicity, and the beasts and birds that inhabited them have their place in his decoration. Birds and flowers, from their gayer colours, are especial favourites in the illuminations of manuscripts. There are many faces, also, that are self-evident portraits in these, as well as in the paintings, carvings, and stained glass.

It is scarcely possible for the art of architectural decoration to expand till we free ourselves from the love of copyism, and take up in its stead the animating spirit of the past. With our added knowledge and increased means, to what might we not attain if we only trusted ourselves to this spirit. Let antiquarian knowledge be no longer the guide, but rather the suggester, and we shall eventually attain, what it now perplexes so many heads even to imagine,—a new style. Have we not our own history and our own faith to symbolize that we need to cling to those of the past, that are often but barely comprehensible? Are there not more lands and more wonders known to us, from which we may collect our models, than our forefathers had? Why do we even pass by familiar objects to copy their representations of them? Why content ourselves by putting up griffins or dragons, or other fabulous creatures, when the whole of animated nature offers its graceful forms to us, and the simplest weed that grows is a more beautiful and perfect thing than ever was chiseled by man's labour or coloured by his art; and not the earth's surface only, but from its hidden places, we might learn, and turn its crystals and fossils to our use. The sea also offers its beauties to our eyes, in the forms of its shells, its fuci, and corals,—things seldom used in decoration, but certainly most appropriate for sea-side buildings, and those which are used for what appertains more especially to naval purposes. We who live in a new age must not confine ourselves only to that which our fathers knew and practised. Whatever they saw spread out for them is yet more widely spread for us; but instead of turning back and copying their works, let us seek, with the same spirit that they possessed, in that same book in which they sought, and found, that which, though old as the creation, is to us ever the newest and fairest. E. W. L. C.

PLEDGE-DEPOTS FOR THE WORKING CLASSES.

THE early advocacy of lodging-houses by THE BUILDER was not without effect in popularising the theme. The extensive clearances made in densely inhabited poor quarters, and the extrusion of hundreds of families from squalid, ill-ventilated, undrained courts and lanes, absolutely required the substitution of other locations; for swarming poverty must have sought shelter in remoter purlieus, where they would cling and cluster in closer and fouler community, or else have emigrated to the county towns or agricultural districts.

It is certain that in the gradual improvement of the metropolis, in keeping pace with the growing taste for embellishment, houses of such a character as might suit the labouring classes have not been built; and equally so that the only chance which now remains for making provision for the operatives is dependent on the construction of suitable lodging-houses at convenient intervals. A porter or even an inferior shopman of New Oxford-street, or of the style-reforming centres, cannot find lodgings at a distance under one mile and a half and frequently three miles from his occupation; and although the higher grade of clerks are receding as far as possible from the centre (some of them by rail) still the relinquished tenements hardly suffice to supply the accruing wants of those who succeed them.

For single men, lodging houses on the model plan may do; but how is the workman with a family of four to six in number to be hived? this latter wants three rooms at 4s. a week, clean, wholesome and convenient; but these he cannot get, nor even two rooms fit for human habitation at that price. Twenty shillings may be considered (allowing for lost time, sickness, &c.) the average wages of the sons of toil, and in this year of free trade, that sum will go further than 30s. would have gone ten years ago; yet how can the father of a family see his little ones pine for food or raiment (which they must inevitably do), if he exceed that sum for lodging.

It is not so much thought of as the subject needs, that a clean commodious apartment not only conduces to the health of a family group, but that the facilities it affords economises time and materially promotes morality. The common saloon at home, with a fire, often keeps the hard-wrought mechanic from the gin parlour! What is wanted is the *Family Lodging-house*, with fittings suitable to the advanced state of a fearfully increased and much improved community. That march of science which refines the tastes, whilst it increases the requirements of the higher orders, goes on progressively, and the modes of life which were tolerated last century by the humblest citizen, would now be loathed as unsuited to the circumstance and wealth of this nation, as well as to the era in which we live.

The public baths are certainly a great convenience and luxury to the poor, but the wash-houses, to be convenient, should be attached to their dwellings: the mother of an infant family cannot, nor can the sick or weakly roomkeeper, go out to wash.

All the requirements of our social state are now better understood than formerly, because they are more studied. The accumulation of living souls within the focus of London presses upon the fiscal powers for increased provision against general want: the public health, as also the public peace, demand it: the laws of nature, as well as the law of God, enforce it.

There is, however, one vast requirement, to which little attention has been paid in this country—one which our neighbours, the French, have long acknowledged and acted on: but as yet, in this metropolis, no attempt has been made to realise a resort for the people, which has been blessed abroad with the happiest results to millions. As this is a foundation fixed on the first of Christian virtues, and as it is embodied in structures, THE BUILDER may not be a bad medium of a design which has for its corner-stone the Christian basis of charity: this is a *Mont de Piété*—a great national pawnbroker's warehouse, not at thirty per cent. and tickets and pence, and too often at other extortions, but simply at five per cent. per annum.

Such a per centage (calculated to a month) would be quite sufficient, not only to pay a suitable return for capital invested (such as four per cent.), but would amply require the numerous hands employed in superintendence and management. In such an establishment not only would a fair equivalent be given for the value of the article pawned, but an additional extent of time might be allowed for the redemption of the deposit; for, unhappily, the bequest of paternity, the valued gift, the not-to-be-replaced relique of friendship or love is but too often forfeited, and for ever lost, under the present grinding system of heartless exaction.

I do not say that pawnbrokers are worse than other men, but their vocation makes them callous, and their profits are on the distresses of the needy, for the confiscation of the pledge is the greatest gain to the lender.

Did the rich know this, they would feel for it, but as a body they cannot know it: it is only through the press, and by the narrative of those who "know the short and simple annals of the poor" they ever can know it.

There is as much charity as wealth in our happy land; every corner we turn announces it. See St. George's Hospital fronting two parks! But look everywhere, on all sides, it is there! How many institutions founded and supported by voluntary contributions,—

hospitals, schools, nay, the very district poor-houses! And yet we have no Mont de Piété.

Of churches we have many, and more every day arise. Is a subscription wanting, thousands flow in for the promotion of religion; but is not the glory of God promoted most and best by conducting to the happiness of his creatures? Charity with us is diffuse, incessant, and indefinite: the countless private calls on humanity are answered, and in too many unworthy instances satisfied. Give the claim only a *body* and *form*, and where was it ever found deficient? This plan, then, of Monts de Piété (and I adopt the phrase in honour of the French origination) needs but this *body* and *form*—it requires but the advocacy of the press—it has but to be held up to the sympathies of the rich, and the result will be sure to be the successful establishment of institutions which, in times of poverty, sickness, and calamity will yield inestimable, because prompt, succour to the indigent population,—the source of labour and the stay of the empire.

Commerce may prosper and wealth accumulate amongst the section of proprietors, but unless that wealth be diffused, and the condition of the multitude (the producers) be also improved and ameliorated, the nation cannot be said to prosper: the aggregation of property in vast hoards benefits not, for whilst it elevates some above their natural sphere, it depresses the great mass below the rights of humanity; and the extreme of luxury on the one hand renders that privation the more severe under which the poor, on the other hand, are languishing.

QUONDAM.

THE POSITION OF THE ALTAR OR COMMUNION TABLE IN EARLY CHURCHES.

I AM sorry to be obliged to trouble you again on this subject, but I will strictly obey your injunction, and not follow Mr. Elliott in converting a simple question of fact into a theological discussion. I might fairly leave the question as it now stands, as Mr. Elliott having expressed an opinion contrary to the established views of those having the same material to judge from with himself, and having, as it appears to me, failed in bringing any kind of evidence in favour of his opinion,* the ordinary rules of discussion render it needless to go into evidence on the subject. Besides this, being simply an architect, and having neither the time nor learning for an inquiry which might set one wandering through the whole range of ancient fathers and church historians, I am only anxious to show that the *onus probandi* still rests with your correspondent, and that he, in stating a novel or unusual opinion, ought at least to have given it as such, and not to have stated it in terms calculated to lead the uninformed to suppose it an admitted and incontrovertible fact.

Mr. Elliott's more important assertions may be condensed into three:—

1. That in the early churches there was "nothing resembling the nature of the sanctuary"—"no semblance of a holy place."
2. That there was in them "no semblance"—"nothing even to remind men of an altar."
3. That though there was a raised platform at one end of them, on this "the communion table was never placed, but invariably stood in the midst of the congregation."

On the first, I will mention that we learn from Bingham that the *bema*, or tribunal, was, in addition to its ordinary name, called "The Holy"—"The Holy of Holies"—"The Sacramentum"; and that the same word is sometimes used for it by which the Seventy designate the sanctuary in the Old Testament. Bishop Sparrow speaks of the "*αγιον βημα*" (the *holy tribunal*), "the sanctuary, raised in, of old," "that it might not be pressed upon by the multitude." Wheatly speaks of the "*sacramentum*, since called the *chancel*;" and it is notorious, that Eusebius, in the passage so frequently quoted, speaks of the "*Holy of Holies*" being surrounded with a screen or railing. These authorities are sufficient to throw upon your correspondent the

burden of proving that there was "no semblance of a holy place."

On the second assertion (that there was no semblance—nothing to remind men of an altar), it seems almost absurd to bring authorities to prove the prevalence of the contrary opinion. Bingham seems to feel this, and says "we never read of any such dispute in the primitive Church; for ancient writers used both names indifferently, some calling it altar, others the Lord's Table," &c. Mede actually doubts whether it is called anything else than altar by writers of the two first ages, which is, of course, saying too much. It appears that Ignatius, Irenæus, Origen, Tertullian, Cyprian, Chrysostom, Zeno, &c., &c., all use the term altar. I am aware that Ignatius is not a certain authority, but there is evidence enough without him; and even the interpolations of his works will come within the range given us by Mr. Elliott. Eusebius uses the same word; indeed, it seems to have been always used indifferently under other terms, though it is true that the early Christians admitted, as between themselves and the Pagans and the Jews, that they had no altars—meaning that they had no altar for the bloody sacrifice of slain victims. The fact of its being in the earlier ages of wood does not affect this question, as even in the Jewish tabernacle both the altars were mainly of that material. Bishop Sparrow says that the "names altar or holy table were used for the same things, though most frequently the fathers and councils use the word altar." With such evidence before him, how can Mr. Elliott say that there was nothing in the ancient churches "even to remind men of an altar?"

The remaining assertion is that "the holy table was never placed in the chancel, but always in the midst of the congregation."

That it was in one sense often in the midst of the congregation, I admit, inasmuch as the chancel or sanctuary was not limited usually to the mere projecting apse, but protruded into the church, so that some portions of the congregation were on either side of it, as in the case of a modern church with chancel aisles. This, however, is not, I apprehend, what Mr. Elliott means; he claims for it a place altogether external to the *cancelli*. The famous passage in Eusebius on this point has, I believe, by some been held to favour Mr. Elliott's view; but if so, what is the meaning of the innumerable regulations as to who were and who were not to be admitted to approach the altar? The oldest English translation I have met with (A.D. 1584) gives it thus: "But this man having finished the temple, and the most high seats for the presidents honor, again having placed the underseates in a passing good order, and last of all the most holy place, the altar being set in the midst; again, he so compassed these things with wooden rails wrought up to the top with artificial carving that too many might not come therein." Bingham says on this, that it "is not to be interpreted, as some have misunderstood it, of the altar's being in the middle of the nave or body of the church, but in the middle of the *bema*, or sanctuary, at such a distance from the upper end as that the synthrone, the seats of the bishop and presbyters might be behind it."

The Chevalier Bunsen in his "*Basilicas of Christian Rome*," after quoting this passage from Eusebius, explains it that "the altar was in the middle of the square" (i.e. the intersection of transept) "enclosed behind by the clergy, on both sides by the magisterial persons, so that the entire space was shut off from the rest with screens, in front against the people, on both sides against the catechumens." I think he is slightly mistaken about the magisterial persons, probably understanding the *Soleion* to be referred to. Bingham, however, gives good reasons for understanding this of the presbytery; but this does not affect the case that the altar was *within the cancelli*. The talented reviewer of M. Bunsen, in the *Quarterly*, clearly lays down the whole arrangement, and describes the altar as "*within the sanctuary* more or less advanced towards the choir." The late Mr. Hope, Professor Willis, Wheatly, and Bishops Beveridge and

Sparrow, give it precisely the same position Siegel, in his "*Christlich-Kirchliche Alterthümer*," says that in the latter half of the fourth century, the council of Laodicea (A.D. 361), refused the laity admittance to the altar," and that it was "early the custom to separate the choir, the place where the altar stood, from the nave of the church with screens." Again, in describing the church of St. Sophia, from Procopius, he says, after mentioning the *cancelli* and their gates, "In this *bema*, or *αγιον αγιον*, stood the altar or holy table." Thus we find it to have been in old St. Peter's; thus also in the early cathedral of Canterbury, said to have been copied in its arrangement from St. Peter's; and thus I may boldly say it clearly appears to have been placed in every ancient church of which we have any description extant; how then, when we find it precisely in this position in the Basilicas, as they have come down to us to the present day, can we assert that it is a modern alteration, and that in early churches it was never placed there?

Of the churches anterior to the time of Constantine, we know but little, but that little does not militate against what we know of their successors. It would be absurd to expect that the upper rooms, in which the early disciples worshipped in small and select companies, should present all the same arrangements with a church for a mixed congregation at a period of more advanced extension of Christianity; but, as the churches of Constantine were the immediate successors of those destroyed throughout the empire by Diocletian, it is reasonable to suppose that their arrangements were the same, though their decorations were far more magnificent; and Eusebius's description does not appear intended to point out any novelty of arrangement.

I think I have said enough (though the case is so obvious that I feel almost to be trifling with your readers by going into it) to prove that the old churches, according to the received opinion, had a *sanctuary* and an *altar*, and that the altar was in the *sanctuary*. I will now add, that they had, for the most part, in advance of the sanctuary, a *choir*, enclosed by a second range of *cancelli*; thus we have, firstly, at the extreme end, the seats for the bishop and higher clergy; secondly, the altar, with its *cancelli*; thirdly, the choir, with its *cancelli*: as, though of later date, in San Clemente, and nearly as in the early cathedral at Canterbury. The great change from this to the later arrangement was to bring the seats of the higher clergy forward into the choir, and the doing away with the second or sanctuary screen, which gives us at once our ordinary chancel arrangement; a change quite unconnected with any religious innovations. To these innovations are to be attributed the multiplication of altars and the increased exclusiveness of choir screens,* but the main change was one simply of convenience. The depth, too, of chancels had nothing whatever to do with transubstantiation, but simply arose from the increased number of the clergy or choir to be seated, and was not a constant feature, but varied directly with the number of persons to be provided for, which accounts, on the simplest utilitarian principle, for the extraordinary varieties of length which we find in our old chancels. The main divisions of our churches, i.e., the sanctuary, the choir, and the nave, agree precisely in principle with those of the early churches, differing only in the altered position of the clergy, who, instead of sitting behind the altar, are placed, if about to officiate at the communion, at the side of the altar, if otherwise, with the choir; so that, notwithstanding all the admitted innovations of the Middle Ages, the grand primitive divisions have been constantly adhered to, and are still retained by our own church,† though carelessness or igno-

* I have, for brevity's sake, avoided going into the peculiar arrangements of the eastern, as distinguished from the western church. I may mention that the credence table, or table of prothesis, was not one of the late additions, as Mr. Elliott supposes.—See Bingham, Siegel, &c.

† The concession of our reformers as to bringing forward the altar table, at the time of communion, is no sufficient ground for Mr. Elliott's claim upon them as agreeing with him. There can be no doubt that they had not had much opportunity of searching into ancient

* The passage cited from Justin Martyr is absolutely silent on all the questions at issue.

rance have too generally caused them to be lost sight of. S.

CISTERNS, LEAD PIPES, AND WATER SUPPLY.

We return to the appendices to the "Report on the Supply of Water to the Metropolis," issued by the General Board of Health, chiefly to make some extracts from the evidence concerning cisterns and lead pipes. Dr. Arthur Hassall being asked,—

"Have you made any examinations of cistern water?" says,—"I have, many. A cistern is a small reservoir, and has all the faults of reservoirs: the water contained in it is generally exposed to light, air, and the sun, and the dead and living organic matter, as in the case of the reservoirs, too often goes on accumulating from day to day, the former seriously contaminating, by decomposition, the purity of its water; the living organic productions present in the water of cisterns resemble those of the water of the company by which it is supplied: certain forms, however, become developed in the water of cisterns with great rapidity, as the *entomostraceæ*, especially *cydlops*, *quadrangula*, *infusoria*, *confervæ*, and *diatomaceæ*: the *entomostraceæ*, and some of the *infusoria*, swim freely about in the water, while the *confervæ* and *diatomaceæ* either adhere to the sides or else fall to the bottom of the cistern, together with the grit and dead organic matter, forming an ever-increasing mass, which is stirred up on each renewal of the water only to subside in still greater quantity, until after the lapse of weeks, months, or even years, some fortunate accident, or frequently the offensive and putrid state of the water causes the cistern to be cleaned, and a removal of the putrescent and noxious matter. On making inquiries as to the frequency with which cisterns are cleansed, I was astonished to find how generally they are neglected; a neglect which is to be explained partly by ignorance of the necessity which exists for repeated and careful cleansing, and partly by the inconvenient and absurd position in which cisterns are very generally placed, mounted high up, frequently just over the privy or closet, and often requiring ladders to reach them; but the evils of cisterns are not merely aggravated by neglect and bad management, there are faults of construction connected with them: thus the bottom is usually level, and the tap inserted about two inches above this level, leaving a space for the continued accumulation of grit and dead and living organic matter: this evil might be obviated by having the cistern of a rounded form at the bottom, the discharge pipe issuing from the centre. Lastly, the material of cisterns is bad: they should be made of glass, earthenware, or marble."

He was questioned as to the actual effect of sewer-water:—

"Have you any evidence to show that sewer-water does contain sulphuretted hydrogen in such large quantity as to be prejudicial and even fatal to animal life?—With a view of determining this question, I made the following experiments:—1st experiment. A given quantity of Thames water, known to contain living infusoria, was added to an equal quantity of sewer water: examined a few minutes afterwards, the animalculæ were found to be either dead, or deprived of locomotive power and in a dying state. 2nd experiment. A small fish placed in a wine glass of sewer water, immediately gave signs of distress, and after struggling violently, floated on its side, and would have perished in a few seconds, had it not been removed, and placed in fresh water. 3rd experiment. A bird placed in a glass bell-jar, into which the gas evolved by the sewer-water was allowed to pass, after struggling a good deal, and showing other symptoms of

arrangements of this kind, and were desirous of concealing in some slight degree to their foreign coadjutors. Bucer, we find, told them, that "in ancient times churches were built in a round form, and not long, like ours; and that the place for the clergy was always in the middle," assertions for which even Mr. Elliott will not thank him! He argues from this, that "our division of the chancel from the church was another article of treason against God!" In the face of this, our reformers ordered that "the chancel should remain as they have done in times past."

the action of the gas, suddenly fell on its side, and, although immediately removed into fresh air, was found to be dead. These experiments were made, in the first instance, with the sewer-water of the Friar-street sewer: they were afterwards repeated with the water of six other sewers on the Middlesex side of the river, and with the same result, as respects the animalculæ and fish, but not the bird: this, although evidently much affected by the noxious emanations of the sewer-water, yet survived the experiment.

Would you infer from these experiments that sewer-water, as contained in the Thames near to London, is prejudicial to health?—I would most decidedly; and regard the Thames, in the neighbourhood of the metropolis, as nothing less than diluted sewer-water."

As to the use of lead pipes and cisterns, Dr. R. Angus Smith says:—

"The use of lead pipes is common enough; and although the danger from lead has often been pointed out, there is no diminution in the amount used. It is acknowledged that with soft water, lead is very dangerous; but I am disposed to think that it is dangerous even with hard, except when a crust forms upon it. When a lead pump is used, no matter how hard the water is, there is still lead to be found in it. In one case I found lead where there were 62 grains of lime salts in a gallon: the family filtered the water, but that did not quite remove it, although it was much improved. This shows the lead to have been in complete solution, although the water was hard. The pump was made of lead, so that there was a constant friction preserving the surface clean and assisting comminution.

In another case, where there was a lead pump and well, the water also coming from a badly-drained and putrid underground, the water was acid, and an acid salt of lead was found in the water, strong enough to have a distinct taste of lead, and otherwise nauseous from the other salts, such as nitrates and chlorides. A few bubbles of sulphuretted hydrogen made the whole of a deep brown instantly, and it was lamentable to find that the persons who used it did not suspect any evil from this source.

The use of zinc in lead pipes has been proposed as a remedy, but it is not desirable to drink even zinc. There is a lead pipe made in Manchester covered with tin: a very thin film of it protects it considerably from the action of water acidulated with acetic acid. Probably for water-pipes it may be very useful. It is time that some change should be made in the small water-pipes now made of lead, and that the use of lead pumps and cisterns should be done away with, unless they can be protected."

Up to this time it has been broadly stated that soft pure water acts more powerfully on lead than hard water. Evidence is given to show that one is not more injurious than the other.

Mr. Spencer (of Liverpool) says:—"Those who have observed the destructive effects of hard water on cisterns, especially in Liverpool, where the water is pre-eminently hard, but who have not studied the matter chemically, have been at a loss to account for some of the scientific opinions so much at variance with their daily observation. In a word, the closet-experiment has usually come to the conclusion, that soft water only acts upon lead, while the practical observer finds that cisterns are more rapidly corroded by hard water: hence has arisen so much conflicting opinion. A little reflection, however, will render it obvious that the effects of practice can scarcely be observed by the mere immersion of slips of brightened lead into glass vessels containing either hard or soft water, and there suffering them to remain for a few weeks, perhaps only so far covered as to prevent evaporation or the accession of dust.

It must be recollected also that, as cisterns are constructed, lead is not the only metal which has to be dealt with; there being the solder which is used for the joints. Now this substance, which is an admixture of lead and tin, will, when immersed in water along with lead, act as a distinct metal, and give rise to a

voltic action between the lead, the solder, and the water. This will cause a rapid corrosion at the joints, but it will be more or less active in proportion to the hardness or chemical impurity of the water."

A working plumber, William Millard, gives the following evidence:—

"What is your observation of the different action of hard and soft water on leaden cisterns?—The hard water eats the cistern away: the soft water, that is rain-water, does not sensibly touch it at all. The hard water of Highgate will, in a few years, eat the bottom of a leaden cistern entirely away, so that it will be useless.

In how many years?—In about three or four years.

Does not a leaden cistern usually last longer than that in Highgate?—No; it eats holes in the bottom, particularly at the places where there is solder, giving it a honeycombed appearance. This is so much the case, that it is a common custom here for the people to have their cisterns painted.

Is that a protection?—Yes, if the paint be allowed time to get thoroughly dry before the water is let into the cistern, the water does not act upon dry lead, and the cisterns will then last for years."

DOING THINGS BY HALVES AT ST. PAUL'S.

THE proposal which originally appeared in THE BUILDER of throwing open to the street the entire western front of St. Paul's, has been compromised by the dean and chapter, by allowing the gates of the enclosure to stand open for the general promenade of the public. The object originally contemplated was to give greater effect to the building itself as seen from the street, while at the same time the entire thoroughfare would be greatly improved. The project was set aside by the authorities chiefly upon the ground that the space in question would be merely made the resort of the idle and the mischievous. The result, however, of the present arrangement is, that all the nuisance and inconvenience apprehended in the first instance is actually provided for by affording a large enclosed play-place for every little urchin and ragamuffin in the neighbourhood, while neither the public at large, nor the immediate inhabitants of the vicinity derive any adequate advantage from the change. The only proper way to make the improvement complete, is, to adopt the basis of Mr. Barber's plan: that is,—throw open the roadway to Queen Anne's statue, run a light iron hurdle or fence along the bottom of the steps to prevent the intrusion of children or improper persons, and set back the present iron railings on each side as far as the north and south doors, close to or within a few feet of the church.

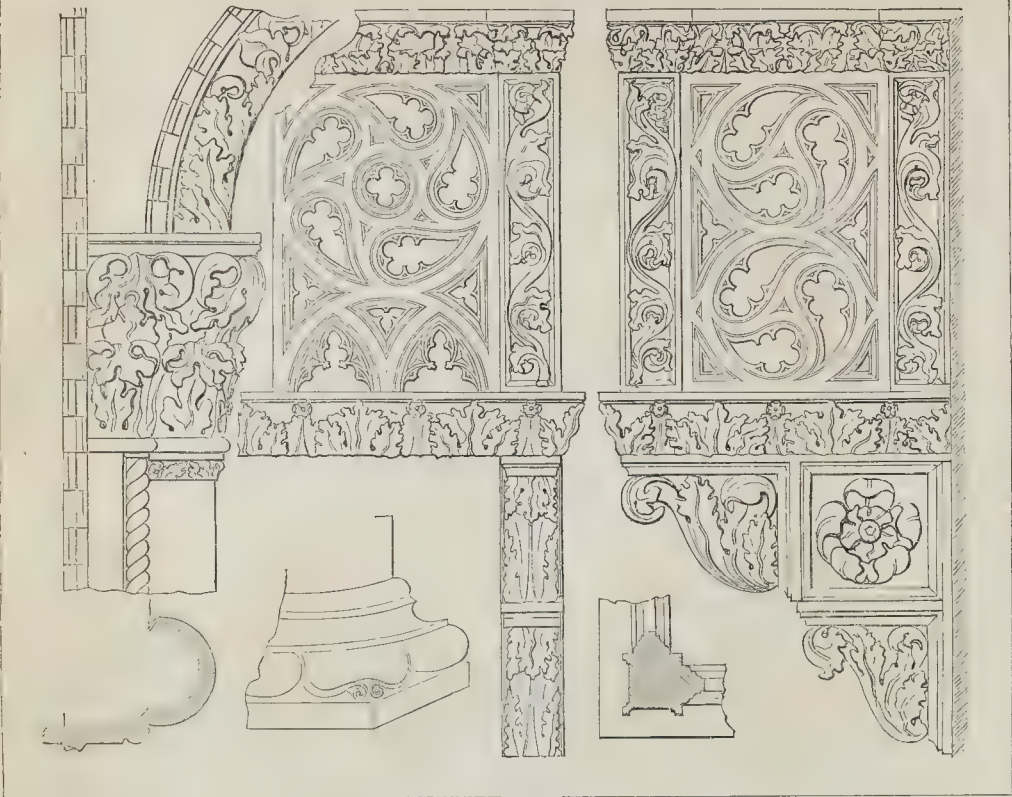
The effect of the whole would be a clear and unobstructed view of the great western front as seen from the street, with an ordinary thoroughfare between the statue and the steps; while on the northern side the omnibus stand which now encumbers the roadway would be put farther back, leaving standing-room as well as space for carriages to draw up to the surrounding shops; and on the south side the main road would be relieved of the coach stand.

Where so great a public advantage is to be obtained at so trifling an expense, surely it is unwise of the parties concerned to oppose any longer the alteration. WATCHMAN.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

—After a general meeting on Wednesday, the 12th inst., the council and some of the members dined together at the Freemasons' Tavern, under the genial presidency of Mr. James Heywood, M.P. Sir George Strickland, Bart., Mr. Wilson, M.P. (Clitheroe), Mr. Heyworth, M.P. (Derby), Mr. Pettigrew, Dr. Lee, Mr. Planché, Mr. Baily, Mr. White, Mr. Halliwell, and others spoke, and a very pleasant evening was spent. Sir Oswald Mosely has been elected President for the present year, and the congress will be held at Derby.

DETAILS OF PALACE DEI PERGOLI INTAGLIATI.



IL PALAZZO DEI PERGOLI INTAGLIATI, VENICE.

THIS is a beautiful specimen of the Gothic architecture peculiar to Venice, and, situated on the Grand Canal, opposite the church Santa Maria della Salute, attracts the universal attention of the passers by: the balconies and the whole of the enriched parts are executed in white marble most exquisitely carved. It is coeval with the celebrated Casa d'Oro, but the projecting balconies of our subject, and their beautiful design, render it by much the more attractive in the present day, the gold and colouring of the other having almost entirely disappeared. The detail shows the profile and part of the front of the upper balcony, and the column and archivolt of the windows. J. T. W.

WHAT MIGHT BE DONE WITH PALL-MALL.

HAVING compared the articles lately published in your journal, proposing certain improvements at the further end of Pall-mall, with the importance and beauty of the situation, I was led to form a conclusion in accordance with the old saw,—“When you commence a work, let it be well done.”

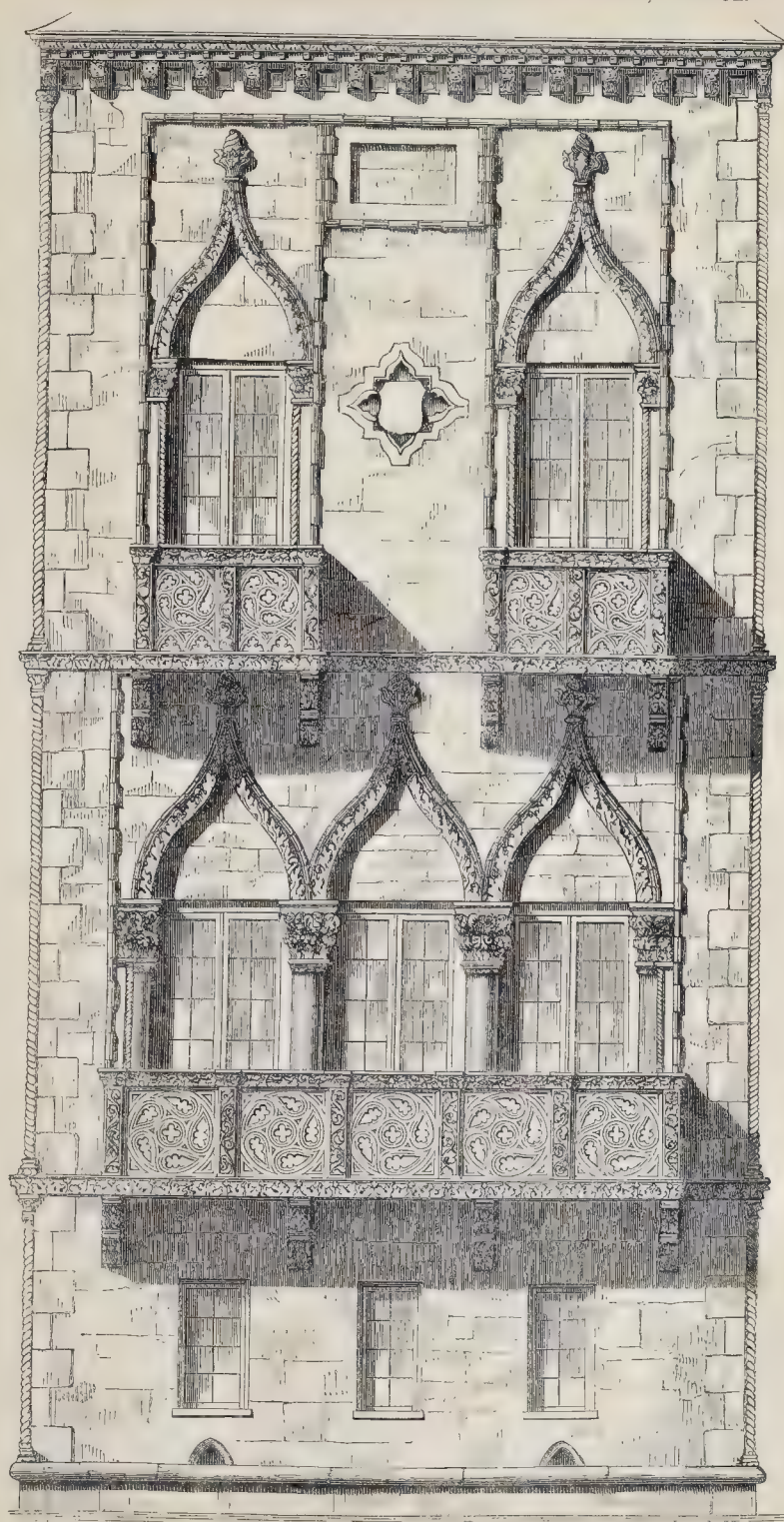
Now, I am an advocate for beauty as well as utility; and I consider the first great object to be obtained, next to clearing out the whole of the square of property on this side and adjoining the Conservative Club, reaching westward to Bridgewater-house, would be the restoration of the Palace, Palace-yard, and all the interesting block of building forming the square between Marlborough-house and the Duke of Sutherland's. This I propose to restore to its pristine beauty in the style in which it was built, and remove the present unsightly modern windows and so-called improvements. I then suggest that the next

decided improvement (which ought as soon as possible to be effected) would be the entire removal of the Pall-mall side of St. James's-square, throwing the space open: this would not only add to the beauty of the Mall, and in a sanitary point of view be most advisable,—it would especially improve the Army and Navy Clubs, as also those opposite, which, from their height, are sadly deficient of space for the proper display of their proportions, as well as a free admission of light and air. Again, passing through Waterloo-place, and looking from the bottom of the Haymarket, the most peculiar-looking figure imaginable is presented by the buildings as at present placed, purporting to be a triangle—classical to a degree! Here I propose to make considerable alteration. In the first place, you will easily perceive (by reference to the map) that the Haymarket stands nearly equidistant between the farther end of the colonnade round her Majesty's theatre and the end of the buildings forming the angle where Pall-mall East crosses this triangle; also that the east side of the United Service Club is parallel to the large shop forming the aforesaid end of the triangle. Now, if the intermediate property were removed, a new and handsome square would be formed, with a frontage more valuable than the one pulled down in Cockspur-street, forming the fourth side of the proposed new square. To carry out this plan to the fullest, I would propose that the stables lately used by the lamented Queen Dowager be pulled down, and that Carlton House-terrace be at once completed; a new street in continuation of the Haymarket be carried in the same direction, passing through and having its entrance in the proposed new square: this would be found to enter Carlton House-terrace-road exactly alongside the last house on the north side, and would form a handsome and imposing ap-

proach to this magnificent range of building, forming also a similar street to the one entering between the Reform and Carlton Clubs. If these improvements were carried out in the liberal spirit proposed by the suggester, I do pride myself as an architect, and a resident of London, that we should have a *coup d'œil* not to be equalled in any town in the world. We should then have Trafalgar-square (when complete, as far as the column, a new National Gallery, and *actual jets of water* are concerned), our new square, which I should suggest might appropriately be called Seymour-square in honour of the First Lord of the Woods and Forests. Then there would be Waterloo-place, greatly improved by a view of the York Column and Carlton House-terrace, seen from Seymour-place, as also by the new entrance. Passing farther on we should be struck by the imposing appearance of the beautiful clubs and houses forming the east and north sides of St. James's-square, as also by the relief given by the gardens, which could be considerably enlarged. Then, coming to the end of our tether, we should have another new square of no mean dimensions (say Morpeth-square), with a view of the two finest mansions in London, and the Green-park with its refreshing verdure between; also the Old Palace, showing to the best advantage its fine proportioned mullioned windows, arched doorways, and embattled parapet. H. B.

METROPOLITAN CATTLE MARKET.—A Bill for a new market, supported by Mr. Childers and Mr. Alderman Sidney, in the Commons, was presented for second reading a few days ago, but the motion was postponed until the measure brought forward by the Government should be fairly before the House. The Bill for the extension of the Islington market has been read a second time.

THE PALACE DEI PERGOLI INTAGLIATI, VENICE.



INSTITUTE OF BRITISH ARCHITECTS.

THE ROYAL MEDAL.

At the meeting on Monday last, Mr. C. Fowler, V.P., in the chair, a proposal by the council to present the Royal Gold Medal of the Institute to Mr. T. L. Donaldson, Professor of Architecture at University College, "on account of his merits generally as an architect, both in the design of buildings and in the long and honourable practice of his profession—his liberal and arduous study of architecture both abroad and at home—his valuable contributions to the literature of the art—his devotion to the duties of his professorship, and for his effectual zeal as one of the chief founders of the Royal Institute of British Architects, so honourable and advantageous to the profession, and to the public good,"—was passed unanimously by the meeting.

We cordially concur in the resolution, and trust that Mr. Donaldson, who has but just now recovered from a severe illness, may live long to enjoy his honours.

Mr. J. Fergusson, Associate, then gave an interesting account of the architecture of Nineveh, as elucidated by recent discoveries; a subject which he had selected in immediate reference to the subscription-list which had been opened at the Institute in furtherance of Mr. Layard's researches; and laid before the meeting his ideas of the original appearance of the buildings. Mr. Fergusson confined his remarks principally to the Palace of Khorsabad, explored by M. Botta, the French consul; and exhibited a view and section of that palace restored, to which we last week drew attention.

In the discussion which ensued, The Chairman remarked the striking similarity between the winged bulls of Persepolis and those of Nineveh.

Mr. Fergusson said, the general resemblance in the sculptures of the two places fully warranted the adoption of Persepolitan forms in restoring the architecture of Nineveh. There was abundance of wood in Assyria adapted for building purposes, and there could not be a doubt that that material was largely employed. The architecture of Persepolis, of Lycia, and of the early cave-temples of India, presented decided marks of being based upon a wooden type. The pillars and the flat roofs had fallen, and filled up the apartments; and to this occurrence was owing the preservation of the extraordinary sculptures now discovered.

Mr. Papworth suggested that the fall of the flat roofs, if constructed of earth, as supposed by Mr. Fergusson, would have prevented the total destruction of the columns by fire, and that, therefore, remains of them might have been expected.

Mr. Fergusson said that was no doubt the case. Several large pieces of timber had been found by Mr. Layard; but it was impossible that that material (especially if cedar) could have lasted, in a country exposed to heavy annual rains; being only protected by a covering of earth.

In reply to a question by Mr. Mocatta, Mr. Fergusson referred, more fully than in his lecture, to the inscriptions on the walls of the palace of Khorsabad. Though the majority of these referred to war and battles, Colonel Rawlinson was convinced that the inscriptions in the state apartments were descriptions, frequently repeated, of the building itself, on the walls of which they were found. This very interesting point would doubtless be further elucidated as prolonged study gave a clearer knowledge of the import of the inscriptions.

Professor Cockerell entered at some length into the suggested restorations of Mr. Fergusson, the correctness of which he considered highly probable. He further adverted to the prevalence of what were usually thought Greek forms, the Ionic capital, the honeysuckle ornament, &c., in the sculptures and ivories of Assyria, which was a matter of much interest. Mr. Bellamy inquired what proof there was that the radial arch was known and used in Nineveh.

Mr. Fergusson referred to several vaulted chambers discovered by Mr. Layard, which were as genuine arches as any of modern times. The sculptures of Nineveh comprised

numerous representations of round-headed openings to doors. Mr. Layard's attention was fully directed to this point, and his discoveries would doubtless prove that the principle of the arch was well known to the Assyrians. In answer to other remarks, he said the floors of the different chambers had not yet been fully explored; but if they were (as they would be by Mr. Layard) he much doubted whether any trace of the original position of the supposed wooden columns would be found, inasmuch as, he thought, above the earthen floor still existing, there must have been some more ornamental flooring which has perished.

Mr. Penrose explained an ingenious instrument for drawing the Ionic volute, partly his own invention; and Mr. Rogers exhibited some beautifully carved book-covers.

The meeting adjourned till the 24th inst.

PRINCESS'S THEATRE, OXFORD-STREET.

MR. DION BOURCAULT'S new five-act comedy, "Love in a Maze," which has been produced at this house with great and deserved success, has only three scenes, but these are quite perfect of their kind, and serve to place Mr. W. Gordon, and Mr. F. Lloyds (by whom they were painted), high in the ranks of stage artists.

The first scene represents the exterior of an Elizabethan mansion, "Buckethorne Chase, in the county of Norfolk," and both as to the details, truthfulness, and general effect, is excellent. The second, shows an apartment in the mansion, fitted up very completely, with its glasses, cabinets, and chandeliers. It has a carved ceiling, with pendants, and the stage-covering is made to represent a Turkey carpet on an oak floor. The third scene, which shows a garden maze (such as at Hampton Court), is perhaps, more noticeable for ingenuity in the setting than for the painting.

We were so placed, thanks to a full house, that all we saw was round a corner, but will still bear witness to the excellence of the work.

The piece is full of wit from beginning to end; and is beautifully acted by Mr. and Mrs. Kean, Mr. and Mrs. Keeley, Wigan, Harley, Addison, and Meadows.

NOTES IN THE PROVINCES.

At the entrance to Mayfield, from Tunbridge Wells, a new national school for girls has been built close to the existing school for boys. It was opened on 27th ult. The building, which will accommodate 110 children, is of red and grey brick. The plans and decorative parts of the building were given gratuitously by the architect, Mr. Charles Turner.—Eastbourne parish church is about to be re-seated.—The intended new church to be built near the station at Tunbridge, will be begun in the course of the spring: tenders for the contract are to be delivered to the architect by 24th inst.—At Hastings, preparations have commenced on the site of the new church. The foundation stone will probably be laid in course of a month. The funds fall short of the required amount. The building is to be ready by Jan. 1, 1852.—The Commissioners of the Hastings Improvement Act are thinking of building a large room for a Corn Exchange over the present market.—Since the stoppage of the new county gaol works at Lewes, in October last, through the failure of the late contractor, Mr. Wm. Trego, arrangements have been completed for contract with Messrs. Locke and Nesham, conjointly with the sureties in the original contract. Shortly after the stoppage, by order of the architect, Mr. D. R. Hill, of Birmingham, the walls of the several wings were thatched over to preserve them. As soon, however, as the weather can be depended upon, the works will be resumed. A number of men are now engaged in preparing masonry flints for face work, &c. The building, as heretofore, will be under the superintendence of Mr. Edw. Stevens, clerk of works for the county, and Mr. John Hawking as manager. The arrangements for ventilation are to be on the same principle as at the

model prison, Pentonville,—air-cells running along the basement of each wing. Every prisoner will have his separate cell, with requisite accommodation for ablatory and other purposes. In cases of sudden indisposition, the inmate may receive immediate assistance by ringing a bell in the corridor. The cooking and distributing of the food of the prisoners will be also specially facilitated by arrangements for the purpose.—A tablet to the memory of the late Canon Bowles has recently been erected in the aisle of the south-east transept of Salisbury Cathedral. It is in the florid Gothic style, and is from the atelier of Mr. Osmond, sculptor.—Mr. Bigglestone, of Hereford, sculptor, has completed a monumental cross, intended to be erected in Malpas churchyard. It is about 14 feet high. The style is of the Decorated period (circa 1350). A pierced cross-flory, with the ball-flower ornament surrounding the centre opening, is elevated on a capital ornamented with ivy leaves, which rests on an octangular shaft, rising from a truncated cone, on one face of which is the inscription in Lombardic character. The base of the cone is surrounded with a circle of ball-flowers; and the angles of the cone terminate upon the shaft in carved finials.—From an abstract of receipts and disbursements on Liverpool water account for 1850, it appears that the ordinary income of last year amounted to 59,733*l.* 0*s.* 6*d.*, and the expenditure to 54,680*l.* 13*s.* 6*d.*, leaving a balance of 5,052*l.* 7*s.* The total income for the three years 1848-9-50, was 173,326*l.* 8*s.* 11*d.*, expenditure, 145,106*l.* 3*s.* 7*d.*: balance, 28,220*l.* 5*s.* 4*d.* In 1848 the amount received from water rents was 44,799*l.*; in 1849, 45,848*l.*; and in 1850, 46,345*l.* On the Rivington account there was expended last year the sum of 104,831*l.* 14*s.* 3*d.* Of this amount 27,206*l.* has been paid to the pipe contractors; 1,283*l.* on account of the water investigation of Messrs. Simpson and Newlands—1,077*l.* 3*s.* 11*d.* being Mr. Simpson's share; and 4,733*l.* 19*s.* 8*d.* on account of Mr. Robert Stephenson's inquiry, Mr. Stephenson's account being 2,955*l.* 19*s.* 7*d.*—A new school for the blind at Liverpool has been erected, and the chapel re-erected, at the junction of Hardman-street with Hope-street, the old sites at Hotham-street and London-road having been taken for railway purposes. The chapel was rebuilt with the old materials; the interior is still uncompleted. The façade of the school, which is of Bath stone, is in the Grecian style, and consists of a centre and two wings, the ground floor of the former occupied by shop for sale of manufactures by the pupils, committee and ward rooms, &c. This, the front part of the building, is of three stories, the upper rooms being fitted as dormitories for females. The rear of the building, commencing with the corridor, being that chiefly devoted to the institutional appliances, is three stories in height; the basement occupied by kitchens and offices, and the upper rooms principally as dormitories for the males. From the central hall the eye commands the whole range of apartments. The contractors for the rebuilding of the church and the erection of the new schools are Messrs. George and Arthur Holme, of Benson-street.—A new vicarage-house is just being completed in the parish of St. Peter, Droitwich. The chimneys and other parts are of moulded and cut bricks from Oddingley. Mr. J. Smith is the architect, and Mr. J. Shilcock the builder.—On Shrove Tuesday was laid the foundation-stone of a new school-room and preaching-house, about to be built in Hunt's-yard, Great Horton, by that portion of the Wesleyan body which has been expelled for their reforming tendencies. In the village of Great Horton, the expelled constitute the majority of the Wesleyan body.—The letting of the erection of the New Corn Exchange at Barnsley took place on Tuesday week. The successful contractors were—Mr. Robinson, stone mason; Mr. Harrison, joiner; Messrs. Hall and Jenkinson, plasterers; Mr. Brown, plumbing and glazing; Mr. M. Wood, slating; and Mr. Rogers, painting.—A new school-house is about to be erected at Nevby, in the parish of St. Mary, Carlisle; Mr. James Stewart, archi-

test.—At a special meeting of the Edinburgh Town Council, it has been resolved to obtain tenders without delay for the construction of the new slaughter-houses, now to be immediately proceeded with.—The Inverness Harbour Trustees lately obtained from the Chancellor of the Exchequer a loan of 8,000*l.* for improvements of the harbour, by deepening the channel of the river, and constructing a new quay.

MODEL LABOURERS' HOUSE, HYDE-PARK.

If not too late we would direct the attention of inventors of improved fittings for houses, to an advertisement which appeared in our last impression, from the Society for improving the Condition of the Labouring Classes. Prince Albert, being president of the society, was applied to in reference to a model structure, which they proposed to exhibit at the approaching exposition. The object was no sooner submitted to his Royal Highness, than he expressed deep interest in its accomplishment, and generously expressed his desire to make the building his own, by defraying the cost of its construction.

His Royal Highness has further taken much interest in the arrangement of the plan, and great trouble in obtaining permission to place the building in the stable-yard of the cavalry barracks, Hyde Park, immediately opposite the Exhibition-building, so that the numerous visitors to that centre of attraction may, without trouble, have the opportunity of carrying home some practical suggestion for improving the social condition of the working classes, whose labour so largely contributes to the Exhibition itself.

The plan of the model house is, in its general features, given in Mr. Roberts's Essay on Dwellings, &c., at the foot of page 37: it provides for the accommodation of four families, on a ground and first floor, and the same arrangement is equally applicable to a three or even four story house: each family will have a living-room of about 150 ft. superficial, three bed-rooms, a scullery, and water-closet, with a dust shaft.

The upper floor is approached by an open staircase and gallery, on the principle of the Streatham-street houses.

The construction is to be of hollow brick—walls, floors, and roof—rendering the building entirely fireproof.

NOTES ON GAS.

A new mode of lighting up turret clock faces with gas-light, perfectly self-regulating, it is said, has been invented by Messrs. Blaylock and Co., of Carlisle. "It lights itself at the proper hour, viz., at sunset each night, and nearly extinguishes itself at sunrise each morning, and follows the setting and rising of the sun from the shortest to the longest day, and again from the longest to the shortest day, with only a half-yearly adjustment."—The *Glasgow Examiner* reports as to another new invention by a Glasgow gentleman, Mr. James Allan, of Buchanan-street. This is a new gas and steam-generating apparatus for mansions, stations, farms, and public works, &c. The gas, like Mr. Stephen White's, is manufactured from rosin. A steam generator is connected with the apparatus, so that food can be cooked, apartments heated, hot water for washing, &c., supplied *ad infinitum*, and very little fuel be required. It can also be very easily taken asunder and as easily put together again by tenants. The apparatus is registered, and is to appear at the Industrial Fair.—The *Expositor* states that "an American has applied for a patent for a cheap and brilliant gas, produced on a new principle, which he states can be obtained at a cost less than 1*d.* per 1,000 feet. It is said that no wood, coal, or water is required; and that the material can be obtained anywhere. It is a self-acting and self-creating gas, called into action by an impulse of nature, from whence may be derived a new motive power of light and heat. An Englishman also asserts [in a recent number of *THE BUILDER*] he has a plan by which any one may produce his own gas by a

machine like a table-lamp, not costing more, and creating a superior gas, at one-third the cost of coal-gas, requiring only to be turned on and lighted, but that he has not the means of protecting his invention from piracy."

—A German, too, is said to have discovered an economical mode of decomposing water into gas for light and heat. This stir about gas throughout the world is something remarkable. Can there be a doubt that it is but the reverberation of our own great national movement and outcry for light—for a poor man's light, for warmth, comfort, and culinary convenience, as well as for cheerful light in every dwelling?—With reference, by the way, to *THE BUILDER*'s share in this national movement, we have had our attention called, by a correspondent, to an unconscious and unintended, if not a very honourable, tribute to our exertions on behalf of the million, in a "Journal of Gas Lighting" that has lately stepped into the shoes of the defunct *Gas Gazette*, which, like its successor, owed its existence to this movement and to *THE BUILDER* as its metropolitan leader. In a recent number of the journal in question we are rather amusingly stigmatised—or honoured rather—as "THE monopolist of incendiary gas intelligence," although in almost the same breath we are somewhat inconsistently deprived of that honour, and declared to have "confined" ourselves to the mere "repetition of the thousand oft-repeated assertions of all the local agitators of the gas question (i. e., of the actual *mutipolists* of gasincendiarity) throughout the length and breadth of the United Kingdom." Waiving this little inconsistency, however, how comical and happy, yet self-stultifying, is the use of the term incendiary in such a relationship to the extension of gas-lighting throughout the country! An incendiary, properly speaking, is one who lights up what ought not to be burnt; but the very mission of gas is to be lit up and burnt, and he who creates or extends a conflagration of its burners throughout the country, is, indeed, an honourable and meritorious "incendiary." We accept the honor, and thank the donor; but with reference to his further statements or arguments about our mode of exciting the movement, we shall once for all say that statements and arguments founded on falsehood and misrepresentation, may very easily be knocked up into an imposing structure, but are themselves rather quixotic objects of attack, unworthy even the expenditure of that single breath which knocks them down. Besides, we formally challenged all opponents, over and over again, while in the field, and how is it that not one dared to accept the challenge or appear against us till we had, as formally, after being for years in "incendiary" harness, announced that our initiative work was done, and that we, therefore, had deliberately laid down our weapons and retired from the field? It is not now worth our while to turn even a single step aside from our other onerous duties—and we shall not do so—even were a "lion in our path." Let the foe who only ventures to pounce upon us now that our eye is off him and his purpose, be satisfied with this little singeing of his whiskers by the "incendiary's" torch. It is too late now for him to attempt to extinguish that right-sturdy torch of truth: indeed, the gas-torch has already passed out of our hands into those of the "local agitators," to whose tender mercies we hereby, once for all, consign him.—Our readers may recollect of a reduction, some time ago, of the price of gas at Whitehaven (from 8*s.* to 4*s.*), if the statement now made by a contemporary be correct, and of our confidence that such a reduction, in place of injuring the company as stupid calculators prognosticated, would be for their benefit no less than for the benefit of the public. That result has already been this, as in so many other instances, been fully realised, the company having lately declared a dividend of four per cent. for the last half-year.—The Liverpool company, who were compelled to make repeated reductions, every time with protestations of their impossibility, and every time with benefit to themselves, until at length their own representative in a Parliamentary examination advocated further reductions still,

in order to increase still more their previous profits,—are now again in so prosperous a condition that it is stated in a recent report of their affairs, that although "it was not unreasonable to suppose that so large a reduction in price as 25 per cent., which took place in 1845, was sufficient to preclude any hope of the rate being further reduced;" yet that "it would appear that even this hope may be realised at no distant period."—The price of gas at Bangor is to be reduced from 10*s.* to 8*s.* 4*d.* in the beginning of next month.—Bognor is about to be lit with gas: the building of the gasometer is already in progress, and the pipes are being laid with all possible despatch.

FOREIGN INTELLIGENCE.

Berlin: a New Cartoon by Cornelius.—The completion of any new work by this master creates always great sensation with our German neighbours. The present cartoon represents the *Resurrection*, and is the third of the series for the Campo Santo of Berlin. This mystical picture represents an angel reposing on a rock, beside him the book of life and death, yet unopened, while his right has grasped the sword of justice. His pensive features express a high earnestness; the sentiments of one of heavenly descent, who, with deep sorrow, fulfils his office against a portion of humanity. The sentence, however, which he has to pronounce is already expressed in nature and in the mind of those risen. Those to the left appear full of terror and despair, while those to the right and in the centre are animated by heavenly joy. Amongst the numerous surprising beauties of this composition, we may mention the figure of a female amongst the reposed, lying on the ground. It is the body of a heroine, whose powerful form is rendered with an energy and grandeur of style which reminds us of the finest examples of Grecian sculpture. But the pervading idea of this great picture is, that it is nature herself, the bent of mind and soul, which leads some of those here represented either to beatitude or reprobation.

Manich Art-Union.—At the late distribution of prizes, ninety-five oil paintings, three aqua-rels, three paintings on porcelain, two drawings, and six plastic works were disposed of. Amongst the former, forty-three were landscapes; of which an Alpine torrent, by A. Zimmermann, a charming moonlight by Morganten, and an incomparable scenery of a storm, are chiefly remarkable. Of architectural pictures, a "Hunting Villa," by Kirchner; a "View of Venice," and the "St. Lorentz Church, at Nurnberg, deserve notice.

Excavations undertaken by the Archeological Society of Dijon.—This society, who have found that the locality about *Laudanum* was of great antiquarian interest, have obtained from Government an especial grant for this undertaking. After having cleared off the debris of a *balneum* and *tepidarium*, there was found to the east of the baths, and on the western slope of the hill the substratum of a square tower, which was close to the walls of the old city. Its base, composed of *stutamen*, forms above the ground a widening, indicating that it has served as a reservoir for the water already used in the baths. In the midst, a pretty large excavation seems to indicate a *hypocaust*, hewn in the main rock. The whole circumference of the *terme* has been also cleared, whose length is 31 metres. Ancient pottery, and some basso-relievos, have been also hitherto discovered.

STAFFORD PUBLIC BUILDINGS COMPETITION.—The successful competitor for the "Stafford Public Buildings" is Mr. John Young, Jun., of London. Fourteen designs were furnished to the Committee of Selection.

BRIDGE BETWEEN CANADA AND THE UNITED STATES.—The *Toronto Patriot* announces that "the magnificent bridge between Lewistown and Queenstown, Canada, near the falls of Niagara, had been so far completed that the engineer had crossed to the American side. The bridge is the largest structure of its kind in America."

THE SAPPERS OF THE SURVEYORS.

I AM glad to see that more than one of your correspondents have noticed an abuse of which they have just reason to complain,—the employment of hired soldiers to take away the business of the professional surveyors. I do not write in a party spirit: I do not attribute the evil to any particular individuals:—the mischief appears to me to arise naturally from that system of centralisation which we of the present day have so strangely allowed to obtain a footing in almost every institution of the country. The plan is essentially military. It requires that uncontrolled and irresponsible power shall be lodged in the hands of a few individuals, and that their orders shall be executed by subordinates, whose sole duty is passive and unreflecting obedience. I have watched the growth of the system for years, and have long foreseen the effect it must ultimately have upon the prospects and the character of all professional men. It is under this system that the surveyor, after having at a great expense become qualified for his profession, sees the money taken from him in taxes employed to enlist, train, and teach a body of soldiers, who are then sent out to attempt the very work by the performance of which alone he can hope to obtain a livelihood. I feel assured that the wrong will ultimately extend to all professions, and I heartily wish that it had begun with some class of men who would not have submitted so tamely as the surveyors. I should like to see a wealthy rector stopped at the church door by Private Murphy, with "sure your Riverence and myself will do the preaching to-day, and receive the money to-morrow,—by order of the commissioners." Or I wish that Corporal Kane would attend at the rent-day of some rich landlord, with orders to receive the rents on behalf of his commanding officer. The growth of the evil would then be stopped.

I consider it too late for the surveyors to complain: to them the mischief is done; and it is therefore with pleasure that I watch the extension of the injustice to the members of other professions, from whom I trust it will meet a more efficient resistance. I. T. S.

IMPROVEMENT OF LAMBETH AND SOUTHWARK.

OFFICE OF WOODS.

The districts of Lambeth and Southwark have for a length of time been expecting some announcement as to what will be the extent of improvement when the Woods and Forests determine where Westminster-bridge is to be erected, when the roads there are determined, the new market for meat and vegetables settled, the course of the metropolitan sewerage determined, and the lines for the railways. All these matters have from time to time been promised.

Do, pray, Mr. Builder, tell an anxious proprietary the situation in which they will be involved. The Office of Woods, by thus delaying the announcement of their plans, are doing great injury: inevitable ruin must be the result to many. A SUFFERER.

DISFIGUREMENT OF KENSINGTON GARDENS.

FROM the east side of the Serpentine river in Kensington Gardens, and from the road in Hyde Park, there is a charming prospect to the west through a broad, open, grassy glade towards the old Kensington Palace. When the Serpentine was cleared out last year, one of the places chosen in which to deposit the mud was this lawn-like glade, there being, of course, a thousand equally convenient spots concealed by the trees close at hand. Now surely every person, from the highest to the lowest, who was concerned in this proceeding, should be publicly reprimanded. Not content, however, with this insult to the public, the mud deposited in other places, out of general observation, has been carefully removed, while the above is suffered, at nearly a year's delay, to remain. Is not this a case of such stupidity as to call for an example on its perpetrators?

DAVID SINGLEHEART.

ARCHITECTS' BENEVOLENT SOCIETY.

THE first annual meeting of the friends of this charity was held on Wednesday afternoon, at the Freemasons' Tavern, Mr. Sydney Smirke in the chair. The report of the Council was read and unanimously adopted. This recently-established society has for its laudable object the administering the same kind of relief as that which has been so long supplied by the Artists' General Benevolent Society, but confining itself exclusively to the regularly educated members of the profession of architecture, and although it has only been founded a few months, it has received very considerable support. At the close of last year about 150 gentlemen had become annual subscribers, and 30 or 40 more had since joined. The sums received up to the 31st of December last amounted altogether to 390*l.*, of which 300*l.* had been invested, and the remainder left to be applied to the ordinary purposes of the society. Some large donations had been received this year. The Royal Institute of British Architects had kindly granted to the association the use of their rooms for the meetings of the council, thus effecting a considerable saving to the society, and adding greatly to the convenience of its members. The council had drawn up a complete code of bye-laws, which was read to the meeting, and, after some discussion, was approved of and agreed to. After other routine business was done, thanks were voted to the chairman, and the meeting separated.

We cannot but feel a deep sympathy in the charitable objects of this society, and we earnestly call upon those members of the profession, especially in the provinces, who have not yet become acquainted with this institution, to lend their assistance in furtherance of its interests.

THE ARCHITECTURAL EXHIBITION.

At a meeting of the committee on the 11th ult. it appeared that all the old supporters of this undertaking are determined not to forsake it under the difficult circumstances of the present year, and several new names were announced (many of them well known in the profession, as subscribers and as promising contributors of drawings. We must, however, observe that the circular put forth has hardly received that response which the object merits. We think there can be no question but that the undertaking will be carried through, and probably gentlemen will find cause to regret hereafter that they have not the credit of having joined in the earliest stages. We hope that before the next committee meeting those who are animated by a desire to see their art appreciated and advanced in public estimation will have come forward, and put the committee in a position to incur the liability necessary in the heavy rent of a gallery. No time should be lost, as every suitable place is being rapidly engaged for other purposes.

GRINDING AND POLISHING PLATE GLASS.

THE grinding and polishing of plate glass by machinery is perhaps the largest example of the production of plane surfaces by grinding, and a brief outline of the mode of proceeding will be here offered.

In the manufacture of plate glass, the materials are first fused in melting pots made of Stourbridge clay, which measure from 30 to 40 inches diameter, and 3 to 4 feet high. The pots are made in the form of a truncated cone, being rather smaller at the bottom than the top, and are capable of containing a sufficient quantity of the melted glass to form four or five plates of the largest size. After the materials have been thoroughly fused together, a sufficient quantity of the melted glass to form a single plate, is removed by iron ladles from the large melting pot to smaller pots called *cuvettes*, which have been previously heated in another furnace. The glass, now in a pasty condition, is placed in the pots while they are in the furnace, which is then closed up, and kept at a considerable heat for some hours, until all the air bubbles have been expelled and the glass is sufficiently fluid to be poured. The pot is then removed from the furnace,

and carried on a truck to an iron table or bench, having a flat surface about 18 feet long and 10 feet wide: two bars of iron of equal thickness to the desired plate are laid upon the face of the table near the edges. The fluid glass is poured on the table and spread with iron or copper tools: an iron roller about 15 inches diameter, equal in length to the width of the table, and weighing about 30 cwt. is rested upon the two iron bars, and traversed over the face of the glass to roll it out like dough to a uniform thickness. To insure the rotation of the roller in a straight line along the plate, it is provided at each end with toothed wheels that work in corresponding racks fixed on the sides of the iron table, and the roller is drawn along the table by means of two chains, coiled around the ends of the cylinder and worked by a windlass.

When the glass has been rolled flat, the cylinder is received at the end of the table upon two arms counterpoised by means of levers placed beneath, so as to allow of the heavy roller being raised or lowered by two or three men. The plate, still red-hot and yielding, is slid from the table upon the flat surface of a carriage, which is wheeled to the annealing oven, upon the bed of which the plate is pushed and allowed to remain for several hours to cool gradually.

The plates, when cold, are examined as to their condition, and such plates as present defects in the glass, or irregularities in the surface that it would be tedious to grind out, are cut with the diamond into smaller pieces; but the nearly perfect plates are kept as near their full size as possible, and merely squared on the edges.

The plates of glass now measure about half-an-inch thick, and the surface is full of small irregularities, presenting a mottled appearance, the roughest side being generally that which was placed downwards upon the bed of the annealing oven, and copied all the irregularities of the bricks of which the bed of the oven is formed. The side of the glass that was uppermost in the oven is comparatively smooth and bright from the action of the fire, although in many cases this surface is not so nearly flat as the lower. The plates have therefore to be ground flat and polished on both sides: formerly this was effected entirely by hand, but of late years the rough grinding with coarse sand, and the polishing with crocus, are almost always done by machinery, and hand labour is only resorted to for the intermediate process of smoothing with fine emery.

The grinding and polishing machines employed for plate glass differ somewhat in construction in various manufactories; but a single example of each will sufficiently explain the general method.

The grinding machines employed for the largest plate glass are arranged in pairs along the grinding room: every pair of machines is driven by one central beam, and consists of two benches of stone 15 feet long, 8 feet wide, and 18 inches high, placed about 10 feet asunder; upon each of these benches one or more plates of glass are embedded in plaster of Paris, close together, and quite level. Other plates of glass are cemented upon the lower faces of two swing tables or runners, which are traversed over the fixed beds by a horizontal frame or beam about 30 feet long: the machinery for driving the beam is fixed in a frame about 6 feet square and 18 inches high, placed between the two grinding benches. A horizontal shaft, fixed underground, extends throughout the length of the grinding room between the lines of benches, and the motion from the shaft is communicated to every pair of machines by a pair of bevil wheels leading to a central crank that revolves horizontally, and has a radius of about 2 feet; the arm of the crank is attached by a pivot to the centre of the horizontal beam. Four other cranks of the same radius are placed parallel to the central driving crank, one at each corner of the square frame, and serve to guide the traverse of the horizontal beam, which is thus swung in a circle of four feet diameter in a manner somewhat similar to the grinding bed for marble, fig. 1099. The beam is supported at various parts of its length by chains suspended from

the roof of the building, which allow of the traverse of the beam, and serve for raising it by means of levers, for the removal of the work.

Near each end of the beam is attached, with the power of adjustment for position, a small sliding frame carrying bearings for the reception of the central pivot of the swing table or runner, which consists of a strong frame of wood covered with boards, and measuring 8 feet long and 6 feet wide, placed face downwards upon the bench: a central pivot stands up from the back of the runner, and enters the bearing fixed on the horizontal beam, which thus communicates a circular swinging motion to the centre of the runner, exactly the same as that of the driving crank; and the runner being free to revolve upon its pivot, acquires a continual rotation around its own axis. By the combination of the two movements, the relative position of the fixed bench and runner are continually changing; this tends to the mutual correction of the two surfaces of the glass, and greatly assists the equal distribution of the sand and water used in grinding. The horizontal beam makes about fifty circulating strokes in a minute, and the runners revolve upon their own axes about once to every five or six strokes. The position of the runners upon the driving beam is shifted once or twice during the grinding, to distribute the action as uniformly as possible over the entire surfaces of the glass plates.

The largest plates of glass are nearly equal in size to the fixed bench, and these are imbedded singly upon the bench with the most irregular side upwards; but more generally plates of medium and small size are ground together; they are selected of uniform thickness, and arranged close together upon the bench, with the largest plates in the middle and the smallest at the ends. The runner is covered by one or two plates at most, as small pieces would be liable to be thrown off by the centrifugal force.

All the irregularities of the surfaces are first ground out with sharp river sand, that has been washed and sifted into two sizes; the sand and water are thrown on by hand occasionally, and when the plates have been ground quite flat, the finer sand is employed, and followed by emery of two finer sizes, applied as usual in succession, in order to remove the scratches made by the coarser powders. The plates of glass are thoroughly washed between every change of grinding powder, and when the one side of the glass has been ground with the finer sizes in succession, the plates are inverted, and the same routine is followed on the second side.

The grinding machines do not, however, admit of being employed with very fine emery, as the close approximation of large surfaces travelling over each other at a considerable velocity, causes so much friction that it would be liable to tear the surface of the glass, and, consequently, as the plates become sufficiently smooth to require the application of fine emeries, the velocity and pressure should be proportionally reduced, and a greater degree of care and management is required; it is therefore found to be preferable to effect the smoothing of plate glass by hand.

The plates are smoothed upon stone benches of suitable size, about 2 feet high, made very flat upon their surfaces, and covered with wet canvas. One large plate nearly equal to the size of the bench, and two or three plates of about half the size, are usually given out as a set of work. The large plate is laid upon the wet canvas which serves to hold it firmly, emery and water are spread over the surface, and one of the small plates is used as a grinder or runner. If the plates be large, a few flat lead weights of about 14 lbs. each are laid near the middle of the runner, to distribute the pressure uniformly, and the runner is traversed over the lower plate with a swinging stroke backwards and forwards, so as to describe nearly a semicircle around the centre of the runner, which is at the same time shifted a few inches during the stroke. Every stroke follows a slightly different path from the preceding one, and the runner is also gradually twisted round as the smoothing pro-

ceeds. The combination of these movements serves to expose every part of the surfaces of the bed plate and runner to an equal amount of grinding, and also to distribute the emery very uniformly.

Small plates are smoothed by young girls, and large plates, which require greater dexterity and a proportionate increase in the amount of traverse, are smoothed by two women; who stand on opposite sides of the bench, and placing their outstretched hands flat upon the runner, swing it with a stroke of five or six feet. The employment appears most masculine, but it is found that the smoothing is upon the whole executed better by women than men, as only a moderate force is required, and from the greater delicacy of touch possessed by females, they more readily appreciate when any particles of grit have become accidentally mixed with the emery.

About six sizes of carefully washed emery are used in the smoothing, and between every size, the plates, canvas, bench, and hands are thoroughly washed; perfect cleanliness in the clothing is also quite essential, as a particle of coarse grit would make a scratch that would require the smoothing of the plates to be recommenced. The fine emery last employed gives a very smooth and partly polished surface, which is completed with the machine next described.

The polishing machine has a bed 15 feet long and 8 feet wide, that is mounted upon rollers, and slowly traversed sideways, a space of 4 feet to and fro, by means of a rack and pinion beneath. A few inches above the bed are reciprocated longitudinally two beams or carriages, each about 18 feet long and 9 inches wide, and consisting of two cast-iron side-plates connected together at intervals, and supported at each end upon two small wheels, that run upon a short railway at the end of the traversing table. The carriages are placed 4 feet asunder, and reciprocated about 2 feet by means of two cranks fixed opposite to each other on the same axis, so that the beams work in opposite directions, the one advancing as the other recedes.

The plates of glass are embedded close together, with their surfaces quite level, upon moveable platforms that are afterwards fixed upon the traversing bed, and the polishing is effected with a series of rubbers, placed 1 foot asunder, and measuring 8 by 6 inches, covered with thick felt, and attached to the reciprocating carriages, which drag the rubbers backwards and forwards over the surface of the glass, while the latter is traversed beneath the rubbers, a space equal to the distance between the two lines of rubbers, to expose all parts of the glass equally to their action.

Every rubber is separately attached to one of the two carriages, to allow it to ply uniformly to the surface of the glass: this is effected as follows:—Between the two side-plates of the beam are fixed, near the top and bottom edges, two cross pieces having square holes, through which slides vertically a square bar, the lower end of which projects about 2 inches below the beam, and is rounded semi-cylindrically. The rubber is made quite detached, with a central cavity at the back to fit the end of the upright bar, which thus forms a joint that allows the rubber to adjust itself to any trifling irregularities of the surface over which it is traversed, and the rubbers admit of being readily removed while the plates of glass are being exchanged. The pressure is given separately upon every rubber by two lead weights of about 15 lbs. each fixed one on each side of the upright bar.

The powder generally employed for polishing plate glass by machinery is the Venetian pink of the colour-man, a cheap powder which contains only a small proportion of the oxide of iron, mixed with earthy matter that renders the powder less active, and allows of the free use of water, which serves to reduce the friction and prevent the glass becoming heated by the action of the rubbers. Tripoli, crocus, or putty powder, used with water, are too active to produce a high polish on glass, and therefore they are generally employed dry for the last finish of glass polished by hand. But the great amount of rubbing surface, the velocity

and power employed for polishing plate glass by machinery, render the use of dry powders inadmissible, as the surface would be torn by the friction, and the heat evolved would be liable to break the glass.

Sometimes old plate glass, that has become scratched, is repolished: when the plates are large, and sufficiently numerous, they are repolished by machinery, just the same as new glass, but more generally old plates are repolished by hand, as the process can be then restricted principally to the scratched portions of the surface.

The polishing is commenced with tripoli on cloth rubbers of the usual form, and finished with putty powder or crocus. The pressure is generally given as in hand calendering, by attaching the rubber to the lower end of an upright pole, suspended from a long horizontal spring fixed overhead, like that of a pole lathe. The elasticity of the spring supplies the pressure, and the workman has only to push the rubber backwards and forwards; but the process is both laborious and tedious with large plates, and, from the irregular action of the hand, the surfaces of glass thus polished present a wavy appearance much inferior to those polished by machinery.

Sheet glass or flattened glass is manufactured by blowing the glass first into the form of a spherical bulb, which is afterwards elongated, by alternate heating, blowing and swinging, into a cylinder about 3 feet long and 6 inches diameter, with rounded ends, which, as the last process of blowing, are opened out, and the ends are cut smooth with a diamond traversed in an upright frame around the cylinder, which is then cut through on the one side longitudinally, with a diamond inserted near the extremity of a light rod, and drawn through the inside of the cylinder under the guidance of a straight edge. The cylinder is then placed with the cut upwards in a reverberatory furnace, and the heat causes the cylinder gradually to open as a sheet, which is gently flattened down on the bed of the furnace, with tools like blunt garden rakes, made of iron or wood.

To improve the flatness, several sheets are afterwards laid upon each other in a second reverberatory furnace with a level bed: the heat of the furnace, and the weight of the superincumbent mass, causes the lower sheets of glass to become sufficiently flat for ordinary use, notwithstanding that there are many little irregularities in its surface, arising from the imperfect action of the flattening process. For the best purposes these irregularities are removed by grinding and polishing.*

Books.

Report of the Proceedings of the British Archaeological Association, at the Fifth General Meeting, held in Worcester, in August, 1848. Edited by ALFRED J. DUNKIN, Member of the Committee of the Worcester Congress. J. Russell Smith, Old Compton-street, Soho. Only 120 printed. 1851.

We have here a pleasant reminiscence, by Mr. Dunkin, of all the various papers, notes, and memoranda collected during and since the Worcester congress, dedicated to Mr. C. Roach Smith, and illustrated with a variety of engravings. The whole forms a goodly volume of 456 pages, besides an index, and appears to be a diligent compilation of the proceedings.

First Book on Plane Trigonometry: comprising Geometrical Trigonometry, and its Application to Surveying. By G. W. HEMMING, M.A., &c. Taylor, Walton, and Maberly, Paternoster-row.

This little volume is intended for the use of schools. It contains numerous examples, and, considering the new aspect which the science of surveying has assumed, cannot but be useful as well as interesting to students and others who have had but little time to devote to such studies. It is to be followed by a short treatise on analytical trigonometry and calculation of logarithmical, and trigonometrical tables.

* From the third vol. of Holzapffel's "Turning and Mechanical Manipulation," noticed in a late number.

A popular Narrative of the Origin, History, Progress, &c., of the Great Industrial Exhibition. By PETER BERLYN. London: James Gilbert.

This little book gives, in a concise and agreeable manner, a narrative of the progress of the scheme towards fruition, and an account of the building. It does not pretend to be anything more than a compilation (there was no want of materials); but the account is put together pleasantly, and makes a pretty little book.

The Palace of Industry, its Construction, Machinery, and Statistics. By W. J. B. SAUNDERS. London: Eifingham Wilson.

We have here what may be considered a supplement to the foregoing,—although complete in itself,—namely, a comprehensive and popular account of the construction of the building. It is clearly written by Mr. Saunders, and, if we mistake not, has in part appeared from time to time in the pages of the *Morning Advertiser*.

Miscellaneous.

RAILWAY JOTTINGS.—Some specimens of timber sleepers, creosoted, which have been laid for nearly eleven years on the Crewe and Chester Railway, are now, says the *Liverpool Times*, as sound as the day they were laid. Specimens of wood thus prepared are intended to be exhibited by Mr. Bethel at the coming Exhibition.—"It is not from through traffic, or from the great termini," says Mr. Glyn, "that we derive our main revenue or our permanent prosperity. We raise the large amount which you see quoted in the returns every week from the development of traffic at 188 stations on our own lines." This is virtually what we maintained some time ago, with reference to certain inconsequent comparative statistics as to omnibuses and railways. Liverpool, with America at its back and Ireland opposite, observes the *Daily News*, only yields, by ordinary train, 1,470*l.* out of the 31,000*l.* a week that appears in the returns. And, in corroboration of Mr. Glyn's experience of the superior value of short as compared with through traffic, we may state that the total annual proceeds of the through passenger traffic from all Scotland, by both the eastern and western lines, does not reach 40,000*l.* a year; and for merchandise to and from Scotland, railways cannot of course compete with shipping.—"Railway travelling," says *Heraclitus*, "is becoming less aristocratic, and assimilating itself more to the omnibus system. If that be the case, which we long ago predicted it would, railways will have to prepare for it by looking after the working expenses. In the instance of the York, Newcastle, and Berwick line, in which the third-class receipts have increased 188 per cent., while the second have only increased 42, and the first only about 39 per cent., we see that 32,539*l.* increase of receipts on the past half over the corresponding half of 1849, has been earned by only an increase of 2,167*l.* in the working expenses." We need scarcely add that we give such quotations much more by way of confirmation of the truth of our well-known views on the subject of railway resuscitation, and rising profits in general, than as anything unlooked for or on which to base new suggestions for future guidance.

ELECTRO-TELEGRAPHIC.—The international organization of the telegraph is in rapid progress. The convention between Prussia and Belgium, placing telegraphs on the lines of railways through both territories in close connection with each other, were to come into operation on 1st February. A convention of same kind already exists between Austria, Prussia, Saxony, and Bavaria. The addition of Belgium to this telegraphic union completes a line of communication, under one system of management, from Vienna to the frontier of France and the shore of the British Channel at Ostend. After the 1st of next month the line will be complete from Verviers to Ostend. Hitherto all communications have stopped at Verviers—now they will only be arrested by the sea.—Messrs. Brett have

submitted to the principal English railway companies a pocket communicator for use by guards and drivers in cases of accident by the way. A small roll of wire at once connects it, and hence the train in transit, with any part of the main line of telegraph, so that warning may be telegraphed to, or aid called for from, the next stations.—Heraclitus, in speaking of the prospects of the electric telegraph in England, says, it will be observed that a new company, the British Electric Telegraph Company, have started for the purpose of more generally extending the system, and on principles of greater economy to the public. We have often thought it strange, in this populous and commercial country, that the electric telegraph should be represented as not paying, while in the United States, where the population is not perhaps a tenth as thick, it should be a most profitable undertaking. It struck us whether it was not an outcry raised for the purpose of securing a monopoly and keeping others out of the field, just as some tradesmen are eternally crying out that business is good for nothing, that they are losing, and yet, somehow, keep on year after year their good-for-nothing business, and continue, not only to live, but to thrive into property, and even fortune, by their losses. [A recent *exposé* shows pretty clearly that this is really the fact.] Fair competition in trade does a great deal of good to the public and to the traders. It stirs up the spirits, calls forth energy, and is the very soul of enterprise and improvement. So sensible are men of business of this, that it is no uncommon thing for men actually to set up in opposition to themselves.

THE FLAXMAN REMAINS.—The authorities of University College have done all honour to the reliques of Flaxman, which have been presented to them by Miss Denman. The portion of the edifice assigned them is to be called the Flaxman Hall: it is a small polygon, rising into a dome, lighted from the top, and presenting four principal sides, as large as panels, each of which contains nine bas-reliefs. The centre of the hall is occupied by the grand life-sized group, "Michael and Satan," the only round composition in the collection. The casts—for these works are all in plaster—are of various sizes, and are let into the wall, and disposed according to their dimensions, as regularly as possible, the vacant spaces being painted in imitation of marble. The works are generally small, and among them are many monumental compositions; but in all these there is a touching story, and the sublimity of the poetic subjects is of a quality which the Greeks themselves have never excelled. University College, however, is fortunate in the possession of these works, the proper place for which should have been the National Collection. In their present site they will be comparatively unseen, save by those whose tastes may lead them to visit Gower-street for that purpose.—*Art Journal*.

INDIAN ANTIQUITIES.—The Bombay government have engaged the services of Mr. Fallon for a twelvemonth, at 40*l.* a month, for the purpose of obtaining drawings of the Cave Temples of Western India, in compliance with the wishes of the Court of Directors. They have allowed 840*l.* for drawings of the ruined city of Beejapore, but have not as yet found an artist. A magnificent set of drawings of the Caves of Ajanta, by Captain Gill, of the Madras army, got up under the Madras government, have recently been exhibited.

GENERAL CONSOLIDATION OF PAVING BOARDS.—The mal-administration of these boards (their lavish expenditure and defective works) must, ere long, become the subject of inquiry. The annual loss to the rate-payers cannot be less than twenty or thirty per cent. As at present constituted, these boards are incompetent to deal with the matters submitted to them, and not unfrequently select an officer from an inferior grade of small shopkeepers, who squabble among themselves and with adjoining parishes. This and the sewers questions have a natural affinity, and should be under a "joint board:" to this should be added cleansing: thus—"sewage, paving, and cleansing." A DISTRICT SURVEYOR.

SALFORD PEEL MONUMENT.—From the agreement entered into with Mr. Noble, the artist, we learn that the statue is to be of bronze, ten feet high, on a stone pedestal, and that unless prevented by sickness or other inevitable accidents, it will be completed by February next year. As to the retention of all the models and designs in the picture gallery of the Salford Royal Library and Museum, the following resolution has been passed:—"That inasmuch as a mutual advantage was contemplated by this committee, especially with reference to the talented youth of the country, the merit of whose productions would thus be brought into notice,—the competition being equally open to this class as well as to those artists who have already obtained distinction,—it is hereby resolved that the said works of art be transferred to the Museum Committee of the Salford Town Council, upon condition that the models and designs of those artists who decline the contemplated plan, be returned to them upon application, provided such application be made within one month from the date of the transfer."

DISCOVERY OF A TEMPLE AT MEMPHIS.—A correspondent of the *Athenæum* states that considerable remains of a temple at Memphis have been brought to light. He says,—The temple was discovered by a French traveller (whose name has not reached me), by excavating in that part of the great Memphite burial-ground which is near the modern village of Abou-Seer. A dromos of sphynxes, thirty or forty, or even more, in number, was first discovered; and then the temple to which they formed an approach, and which was in a much injured state. In the temple twelve statues of Greek style were found, and above these an excavated chamber. From this it appears that the temple was partly built and partly excavated in the rock—like the temple of the Asaseef at Thebes, and that of Wadées-Suboos in Nubia.

EXCAVATIONS ON THE CASTLE HILL AT EDINBURGH.—For some time back numerous workmen have been employed in excavating and building a spacious reservoir at the Esplanade, for the better supply of the inhabitants of Edinburgh with water; and on Saturday week, while engaged in levelling the east end of the Esplanade at the castle, the earth suddenly gave way, and presented to their view a large passage or cavern. Although several cart-loads of stone and earth had fallen in, two men managed to get access into the passage, in which were found a quantity of human bones, a coat of mail, and the drone of a bagpipe! A certificate, narrating the circumstances of the discovery, together with the relics, is to be laid before the Royal Society of Antiquaries. These relics are of peculiar interest to every old citizen of Edinburgh, inasmuch as they appear to confirm the truth of a well-known tradition (of which the writer himself remembers hearing much more than a quarter of a century since), that some hundred years ago a highland chieftain entered a subterranean passage near the castle, playing on a pair of bagpipes, and determined to test the truth of a still more ancient tradition that this passage extended down through the centre of the old city to Holyrood. The adventurous archaeologist of old was never heard of more till now that these singularly illustrative relics have turned up.

CAMBRIDGE ARCHITECTURAL SOCIETY.—The third general meeting of this society for the present term was held on 6th inst., the Rev. T. S. Woolleston in the chair. The Rev. Canon Selwyn, of St. John's College, Messrs. H. R. Luard, and T. F. Wickenden, of Trinity College, and Mr. G. Searle, of Queen's College, were elected as members, and Mr. Luard's name was added to the committee. A paper followed, by Mr. O. W. Davys, B.A., of St. John's College, hon. sec., "On the Western Fronts of English Churches." Mr. Luard directed attention to the undergraduates' and bachelors' window at Ely, and stated that about 300*l.* were wanted to complete it. He called on the members to assist in forming a new committee to raise funds, and several members agreed to form a new association to carry out the original plan.

The Builder.

No. CCCCXXIV.

SATURDAY, MARCH 22, 1851.



HOSE who open Mr. Ruskin's new volume, "The Stones of Venice,"* expecting (through its pretty title) to find descriptions and comments on the structures of the sea-girt town, in the brilliant and forcible language of the Oxford Graduate,—the city of poetry and art described by an artist and a poet,—will probably feel disappointed; but we caution them against hastily shutting it, and will promise (however we may differ in various respects with the author) an ample return, in the shape of pleasure and instruction, for any time they may bestow upon its mastery. It is more practical than the writer's previous works, and might be called an essay on the principles of architecture, without reference to Venice, and still there is much beautiful general writing in it too. The author's reason for the course he has adopted will be seen: the good that will follow it will, we have no doubt, be considerable, for "every man has, at some time of his life, personal interest in architecture. He has influence on the design of some public building; or he has to buy, or build, or alter his own house. It signifies less whether the knowledge of other arts be general or not: men may live without buying pictures or statues; but, in architecture, all must in some way commit themselves: they must do mischief, and waste their money, if they do not know how to turn it to account. Churches, and shops, and warehouses, and cottages, and small row, and place, and terrace houses, must be built, and lived in, however joyless or inconvenient. And it is assuredly intended that all of us should have knowledge, and act upon our knowledge, in matters with which we are daily concerned, and not be left to the caprice of architects, or mercy of contractors."

Against Renaissance architecture (as previously against the painters of the Renaissance) he wages war:—"Raised," he says, "at once into all the magnificence of which it was capable by Michelangelo, then taken up by men of real intellect and imagination, such as Scamozzi, Sansovini, Inigo Jones, and Wren, it is impossible to estimate the extent of its influence on the European mind; and that the more, because few persons are concerned with painting, and, of those few, the larger number regard it with slight attention; but all men are concerned with architecture, and have, at some time of their lives, serious business with it. It does not much matter that an individual loses two or three hundred pounds in buying a bad picture, but it is to be regretted that a nation should lose two or three hundred thousand in raising a ridiculous building. Nor is it merely wasted wealth or distempered conception which we have to regret in this Renaissance architecture; but we shall find in it partly the root, partly the expression, of certain dominant evils of modern times—over sophistication and ignorant classicism; the one destroying the healthfulness of general society,

the other rendering our schools and universities useless to a large number of men who pass through them."

It is in Venice, and Venice only, he considers, that effectual blows can be struck at the "pestilent art of the Renaissance," and thinking that, if he can destroy its claims to admiration there, it can assert them no where else; this destruction (in which we do not sympathise with him) is, he states, the final purpose of his essay. To the failings and weaknesses of cinque-cento art we are fully alive: to mark these out, to purify and reform, would seem to us a more worthy purpose than to destroy. What we would now do, however, is to point out the motives which have guided the author, and the course he has pursued. Feeling satisfied that there was a right and wrong in architecture, and that good architecture might be indisputably discerned and divided from the bad, he set himself to discover for himself the law that regulates this, and found the work simpler than he had expected. He then felt that he had the choice with respect to this Venetian architecture, either to establish each division of the law in a separate form, as the features arose with which it was concerned, or else to follow out the general inquiry first, and determine a code of right and wrong, to which he might make retrospective appeal. In the volume before us, our author has but arranged his "foundations" of criticism, and he enters Venice in the last paragraph of the book:—

"If I should succeed (he says), as I hope, in making the Stones of Venice touchstones, and detecting, by the mouldering of her marble, poison more subtle than ever was betrayed by the rendering of her crystal; and if thus I am enabled to show the baseness of the schools of architecture and nearly every other art, which have for three centuries been predominant in Europe, I believe the result of the inquiry may be serviceable for proof of a more vital truth than any at which I have hitherto hinted. For observe: I said the Protestant had despised the arts, and the Rationalist corrupted them. But what has the Romanist done meanwhile? He boasts that it was the papacy which raised the arts: why could it not support them when it was left to its own strength? How came it to yield to the Classicism which was based on infidelity, and to oppose no barrier to innovations, which have reduced the once faithfully conceived imagery of its worship to stage decoration? Shall we not rather find that Romanism, instead of being a promoter of the arts, has never shown itself capable of a single great conception since the separation of Protestantism from its side?"

On this point, the error of supposing that art owes much to the modern Romish Church, he speaks with strong conviction on several occasions, and scoffs at those who are lured into the Romish Church by the glitter of it, blown into a change of religion by the whine of an organ-pipe, stitched into a new creed by gold threads on priests' petticoats.

"I know nothing," he continues, "in the shape of error so dark as this, no imbecility so absolute, no treachery so contemptible. I had hardly believed that it was a thing possible, though vague stories had been told me of the effect, on some minds, of mere scarlet and candles, until I came on a passage in Pugin's 'Remarks on Articles in the Rambler.'"

This passage he gives, and then comments on the writer as an architect in language more vigorous than complimentary, and which will probably secure for him a niche in some future "Contrasts."

Mr. Ruskin commences the task of determining some law of right to be applied to

buildings, by a chapter on the virtues of architecture, wherein he rightly dwells on the ungrateful coldness shown towards the good "builders of old time," to whom we owe so much, but whose names are never asked, and he points out the distinction (unrecognised by thousands) between the hands that raised the work and the mind that devised it.

"Suppose, for instance, we are present at the building of a bridge: the bricklayers or masons have had their centering erected for them, and that centering was put together by a carpenter, who had the line of its curve traced for him by the architect: the masons are dexterously handling and fitting their bricks, or, by the help of machinery, carefully adjusting stones which are numbered for their places. There is probably in their quickness of eye and readiness of hand something admirable; but this is not what I ask the reader to admire: not the carpentering, nor the brick-laying, nor anything that he can presently see and understand, but the choice of the curve, and the shaping of the numbered stones, and the appointment of that number: there were many things to be known and thought upon before these were decided. The man who chose the curve and numbered the stones, had to know the times and tides of the river, and the strength of its floods, and the height and flow of them, and the soil of the banks, and the endurance of it, and the weight of the stones he had to build with, and the kind of traffic that day by day would be carried on over his bridge,—all this specially, and all the great general laws of force and weight, and their working; and in the choice of the curve and numbering of stones are expressed not only his knowledge of these, but such ingenuity and firmness as he had, in applying special means to overcome the special difficulties about his bridge. There is no saying how much wit, how much depth of thought, how much fancy, presence of mind, courage, and fixed resolution, there may have gone to the placing of a single stone of it. This is what we have to admire,—this grand power and heart of man in the thing; not his technical or empirical way of holding the trowel and laying mortar."

Our author, however, would have done more to make the distinction clear to his readers (and there is much rests upon it), had he not used indifferently the terms "builder" and "architect." He to whom the building is owing,—who devised the arrangement, calculated the forces operating, disposed the materials in the best way to resist these, and scattered over the whole beauty to delight, is (rightly considered) the *builder*; but the common acceptance of the word is different; and although people are too apt to consider "designing" means "building," they never fancy that "building" means "designing."

The ignorance which prevails as to the architect's actual province is very extraordinary. A few weeks ago, for example, we heard an eminent barrister at a dinner-table gravely showing, as an instance of the way in which architects "make their money," how the architect of the New Lincoln's-inn Hall had pocketed a large sum, through his contract for the building including payment for carting away a mass of earth, and his contract for the improvement of the square including payment for obtaining a similar quantity to raise the level. It took some time to show him that the architect had nothing more to do with the contracts, beyond seeing them properly carried out, than he had: and this same misconception prevails to a great extent. The mental power, knowledge, and skill necessary for the production of a worthy building, are for the most part wholly unrecognised.

We cannot attempt now to follow Mr. Ruskin in his analytical chapters, requiring, as they do

* The Stones of Venice. Vol. I. The Foundations. By John Ruskin, author of the "Seven Lamps of Architecture." London: Smith, Elder, and Co. 1851.

the pencil as well as the pen: the headings of these comprise the wall base, the wall veil (or body of the wall), the wall cornice, the pier base, the shaft, capital, arch masonry, the roof cornice, apertures, &c. We must content ourselves with the foregoing and some other generalities. His main divisions are very simple. Thus he says:—

"All European architecture, bad and good, old and new, is derived from Greece through Rome, and coloured and perfected from the East. The history of architecture is nothing but the tracing of the various modes and directions of this derivation. Understand this, once for all: if you hold fast this great connecting clue, you may string all the types of successive architectural invention upon it like so many beads. The Doric and the Corinthian orders are the roots, the one of all Romanesque, massy-capitalised buildings—Norman, Lombard, Byzantine, and what else you can name of the kind; and the Corinthian of all Gothic, Early English, French, German, and Tuscan. Now observe: those old Greeks gave the shaft; Rome gave the arch; the Arabs pointed and foliated the arch. The shaft and arch, the frame-work and strength of architecture, are from the race of Japheth: the spirituality and sanctity of it from Ismael, Abraham, and Shem."

The writer in maintaining that the two orders, Doric and Corinthian, are the roots of all European architecture, says,—

"You have perhaps, heard of five orders; but there are only two real orders, and there never can be any more until doomsday. On one of these orders the ornament is convex: those are Doric, Norman, and what else you recollect of the kind. On the other the ornament is concave: these are Corinthian, Early English, Decorated, and what else you recollect of that kind. The transitional form, in which the ornamental line is straight, is the centre or root of both. All other orders are varieties of these, or phantasms and grotesques, altogether indefinite in number and species."

Amongst the practices which he denounces is rusticated masonry, or any device to "direct attention" to the way in which the stones of a wall are put together; and he does this, as it seems to us, on insufficient grounds. The whole theory of symbolism he "entirely and boldly" denies; and with respect to decoration maintains that—

"All ornament is base which takes for its subject human work; that it is utterly base,—painful to every rightly-toned mind, without perhaps immediate sense of the reason, but for a reason palpable enough when we do think of it. For to carve our own work, and set it up for admiration, is a miserable self-complacency, a contentment in our own wretched doings, when we might have been looking at God's doings. And all noble ornament is the exact reverse of this. It is the expression of man's delight in God's work."

It is unnecessary for us to tell those who have read Mr. Ruskin's previous works, that a high religious feeling pervades the volume before us, and that it contains passages of great beauty and power. "The Stones of Venice" will assist to pave the way to the rationalism and advancement of architecture.

CARDIFF ATHENÆUM EISTEDDFOD.—On 10th June the Cardiff Athenæum are to hold one of these Welsh festivals, at which, amongst other prizes to be given, is one of 5*l.* and silver medal for the best piece of sculpture or carving in wood or stone the work of the exhibitor, and one of 7*l.* for the best original painting in oil of any gentleman's seat and grounds within twelve miles of Cardiff (kittat sea). Other prizes are also offered for a water-coloured drawing of Cardiff, for pieces of mechanism, specimens of wood grown in Glamorgan, &c.

THE MOON AND THE GLOBE IN LEICESTER-SQUARE.

CONSIDERABLE progress has been made in a short time with the construction of the proposed Globe in Leicester-square. All the trusses which form the skeleton of it, 50 or 60 feet high, are up, and the appearance it will present is already shadowed forth. The other night, when we passed through the square, about twelve o'clock, it made a curious and striking scene. The moon was shining brightly in a clear sky, which was studded with stars,—those wonderful stars that never change. All was very still about, and the campanile of the Baths, touched for the moment by the moon, made the background Venetian. Amongst the great ribs of the growing structure, a number of gas jets flared brilliantly, and made the struggling shrubs and grass about greener than they ever were before: a few men were mysteriously moving amongst the ribs, which looked like the skeleton of some enormous fish lying stranded; and in the middle sat gravely the stone statue of the Second George, vividly recalling "Don Giovanni" and Mozart's immortal music. The "*Zitti, Zitti*," rose to our lips. *Il Commandatore* had come to supper, horse and all! However, we must keep out of the clouds, and remember we are in Leicester-square. The carpentry seems strongly put together, and it is evidently intended not to verify too soon one of William Shakespeare's prophetic assertions, that—

"The great globe itself,
Yea, all which it inherit shall dissolve;
And, like this insubstantial pageant faded,
Leave not a rack behind."

THE RELATION OF ARCHITECTURE TO PAINTING AND SCULPTURE.*

ALTHOUGH a recurrence to sounder principles may certainly be traced in the works of the several branches of art, for some time past, on the walls of the Exhibition rooms, at the competition at Westminster Hall, as well as in the different churches and other public and private buildings erected around us, distinct from those more ephemeral changes of fashion which had previously periodically succeeded each other, and evidencing an increase of power, together with a more serious and intelligent aim, and a more earnest study of nature,—and while much hope may be gathered therefrom, of a gradual leavening and growth of pure taste,—yet, up to the present time, its range has been but limited, and its progress but slow. And the cause which has cramped the one, and retarded the other, will, I think, be found in the want of attention to the first law which common sense would teach us, namely, that in the unity and fellowship of the several branches of art does their power consist.

For it is the province of architecture, painting, and sculpture, to embody the whole of the visible qualities of nature; being, as it were, the several dialects of the universal language of art that address the visual sense, and by which man seeks to convey to his fellows the impressions he receives from the material creation around him; for which purpose separately they are imperfect and individually incapable of the full rendering of the majesty of nature, since each has the power of setting forth some one or more of her qualities that lie beyond the range of the others. It is therefore by the union of their several efforts alone that her whole excellence can be declared. As the seasons by their succession complete the cycle of the year, and by their united influence bring to perfection the fruits of the earth,—as the voice of all created things, weak and faint by themselves, have yet a part peculiar to themselves in the grand chorus of praise to their Maker, without which its harmony would be incomplete,—so in the arts do their glory and their strength consist in their unity, which combines the efforts of each, and gives purpose to their power, and direction to their aim. Thus architecture embodies but the abstract principles of nature: re-creating by

means of her laws of construction and geometry, she gains sublimity by vastness, symmetry, and contrast,—beauty by proportion, harmony, and ornament. She builds up the polished stones of the earth into a music of visible matter, which yet is and must remain but a "frozen music" (as it has been called), out of time with the natural melodies around which concentrate every kind of attraction, if she avail not herself of the graces of her sister arts. Apart from these, her means of expression are very limited, and extend not beyond the simplest emotions of the mind, addressing but few of the sympathies of men, with no more power than the lisping of a babe or the gestures of the dumb. But that which she has to say, is told from one generation to another; told so clearly, that men may not but hear; and while she shields within her arms the more fragile works of painting and sculpture, their voice whose compass is greater blends with and becomes one with her own, and history lends its associations, and the wild legends their awe; and when records have perished, and the voice of tradition is hushed, so long as one stone will stand upon another, time will but add a charm, and bedeck her mouldering walls with the golden hues of the lichen and the moss, till, beautiful even in death, the last relic is ploughed into dust.

Then sculpture and painting, which, in their treatment of different aspects of nature, descend to a closer imitation of her works, the ideal of whose search is not in principles, but in the fulness and perfection of things, whose aim is rather recombination than creation, depend so much for space, material, and opportunity on this their more enduring sister art, that, isolated from her and from each other, their efforts can be but cramped, small, and perishable, and become but too often as a jewel lost for want of a setting, shelved to moulder in the dust of ages, buried in the narrow sphere of some gallery, to pamper the pride of perhaps an ignorant connoisseur, fain thus by his wealth to purchase the *écrit* of taste.

The bond, then, between these several fine arts tends to enhance and ennoble each,—nay, is absolutely necessary, to the perfection of either. Yet how seldom in the present day is its value duly recognised: artists of either class are content to grope on blindly in their own narrow course, utterly careless of the sympathy of their fellows. Our buildings are thus mostly devoid of colour,—the want of which is so painfully felt in the interior of St. Paul's Cathedral, and most of our other churches; while their carvings are generally left to little better than masons, or, at least, have not formed part of the original design; and, therefore, cold, cheerless, and destitute of feeling, they have no charms for the ordinary spectator,—for it requires some education of the eye, and a considerable intellectual effort, to appreciate the merits of proportion, which are all that are aimed at.

Some exceptions happily there are to this rule, among which the sculpture in the pediment of St. George's Hall, Liverpool, may be mentioned as being the design of Mr. Coskerell, and an admirable composition. Then, again, the painter despises architecture as mechanical, and it must be confessed, with too much reason at present, ill driven, perhaps for a background to a picture, he stumbles upon archaeology, and in avoiding errors of chronology, violates the first principles of the art. And sculpture, the line of separation between which and architecture it were impossible to draw, has yet been rent from it, and, like Atlas raised from earth, it has lost the power it possessed. Now, for the first time, is the niche stateless, and the statue remains shelterless, while the only combination our clumsiness can conceive is that wretched idea borrowed from Rome, of hoisting a hero into the clouds, forsooth, to keep him out of sight and out of mind.

One of the worst among the countless follies of restoration, now common in France, is to renew, as if built yesterday, all their canopies and nichework, forgetting the figures, of which they were but the covering: such has been done at the rich flamboyant church of Louviers; while, in some instances, I believe,

* Part of a paper read before the Architectural Association, February 14th.

at the cathedral of Notre Dame, at Paris, they have new statues into the old niches, like new pieces into old garments, which specimens of their stiff, cramped, sham mediævalism can only make one sigh devoutly for another revolution to knock them all down again.

Yet throughout both ancient and mediæval art, even in their decline, do we find this principle of common sense obeyed, whether we look to the stern temples of Egypt, from whose storied walls the colouring has not yet faded, and whose colossi and sphynxes, in their grand conventionalism, never since surpassed, with their brows bent and their eyes fixed so calmly, as if they would scan eternity, seem as much a part of the architecture as of the sculpture, as do likewise the human-headed bulls and the carved slabs, the only remnants that can be gleaned from the palaces of Assyria; or, if we turn to the Parthenon of Athens, which was probably the most perfect instance of the harmonious combination of the three arts, the temple forming not only a frame for the display of the mythic history of Greece, but each group and ranked procession having its architectural as well as its phonetic part to fulfil, which could not have been effected had Ictinus and Phidias despised or been ignorant of each other's art.

But if less æsthetically refined than this *chef d'œuvre* of classic art, yet even more pregnant with feeling and thought, and therefore works of a higher order, and showing the architect and sculptor to be one, or at least most closely united, are some of the best works of the Gothic period. Many complete and noble poems in stone are to be found over the heads of the doorways to the larger churches and cathedrals of France,—a position peculiarly appropriate for them, as they here must arrest the attention of those about to enter the building, are at a suitable height, and are somewhat protected from violence and weather.

Thus at *Coutances*, over the doorway under the northern porch, are the figures of the Lord, with an angel on either side, in very high relief, now mutilated and headless through revolutionary fury; yet in the grouping of the composition, in simplicity and grace of action, and the arrangement of the draperies, equal to most of the works of classic art in beauty; and withal there is an evident dignity and reverence in the attitudes such as was never aimed at in these.

In the noble five-arched west front of Bayeux Cathedral, the tympanum of the second arch from either side is filled by a group of sculpture. That on the northern side consists of events in our Lord's life and passion; the other, of his descent into Hades and subsequent glorification, the arch mouldings being occupied with ordered ranks of the heavenly host and saintly bands, not ranged in meaningless monotony under their several canopies, a mere feature in architecture, as in the restored west doorways of St. Ouen at Rouen, where they are turned complacently to a pierced screen of tracery, or even, as in the fine south transept end of Rouen Cathedral, where a row is carried under the circular head of the window, till at its summit they lie horizontally—an error which has, however, been corrected admirably in the northern transept end of corresponding design, by their being placed above the springing of the arch, side by side, looking downwards, and, as it were, hovering over the recess of the window. But here they are evidently in adoring contemplation of the events which are recorded in the centre. Their hands are uplifted and their wings poised: their attitudes are varied with the utmost grace, while as each row distances from the scene they change from intenser action of inquiring love, a drawing closer, as it were, to view the trials and triumph of the Saviour, to a mute and reverent gaze, and a drawing together of their folded garments.

Still grander even is the conception and treatment of the bas-relief over the central door of the church of St. Maclou, at Rouen, and so magnificently are all the usual architectural features subordinated to the sculptural character of the composition, as to prove them the design of one mind, or that, at least, the connection which then existed between the

sculptor and the architect was much more intimate than is ever now the case. The subject treated is the Last Judgment. In the apex of the arch in the outer of the double row of canopies is the Father, with right hand uplifted, and bearing the world and cross upon it in the other: in the second row, immediately beneath, is the Holy Spirit as the Dove descending; and, seated in the centre of the tympanum, is the figure of the Lord Jesus, which is of larger size than the rest of the group, while from the crown of the tympanum are rushing four angels with their trumpets to announce the coming doom of the world. The rest of their band are ranged in staid ranks on either side of Christ, with their wings folded over their feet, their harps and other instruments in hand; while in the next row below are seen the blessed of all nations, distinguishable by their mitres and turbans, and the variety of their dresses,—some holding the books of their inspiration, others kneeling or pressing forward with their heads raised to the Saviour,—thus seeming, as doubtless was the intention, to embody the beautiful summary of the hymn, where "The angels cry aloud,—the heavens and all the powers therein,—The cherubim and the seraphim,—The glorious company of the apostles,—The goodly fellowship of the prophets,—The noble army of martyrs,"—and "the Holy Church throughout the world," are joined in praising their Creator.

To the left hand of the lower portion is the Resurrection. The souls are pressing into a sort of cathedral building, and are being marshalled by angels; while the two lower canopies of each row on that side are occupied by figures rising from their tombs. Of those above, and down to nearly the same distance on the opposite side, each has an angel overshadowing with his wings, and directing to the Redeemer, a crowned saint, whose hands are clasped in prayer, and whose features are beaming with thankful praise.

On the right-hand side the avenging angel is driving the condemned into the flames beneath. The majestic swoop of this figure is finely contrasted by the struggles of a demon, who, in his hurry to escape, is crushing through all the arch-mouldings, and is leaving his garments behind him.

While the scene of the Inferno itself is drawn with all the terrible minuteness of the fancy of a Dante, and extends to the three lower canopies of each range on the right hand, the outlines of which are barely traceable amid the mass of horrid demons and shrieking victims clinging around them: the expression in the countenances of these, of savage malice in the former, and of torture and despair in the latter, are truly fearful. In the midst, Satan is sitting supreme: in one compartment devils are blowing the flames, which burst upwards in their fury: others turn a wheel, upon which figures are stretched over a harrow; and some are crouching into the very hollows of the canopies, as if they would screen themselves from the wrath of the Almighty, and were calling upon the mountains and the hills to cover them.

Again, there are some of the most perfect combinations of the different arts to be found among the tombs of the Gothic period; whereas those of the present day, even when in themselves worthy of notice, are almost exclusively of a sculptural character, and in discord with all around them. (Note the introduction of a camp bedstead and mattress into a cathedral, such as that upon which the two children, by Chantrey, are lying, in Lichfield Cathedral, in contrast with the altar tomb.) These monuments, from their limited size, admit of a richness that would be fitter if carried over the whole of the buildings which contain them, whose grey and sombre walls make them to glitter like gems in the dusk. Their effigies of armed knights lie as if in calm and peaceful slumber,—now that their warfare is done,—all blazing like the iris, in burnished gold and enamel, their altar tomb for a couch, and canopied by a lacework of stone, beneath the arch of which there is usually, in the wall-tombs of Italy, some subject of an appropriate character painted in fresco, as in that of the

Bardi Chapel at St. Croce, where the figure of the warrior himself is represented in complete armour, rising to judgment at the summons of the last trumpet.

These examples which I have given will, I think, be sufficient to prove, that in *precedent the text-book of ART*, is found the confirmation of the principles we had already deduced from *Nature, her prototype*,—namely, that in every object in which perfection is attempted, form, colour, and modelling of surface should be combined; and, therefore, that architecture, painting, and sculpture, which respectively embody these qualities, should likewise be ever united.

The recognition of this one principle alone would tend far towards the entire restoration of *Art*; but we may with advantage pursue still further our examination in these its only, yet ample, sources of instruction,—observing in both, that while all these qualities are joined together in perfect harmony, each has in a manner an independent existence, and is so distinct and separate as to allow of its being isolated and idealized at the will of the artist.

This consideration will suggest to us many practical directions as to the proper position that each of these branches of the art should occupy, in order to prevent any confusion or interference among them, or the undue predominance of one to the prejudice of the rest.

And, first, of architecture, which, being, as it were, the frame to the others, should appear *predominant in all the main structural lines and features*, and these being left comparatively plain, will give a relief and repose to the more enriched portions. While, therefore, in piers and columns bearing any principal weights, the clustering together a number of shafts for that purpose, which they answer as well as any other arrangement could, is a legitimate and beautiful idea (as also are the shallow channelings in the circumference of the Doric column, since they run in the direction of the transmitted pressure, and in no degree diminish the strength),—the panels filled with arabesque ornament, used in the Renaissance, are inappropriate to so important a member: besides that, whenever solidity is the chief requisite, neither panels, whose object is the reduction of substance, nor deeply under-cut projecting mouldings, such as those of the Flamboyant style, should be used. No member performing an important office in the construction ought to be disguised, as a mere ornament, nor an ornament as a constructive feature; since, in the former case, the province of architecture is invaded, for instance where a crumpled mass of foliage forms a corbel to receive the vaulting shaft, as sometimes is done in the English Decorated Gothic; and in the latter case it becomes the usurper, as when battlements are used to decorate the transoms of a window, or the capital of a column, as in the Abbey gateway at Workop, in Nottinghamshire.

On these grounds, too, we may arraign those fanciful figures, full of life, indeed, and interesting from their symbolism, which bear the columns of the porches to the Lombardesque churches in Italy, such as St. Zeno, at Verona; also those massy pendants which hang, wedged up, as it were, to the centre of the arches of the grotesque and cavernous porch at Louviers, while those from the vaulting of the south transept porch at St. Ouen, at Rouen, are still more, if possible, to be condemned as not having the same visible means of support.

The proper position for sculpture is at the junction or the intersection of the main architectural features, such as the capitals, mouldings, finials, bosses, and other accessory portions; as statues in the niches or crowning important points, and bas-reliefs within pediments, panels, &c. If it be carried over large masses of surface, it would appear to usurp the place where colour might be better applied, and it will, at least to some degree, lose its proportional effectiveness and its character as a decoration only to the architecture. The metopes, frieze, pediment, and aerotera were its field in the classic temple, the walls being left to the painter. Again, in the best and purest of the Gothic examples, such as the transept ends of Rouen Cathedral, it is

treated in the same manner; for though the lower parts of their doorways, with the angular pedestals that flank them, are covered to a considerable height with most delicate bas-reliefs, they are only the decorations to these principal features, and are abundantly contrasted by space of plain surface above and around, by means of which not one of the well-studied and exquisite mouldings, and other enrichments, is lost in the general effect. In the works of the later Gothic, however, the carving is not so judiciously confined to the principal parts, but often covers the whole of the walling, as on the apse of the church of St. Sauver, at Caen. In our northern climate, where it is, in general, impracticable to decorate these spaces with colour, it may be expedient at times to give reins to the fancy of the artist, and to trust to the sunshine to gild the projections, and to the mist to flush the recesses with purple, and by the mere force of fretted wall and carved work, to strike awe into the minds of men. But in such cases, the sculpture will have exceeded the limits of its due subordination; and this excess can only be tolerated where it arises from fulness of thought and an ungrudging spirit, conscious that much of its work will be lost, and that it must be less effective in proportion to its quantity—and not if it consist in the mere repetition of the same details, the last resource of poverty of invention, as is too often the case with our English Perpendicular buildings, or in that niggard endeavour, which is the very incarnation of the spirit of modern times, namely, produce the greatest effect with the least expenditure of thought or means.

Then the place for colour is on the flat surfaces, the walls, the windows, the bays of the vaulting, the pavements, &c., whether we give them over as a blank page to the painter, which it were well often to do, or whether we are content to cover them with quaint patterns and mottled figures. Such principal members in the construction, as shafts, vaulting ribs, or those which depend upon the grace of their form, as mouldings, ought to be comparatively simple, without much vivid colouring: certainly they never should be striped with lines running in a vertical direction, which destroy all their breadth, and cannot be supported by any authority in nature: lines crossing them, as those used in the decorations of St. Germain de Près at Paris, will better develop their form: zigzag lines running up them, as seen in the Cathedral of St. Denis, give the uncomfortable idea of their being elastic. However, in all these systems the effect is somewhat confused, and these important members are not made sufficiently prominent or detached from the surface of the walls: the more natural method, as in the stems of plants or trunks of trees, is to keep them of a single colour, which is best effected by the use of marbles; for instance, by the Purbeck marble shafts in the Early English Gothic, as in the choir at Ely Cathedral. They might, perhaps, have their colour gradated as they rise, or divided into ribs, like trees into branches, such as that exquisite painting of the mountain birch in autumn, whose slender stem gleams amid the then deep russet woods, a line of silver grey, sprayed into ebony twigs, all showered with beads of gold.

Nor should the colouring be allowed to interfere with the sculpture any more than with the architecture, for its modelling and delicacy is seen best, or rather seen only, when left in pure marble or stone. I know nothing that so immediately renders common the finest carved work than to gild it as has been done in the choir of Lisieux Cathedral, and partially in the chapter-house of York, or to daub it with colour, as in many of the churches of Caen, where the noble foliage of the Early Gothic and the richer Flamboyant alike seem as if just brought from a *papier maché* shop. The ground of the ornament might, however, be toned with colour judiciously, to relieve better the design when it is far removed from the eye.

In the treatment of colour, it too often happens that attention is bestowed only upon the individual harmony of separate portions or patterns; whereas, for general effect, the colour should be brought to a focus in one

point, and the rest, as it were, toned up to it: painted glass, by its peculiar brilliancy, or some richly coloured screen, altar, or other feature, would supply readily the means of effecting this, and it will be found that greater power will be gained thus, than if equal richness, or colours of equal brilliancy, were carried over the whole buildings.

With regard to this part of the question, however, I cannot do better than call attention to the following principles which have been given by Mr. Ruskin, in his "Lamp of Beauty," which, as indeed the whole of his observations upon the application of colour to architecture, are most practically useful:—

"That colour should be independent of form and arranged upon a separate system: whatever harmonies there may be, should resemble those of two separate musical parts, coinciding here and there only,—never discordant, but essentially different.

"That in the arrangement of colour, the patterns should be somewhat quaint and irregular, and that the refinement of line and form, necessary in sculpture, is wrong in these: they should be confined rather to simple masses, zones, cloudings, flammings, or spots."

The following remarks, too, by Mr. J. K. Colling, in his "Gothic Ornaments," are valuable. "That in the most harmonious combinations of colour in the Gothic style (as in heraldry), colour is never placed upon colour, but should always be separated by either black, white, or gold." This principle will also be found to be carried out in the ornaments of the Alhambra. I have observed lately, that where the most vivid colours are used in the objects of nature, as on the wings of butterflies, this principle may be observed to be carried out; but that where the tones are broken, they are sometimes found in juxtaposition, as on the wings of some kinds of moths. A certain confusion appears to arise in either case, the effect of which is only disagreeable when the colours are brilliant.

JOHN P. SEDDON.

HARMONIES OF COLOUR IN ORNAMENTAL DESIGNS.

A LECTURE on this subject was delivered by Mr. R. Wornum at the Central School of Design on 7th inst., in completion of his course on "The History and Principles of Ornament."

The lecturer first explained to the pupils the analytical nature of colour according to the received theory, and then proceeded to consider the laws of its harmonies. The elementary facts, he continued, we may, or perhaps ought to, suffer ourselves to be guided by, in our general principles of decoration: we are taught them not only by scientific analysis, but by the general appearances of natural bodies also. We find in nature that the principal effect is that of light: that is the general aspect: separate the parts and we find vast harmonies of the tertiary colours: these again are interspersed with arrangements of the secondaries, and the whole is decorated with minute portions of primitive colour, such as flowers and the smaller receptacles of animal life. The primary colours are essentially in nature peculiar to minutiae or the finest details. Neither man nor animals of any comparatively large size exhibit much colour. Now, from this general view I should deduce the following theory of colour in decorative or ornamental art.

All colours are enhanced by black and white as the two extreme contrasts; but to introduce black in any large quantities would be inconsistent with nature: on the other hand, white may enter largely into all ornamental schemes, and at least in the modified form of some light tint, should perhaps be the basis of every extensive combination. For the general compartments of a design also, secondary and tertiary tints are the most valuable; the degree of colour depending a great deal upon the size of the compartments,—that is, whether it should be an absolute colour, or only a tint: the smaller the compartment, the more intense or decided should be your colour, the colour being inversely as the extent of surface. The same rule would hold, of course, with the ge-

neral grounds of designs for manufactures, except where the manufacture is of a purely ornamental character, as a ribbon, for instance, which is always designed as accessory to something else; and in this case there cannot be any objection to the primaries even in a positive degree. But as a general rule the primaries are objectionable as grounds of designs, and where two colours only are introduced and one of them a primary, the larger surface should always be given to its complementary secondary, if we wish to produce the best possible effect of the combination. This restriction to secondary and tertiary tints for the general masses is a very trifling limitation: you have the choice of a thousand tints, from a rich orange green or purple to the most delicate marine, drab, or gray: you leave also a far greater scope for effect in the introduction of the ornamental details of your pattern, and it is here that you have the proper office for the primaries and secondaries in all the depth of their prismatic brilliancy. I think we should be careful even how we use the secondaries in their intensity, for anything more than the ornamental details. Modify them by white and you change their character: they are then, perhaps, of all colours the most fit for grounds or small masses. Even the primaries, when greatly modified by white, whether by actual mixture or mere juxtaposition, may be applied to the same uses; but in their genuine intensity they are extremely objectionable in large masses. I believe we could not tolerate even a red, blue, or yellow paper, if the surface were not broken by some colonnade or diaper work, in a different tint or colour, so as to destroy the monotonous intensity: variety of colour is quite as necessary as variety of form, and the more necessary the more positive it is, because it acts with a greater stress upon the eye. The value of this breaking of the surface where the colour is strong is admirably shown in the decorations of the Alhambra, where we have such an interlacing of colours, that though the primaries are generally employed, they are so small in their masses and so intermingled as to have only a general effect of the secondaries; a result which in the strong light of Spain must amount almost to a necessity. The Moors and Saracens in Spain and in Sicily have shown remarkable judgment in the application of their high colouring, a taste for which appears to be a common characteristic of people accustomed to southern developments of colour in nature, and whose taste for colour is very superior to that in the north, as, till lately, developed in this island, which, for a century or so, seems to have amounted to a kind of drabomania both in decoration and costume. It is still too much the fashion to consider a taste for colour as puerile: it can only be so when in violation of nature's harmonies. I believe aesthetically a judicious application or employment of colour to be highly beneficial to the mind, in imparting a sympathetic gaiety to the current of the thoughts, and in contributing to cheerfulness of disposition.

The lecturer then entered more particularly into the subject of taste in costume, so far as regards colours, and their harmonies,—the colours best adapted to male and female attire,—the effect of mere colour and its harmonies and contrasts in rendering the military popular,—the influence of colour in the sustenance of royalty and nobility,—the gorgeous groupings of colour in the House of Lords on some occasions, &c. &c. The very contempt, or ridicule, or humour, excited by peculiar associations, or by want of proper harmonies, in colour, he thinks, only proves its paramount importance; and there is, he believes, far more in scarlet and purple than is dreamed of by philosophers. The more perfect the combinations of colour, of course the more impressive will be the effect; and the student cannot form an exaggerated notion of the value of the true harmonies, which are not matters of artistic convention, but the simple lessons of nature. [The lecturer illustrated by a rapid view of the most ordinary and the most prominent chromatic appearances of organic or inorganic creation, but into these we cannot follow him.

"If then," he continued, "the organic as well

as the inorganic creation exhibit such uniform principles of colouring, it must be evident to the designer that his works cannot be exempt from these laws, which, in fact, circumscribe all vision, and are inherent in the nature of light itself, by which alone colours exist at all; and, therefore, as they are generated by light they must partake of its nature; so that we know these things to be true whether we feel them or not.

It is in arrangements of two colours only where a discord can painfully obtrude itself: in this case we have no alternative but the absolute harmony or the complements. Mixed harmonies may be fortuitous from the presence of a variety of colours, as the six prismatic or others. Provided, indeed, the design contain the three colours in some form or other, the physical requirements of the eye are in a great measure satisfied; so, accordingly, the approximate harmony, or the combination, of two of the secondaries has a pleasing effect though not perfectly complementary. Such, concluded the lecturer, are the leading conditions of the harmonies of colour. This question of colour becomes daily of higher importance, and must soon vindicate its place as an essential element of prosperous trade.

GRETE PERVILLE TO YE CHVRCHIE.

In ye Chapter House of our Ladye stte Salisbury,
ye vi. of ye Ides of Marche, mcccclii.

Good Magister Buiyder, Greetinge.—Of your pitie listen vnto my tale, which am a poore soule that, have don penance above six hundred yere for my synnes, and specialee for divers frades in the buildyng of this churchie, by the which our moost worthie P'lare Byshoppe Poore, Master Adam the Deane, my fellowe Canons, and oth'r p'sones co'tributors vnto the worke were endomagid, supposyng yt to bee more solide & p'fectlie joynd & fynish to the glorie of our Ladye thanne was doone, & not onlie soe but dyvers the simpel workmenna didde suffer losse booth sp'uall and temporal, beyng cozenyd booth of their lawfull pence and offe the benefytes of indulgence, which our lord Pope Honorius dyd bou'tifullie graunte unto svche as trulie sholde worke at p'fectyng of the worthie P'lare hys desygne. Verilie they be mooste juste iudgem'ts of our Ladye that I doe now vpon this oaken table make humile confession of the synnes doone theruppon, and doe kepe warde on the worke of myne owne hands leste that any ill befalle the same, which yf by your helpe, good Master Buiyder, yn empyntinge therof, we do lette, ye shall obtayne batement of my peynes; which, of your misericorde, I wot ye fain wolde.

Now, I have spyed on evill, the which, yf it bee not lette, maie cause that booth this our cittie of Sarum and the Queene's realme of Englande shall suffer a losse which, withouten vain boastynge, I doe say shal not soddainlie be repayed. For albeit I deemyd ye sholde have so betteryd the maner and faction of your workys that our poore buildyng wolde, yf standyng in these daies, bee clene despyed as a thyng litle and brutte (yea, as it were Gothike and clounishe) bysye the more statelie & curiose fabrikes of this your age; yet when lookyng yesterdaie from the toppe of the gret steepyl which good Bishop Wyvil and hys right subtille buiyder, Master Richard de Farleigh, dyd adde vnto our churchie, it seemd in alle that fayre prospect of nighe the whole shyres of Wiltun and Hamptes, that verilie ther must be some reason in what I heard anon of dyvers menne of our crafte, how that of late thayr marche had been (as they sayd) more in wordes than in dedys. Truelie that Master Richard, which fynish this goodlie steppil, dyd tell me how in hys daies (which was an hundred yere after myne) ther was demyd to be stille noe churchie in alle Christendome for completnesse and fynish to be compard vnto our Ladye's of Sarisburie; and of late yeares Master Inigo Jones dyd bringe me the lyke repute, addinge that many workes had bene begonne & othir ended in fayrer sorte, but noone besyde this builde of a peece. Yea, that righte cunningge and worthie knyghte, Sir Christopher

Wren (whom our Ladye p'donne, for they saie he was a heretike, but I trowe hee was the beste companie I founde this six hundred yere) in hys sojourn in our realme of purgatorie, which was but shorte, hee said he was as proud to have savid our churchie from ruine, as to bee the onelie builder, sithence your humble servitour, which hadde the hap (our Ladye knoweth how ill I deservid the lyke) to lay the whole plat of soe grete a worke. (He meant your hereticall cathedra of New Poule's in London, wherein nygh alle ornamentys bee what ye doe calle *dummys*.) Soe then ye will graunte that albeit our buildyng be lyttel fyrm by reason of age, & uncomelie for losse of dyvers curious ymagerie (to wit, the windowes with storys in manie colours), and the seyntes be noe more worshipped herein; yet sholde alle perille thereunto bee counted an evill thyng and hurtfull, which may bringe losse vnto our soueraigne ladye the Queene and hir people.

Now, for to see the roofys and Byshoppe Wyvil hys steepil abovesaid, I joyndd my selfe unto certayne straungers which the good vergere dyd guide, & soe goyng uppe the wyndyng staire in oone of the boterass turris at north end of the grete crosse yle (which some doe calle transeptum) I spyed oon wyre of copure, the bignesse of a strawe, which spryngth oute of the grounde, & runneth right uppe the said staire, unto the chare-roffe above the grete crosse hys vawtyng, & soe alonge vnto the tower in midst of the churchie, & up throwe alle the tymbre which fylleth that fayre lanterne (for hee was curiouslie wrought for viewe wythinne, but hath bene shuttoute, and sithence the pullyng downe our noble bellfrie by Master Wyatt, is yshaken of bell-tollynge, for which hee was not builde). Then goeth said wyre into Master Richard de Farleigh hys steepil, and soe uppe amidde hys tymbres till yt joyneth the vane-spindel that overtoppyth alle workys in these yslands. Now fromme talke I dyd heare, I wot this hath bene sette up for that hereticall philosopher, Doctor Franklin, hys subtile invencion. But truelie they wist lyttel of this matter, which toke above five hundred foot of conductour (as ye doe calle it) when cclx. fote dydde go clene from the vane-yrone unto the leade on any of the roofes, which bee joynt wyth the grounde by pypys forre rayne.

Now verilie ther be moche damage doone of lightnyng vnto this steepil in former daies, as good Sir Christopher reportyth, and more the hyer ye shal ascende, manie fayre stoomes rift & crackit, for wante of the doctor hys cunynge. But liefer hadde more be soe rift, thanne oon lightnyng sholde happen exceedyng this wyre hys capacitie electricall (as they do saie). Now tho', bye the grace of our Ladye, ther doe hap noe soche myghtie tempestes in this lande of Englonde, as bee commune in mooste partes beyond sea; yet be ther not seldome lightnynges which wolde melte (as in a refynor his founrice) moche more than this thickness of copure. Ye shal finde it writ of Sir Harrys, in hys boke of thunderstormes, page cxi., how that a quarteryng chayne of copure hath ben ymolten, and (p. cxlii.) that men sholde not truste grete thynges unto lesse than a rodde of three-quarter inche of this metalle (& yf ye take yron ye must putte xii. tymes so moche, besyde maykyng of newe so ofte as hee shal deciae thro' ruste). Wherefor this wyre sufficeth not. Ye will saye he hath servid this fiftie yere & noe hurte. So he shal bide, bycause ther hath bene yette no stroke of thondere mightie for to melte hym, or els the outsyde ashar hath bene wette with rayne, which doth conducte the doctor hys fluide. Menne do saie alwaies "there hath no such ill happened yette."

Soe then as soon as ther shall falle oon grievous lightnyng, and the steepil bee over drie to conducte, and the wyre have not capacite; sodaine shall hee be scattered in droppes ymolten, hotte as fyre, amidde beames and rafters seasonyd with dryyng of six hundred yere. Incontinent they be sette on blaze, in dyvers places at once (to wit the steepil, tower, and chare-roffe of the crosse), the lowest at suche heigth as ye shall not reche with alle

the fyre-squirtes in the cittie. Shells of steeple (which hath but viii ynche of thickness) shal not stande soe dissimale fyre. Vowtynges of chalke and plaistre, noone of the fyrmest, shal be as Master Paxton hys glas house, ayente showeris of grete tymbres and stones. Bowes of cunynge worke, of accepted masonnes, which be soe filie poyed that oon cannot be movid but othir doth followe, shal topple doone as childerhouse of cardes. For truelie they be lesse pillers and boterasse* that do proppre this churchie, than ye shall find proportionallie in any other worke of stoon that hath ben builde. But by oon rib, or lesse, of copure ymolten, shal so grete labour and curiosis be clene loste; and so shall yt be fulfilled which is writ on good Bishop Jocelyne hys towmbe—

Flent hodie Salesberie quia decedit [templum].

And they which sitte in Seynt Osmund hys seate shal holde up their handes cryyng "verilie it hathe never soe happened before." And verilie it shal not soe happen againe; for, albeit I do heare ye have in London oon architectonicus professor, which demyth it good all olde buildyng hee for tyme ybrent, yet I trowe alle the Queene's horses and alle the Queene's menne shal not make suche anodir church as ye have lefte unto you of your poore servitour,
Elias de Bergham.

SCULPTORS' COMPETITION FOR THE ART-UNION OF LONDON.

SOME time ago, the council of the Art-Union of London offered 100*l.* and 50*l.* for the best and second best* model of a single figure in plaster 20 inches high, adapted for casting in bronze. Thirty-eight models were sent in, and the council have obtained space from the executive committee of the Great Exposition for the exhibition of about twenty-five of these in the Hyde-park building. One of the most complete works submitted, "The Hesitation of Eve," was excluded from the competition, by being made inadvertently larger than the specified size. Another very fine model, "Satan Punished," from *Paradise Lost*, would also be considered, in its present shape, we conceive, as not in accordance with the instructions, including, as it does, a second figure. Satan, winged, is standing on a rock, and, with outstretched arms, is retiring before the hissing of a fallen one, half-man-half-serpent, at the foot of the rock. The artist, however, confines his claim to the single figure, and by that he will have to be judged.

"Ephialtes Chained" represents a Heraclean figure, the muscles greatly developed, lying at full length on his back. It is modelled with power and knowledge, and is evidently the work of no ordinary mind or hand. "Solitude," a female figure seated on a rock, a stork by her side, is very cleverly posed. "Lycidas" and "Spring," apparently by the same hand, have considerable merit, and the same may be said of "The Huntsman," "Nydia" (Bulwer's blind girl, from Pompeii), "On Earth, Peace," "Psyche Disguised" and some others. "Ariadne" is the "Iris Ascending" (issued by the Society some time since) in another form: indeed it is curious to note the influence exercised by works already executed on a large number of the models.

We are glad to hear that the council have determined not to make their award until after the Exhibition is opened.

It is to be hoped that the interest excited for the Great Exhibition will not interfere with the subscription to the Art-Union of London this year. Every subscriber of a guinea will receive works that may fairly be considered worth double that amount, besides a chance of obtaining the right to select for himself a picture or statue from one of the current exhibitions. And it should be remembered, that while thus availing themselves of a personal advantage, they are providing funds for the encouragement of art and artists.

"The Burial of Harold," by Bacon, has just now reached us,—the alternative print with Willmore's fine work, "The Villa of Lucullus." It makes a very interesting engraving, and will doubtless lead many to subscribe for two chances, in order to possess both.

* If good enough.

Amongst the illustrations of "The Traveller," to which each subscriber will also be entitled, are some very fine drawings by Stanfield, E. M. Ward, Ansell, Martin, F. Goodall, Hulme, Frost, Huskinson, Cave Thomas, and others.

ON THE ARCHITECTURE OF NINEVEH, AS ELUCIDATED BY RECENT DISCOVERIES.*

AMONG the many archaeological discoveries made in recent times, no one has been either so unexpected, or at the same time so complete and satisfactory, as that of the palaces of the Assyrian kingdom, recently brought to light in the mounds in the Valley of the Tigris; and considering the short time that has elapsed, scarcely eight years, since Mr. Botta made his first successful excavation into the mound at Khorsabad, it is wonderful how much has been done to elucidate what was hitherto so obscure; for besides the good fortune of making such a discovery, it has been most opportune that it has fallen into the hands of such men as Botta, Layard, and Rawlinson; who have brought not only zeal, but an extraordinary amount of talent and sagacity to bear on the subject. Neither, however, of these gentlemen has attempted the architectural branch of the inquiry, which is the one to which I shall naturally confine my remarks on the present occasion, not only as the one most directly interesting to this audience, but also as the one on which alone I feel confident in giving any very decided opinion; and for the sake of making my remarks as intelligible as possible, I shall confine them almost wholly to one building—the palace of Khorsabad,—not only because it is one of the most interesting buildings hitherto brought to light, but because it is—owing to the superior liberality of the French government—the only one that has been so completely excavated, as to render its disposition even tolerably intelligible.

Before proceeding, however, to examine it, it may be necessary to make a few remarks on the chronology of the arts in Assyria, and also on the geographical position of the great cities that have been disinterred. With regard to the first, my own conviction is, that the three great periods of art have been brought to light by these discoveries.

The first belongs to the epoch of Nimrod and Abraham, or is slightly subsequent to that time. It is to this period, I believe, that the sculptures of Nimroud and Kalah Sherghat belong; indeed, almost all that Mr. Layard has sent home to the British Museum.

The second period is that of Ninus, Semiramis, and Ninyas, about B.C. 1350. To this period belong the palace of Khorsabad, which is to be the subject of the following remarks; the great Palace of Nineveh, known generally as the Koyunjik mound; and scattered ruins over all the country.

The third period is that of the Salmaneser and Senacherib dynasty, to which belong the south-west palace at Nimroud, and some other insignificant ruins intermixed with those of the other periods.

A fourth period of art, though not strictly belonging to Assyria, is the epoch of the great dynasty of the Achæmenides of Persia, which completes and also closes the great Asiatic Art History, which, including the Persian period, runs through a space of near two thousand years, a longer duration for such a history, than any other class of art can show, except of course the Egyptian.

With regard to the geography I may state, that I believe Kalah Sherghat to be the Calah of Genesis; and Nimroud, which is known to have been the Larissa of the Greeks, to be the Resen of the same authority.

The size and position of Nineveh, I believe to be pointed out beyond a shadow of doubt, by the mounds opposite Mosul, which circumscribe a city capable of containing from two to three hundred thousand inhabitants, which number, as the kingdom of Assyria Proper never could have supported more than three million of people, is quite as much as the capital ever could have contained.

Khorsabad seems to have been a sort of suburban palace,—the Windsor of the Ninevite kings; though, as shown in the plan, a city was attached to it capable of containing 50,000 or 60,000 inhabitants.

The palace itself was situated in a breach in the north-west wall of the city, projecting beyond it into the plain, as seems also to have been the case with the two metropolitan palaces at Nineveh, and indeed generally was, as far as we can judge from what remains, the usual arrangement for such edifices.

The mound or terrace which supported the edifice itself, was a square of about 600 feet each way, rising about 30 feet from the plain. Inwards from this was a second and lower mound, about twice the length and half the breadth, situated within the city, and across which apparently was the only access to the palace itself.

Nearly in the centre of the lower mound was situated a propylæon or great gate, or hall of entrance, which is the only building of which any remains have yet been found on this terrace.

Beyond this there must have been a flight of steps to ascend to the upper terrace, probably situated near where I have placed them on the plan. These led to the outer court, on the left hand of which was the harem, and in front the vaulted passage or entrance leading to the palace itself.

The exterior wall of the harem, both for its extent, the splendour of its sculptural decoration, and the magnificence of its portals, must have been the most imposing feature in the palace; its interior, however, is very inferior to that of the palace properly so called, its walls being composed only of brick, without that revêtement of sculptured slabs to which its exterior, and the palace itself, owe nearly all their interest. Some slabs, it is true, do exist in the court yard, but they generally are unsculptured.

Passing through the vaulted passage the visitor enters the palace court, open on two sides to the country, and on the other two enclosed by buildings, represented in the drawing on the wall.

The principal part of the palace consists of three rooms, placed side by side, and one across their ends facing the country: all these are of the same length, about 116 feet, but vary in breadth from 21 to 33 feet, and they are separated from one another by enormously thick walls, in some instances 21 feet thick, while in others the dimensions vary from that to 13 feet.

Up to the height of about 10 feet from the floor, all the walls of all these apartments are revêted with alabaster slabs, covered with sculptures in low relief, so that no difficulty whatever is experienced in restoring the palace to its pristine form, as far as that height is concerned: above that, however, no direct authority is obtained from anything now found in the buildings themselves; and we are left mainly to conjectures derived from the form of the lower part of the walls to the exigencies of the building, and at the same time such analogies as can be obtained from contemporary or cognate buildings in Egypt, Syria, and Persia. Taking, however, all these authorities, and comparing them with one another, and with what exists on the spot, my own impression is, that the mode I have adopted in restoring them cannot be very far from the truth, though of course it may be modified by subsequent discoveries, or a more careful elaboration of those already brought to light.

To me it appears that the thickness of the walls is by no means an accidental circumstance, arising from the nature of the material used, but an exigence of the mode of building; the tops of these walls being, in fact, galleries, which in their extent almost exactly equalled the superficial area of the floor of the buildings themselves. So that they, in fact, formed an upper story to the palace.

On these walls were placed two ranges of dwarf columns, one on the inner and one on the outer edge, forming externally a loggia, through which light was introduced, and, as will be observed, the walls are always thicker on the outer parts than in the inner rooms,

where they supported galleries; but the outer wall of the palace itself is the thinnest of any, because in that place there could have been no gallery. The pillars, however, which stood on the walls could not have sufficed to sustain a flat roof—so heavy as Eastern flat roofs generally are—across a span of 33 feet, and there must consequently have been pillars on the floor between them: these pillars must have been of wood, most probably of cedar, as, had they been of any less combustible material, some remains of them would have been found, which is not the case; and all analogy from contemporary buildings, and from the remains existing at Persepolis, points to wood not only as the most probable, but indeed as the only material used.

The most difficult part of the whole to restore is the roof over the central apartment. As it was more elaborately adorned with sculpture on a smaller scale than the two outer apartments, it is evident it must have been at least as well lighted; but as it was surrounded on all sides by other rooms, light could only be introduced from the roof. As a skylight is totally inadmissible, I have adopted a mode which is at least as convenient, and is such as was used in Egypt before that day, and is used in India at the present time; besides which, it has the authority of the Persian tombs of the Achæmenides, which I believe certainly represent a hypethron of the sort.

With these adjuncts, arranged as shown in the view and section given in THE BUILDER,* the whole building is not only intelligible, but every piece of it becomes a necessary and inherent part of such a mode of construction.

The numerous remains of colour found on the bassi reliefs, and more particularly the large quantity of glazed and coloured tiles and bricks that are found in all the apartments, in such a position as to show that they lined the upper part of the walls above the slabs, all prove incontestably that the whole of these palaces was as richly adorned with colour as the mosques and palaces of Persia are at the present day. Indeed, in that country it may almost be said, that colour is more architecture than form is.

Another curious peculiarity of this art is the extent to which animated forms are used—all the plain surfaces being covered with them; and even the constructive parts, such as door-posts, and all the returns and angles of the walls, which in other styles were formed of masses of stone or pilasters, or rustication, or some such form, are here either winged bulls, or winged figures, or some form of animated nature: these always form the principal architectural decorations, while the pillars and constructive supports, which are in other styles the principal parts, are here entirely subordinate, and of inferior materials.

One other point I may allude to, is, that all that is Ionic in the arts of Greece came from the banks of the Tigris and Euphrates, as all that is Doric came out of Egypt. By this I mean, that not only the form of the pillars, but the whole spirit and essence of the order, and of the art which accompanied it, derived their origin from the East; a matter for consideration, which opens up one of the most interesting fields of inquiry to those who delight to trace the affiliation of the various branches of art to their origin in the lands of their birth. These Assyrian discoveries enable us to do this, as far as Greece is concerned, and now, for the first time, one of the greatest divisions of her arts has an intelligible source and origin.

JAMES FERGUSON.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN.—We are glad to find that this society is making steady progress: thirty or forty new members have been added: several have been relieved, and two widows of members placed on the pension fund. The annual dinner in aid of it is advertised to take place on the 27th inst., and will, we trust, be well supported. Mr. Henry Lee will preside, Mr. Thomas Piper will fill the vice-chair, and there is a long list of patrons and stewards, including some very eminent names.

* Read at the Ordinary General Meeting of the Institute of Architects, March 10th.

* See p. 149, ante.

NOTES IN THE PROVINCES.

UPWARDS of 200l. have been subscribed towards the erection of new and enlarged schools at Melton, on the old site.—A correspondent informs us that the Leicester guardians have just entered into a contract with a gentleman of that town for the supply of gas at 2s. 9d. a thousand cubic feet. The tenders for gas-fittings sent for their approval were—Branley, 144l.; Robinson, 160l.; Barin, 168l.; and Saracens, 175l.—The *Hampshire Advertiser* states that the price of gas at Newport, Isle of Wight, is to be lowered to 7s.; and well it may, considering the terms on which the present lessee of the works has engaged to furnish the ready-made article to the company. From the local *Independent* and *Advertiser* we collect the following particulars. The contractors are to deliver a due quantity of pure gas through a station meter at the company's premises, the company providing the apparatus, but not the materials. The tenders received were the following:—

Mr. S. Wood, Wandsworth, 4s. 6d. per thousand the first year, 4s. the second, and 3s. 6d. the third.

Mr. James Durkin, Croydon ..	3s. 10d. per thous.
Mr. Walker, Chesterfield	3 1½ "
Mr. Michael Scott, London	2 11 "
Mr. Henry Bowen, Cardiff	2 11 "
Mr. John Richardson, Wimborne ..	2 6 "
Mr. Anthony Winderer, London ..	2 0 "
Mr. George Miller, Newport	1 11½ "
Mr. E. Kirkham, London	1 10½ "
Mr. J. Richardson, Southampton ..	1 10 "
Mr. George Wood, sen., Newport	
(The present lessee of the works) ..	1 9 "
Mr. J. G. Kennett, Newport	1 8 "
Mr. G. Wood, jun., Newport	1 7 "

The company decided to accept the tender of the present lessee to supply them at 1s. 9d. per thousand cubic feet. "After this exposition of the cost of procuring an article which has been charged to the consumers at about the rate of 15s., and only of late reduced to half that amount," says one of the papers just named, "we cannot feel much surprised at the forcible representations which from time to time have appeared in our columns, relative to the extravagance of the company's demands." As to quality the contractor is to be liable to fines on proved impurities of the gas, and as to quantity he will have an interest in giving a good supply. The only remark we are inclined at present to make on the preceding list is, that if gas contractors themselves differ so immensely in their estimate of the cost of gas, while the very man who knows most about the proper local cost is one of the readiest to offer one of the lowest estimates of that cost (his own profit of course inclusive), what reliance ought we to place on the assurances of any one, generally speaking (without special reference to local circumstances), that the present demands and expectations of the public at large are unreasonable, even though the assurer should happen to be a gas contractor or gas engineer, or to have other pretensions, as an authority, however practical?—The late Rev. Dr. Penrose, formerly fellow of New College, Oxford, is said to have bequeathed his collection of pictures and works on the fine arts, to the Oxford University galleries, and to the library of Sir Robert Taylor's Institution.—At Gloucester it is in contemplation to erect a new monument in commemoration of Bishop Hooper, in place of the old and insignificant one now standing in St. Mary's-square.—A Gothic monument has been erected in the Abbey Church, at Bath, to the memory of the late Mrs. S. Warner, who left 35,000l. three per cent. consols. upon trust, to provide annuities of 25l. each for poor widows reduced by misfortune.—The Swansea Docks are to be immediately proceeded with, so soon as tenders from several contractors are sent in. The subscription of the Marquis of Worcester as a shareholder is said to be now 10,000l.—Gas-works are shortly to be erected at the township of Droyleden, Ashton-under-Lyne.—Mr. Joseph Adshead's map of Manchester township, says the local *Spectator*, is on so large a scale, that every house and cottage in the township may be said to have its "local habi-

tation" distinctly marked upon its enormous canvass surface, and a higglety-pigglety mass of brick and mortar it assuredly is, hardly one street of note as a through thoroughfare being found to run from either of the four cardinal points to the other, or parallel to any other street of similar importance. Besides the list of principal streets, Mr. Adshead intends to add the populations of the entire townships of Manchester and Salford forming the two boroughs, both in 1841 and 1851, as soon as the census is completed, so that the decennial progress of the population of the manufacturing capital will be made known to the visitors to the World's Industrial Exhibition, as the map will be sent to London.—A plan for new butchers' shambles, at Barnsley, has been furnished to the committee of that undertaking, by Mr. Billington, of Wakefield, architect.—Strenuous endeavours are now being made at Bradford to have the parish church rebuilt.—A new workhouse is about to be erected at Wakefield.—Messrs. Rae and Franks, of Hartlepool, have contracted to build a chapel in Dover-street there for the Wesleyan Methodist Reformers. The Primitive Methodists have purchased a site in Dock-street. In both these cases the Dock Company have returned one-half of the price of the ground to the purchasers.—The *Gateshead Observer* notices the opening of a new church at Shincliffe.—A tank is being formed at the Newcastle and Gateshead Union Gaslight Company's station, Forth Banks, for the erection of a large gasholder, capable of stowing about 360,000 cubic feet of gas. The tank, when finished, will be 102 feet diameter, 26 feet deep. The gasholder will be on the telescope principle, of 100 feet diameter, and 50 feet high, supported by eleven cast iron columns. From the gasholder a large main will communicate with the heart of the town, so as to leave an abundant supply of gas at all seasons of the year. Mr. Richard Cail is the contractor, and the work will be completed in time to be available for next winter's consumption.—The sculptured figure in Burns's Mausoleum at Dumfries is now being protected by shields of glass within the gate and other openings, so as to exclude the influence of the elements from the soft marble.—Plans have been prepared at Glasgow by Mr. C. Wilson for buildings about to be constructed at the back of the Royal Bank fronting Buchanan-street. The design is a combination of the Greek and Italian styles.—A new park at the west end of Glasgow is projected, to which a committee of the town council has recommended that body to contribute 10,000l.—Workmen are now engaged in placing a public clock with three dials in the spire of the Assembly Hall, Edinburgh.—Plans have been prepared of a tower to be placed on Greenside Church at Edinburgh, at a probable cost of about 950l. The council have to give their authority to proceed with it.—We would direct attention to an advertisement for designs for the *Bristol Athenæum*, the terms of which show a liberal and proper spirit on the part of the committee.

LAW MANAGEMENT OF BUILDING QUESTIONS.

At a moment when the terrible evils and corruptions of the law in the hands of its professors in this country have come to such a pass, that the public more exposed to its pillaging chicaneries,—that is, the trading and commercial public in general,—find it beyond all further endurance, and are now taking strenuous measures for the obviation of these mischiefs by the substitution of commercial tribunals to which every man of common sense and right feeling will most thankfully resort in all differences and disputes,—it is a hard case certainly that this incubus is to be mounted on the metropolitan building trades in the shape of law judges and attorneys for the discussion and settlement (or else not) of the many questions involved in the technical details and pursuits of their own peculiar arts and businesses. The longer we reflect on this subject the more necessary it seems to become to resist this meditated

injustice in the name of justice, and the more so since we see that calculating members of "the profession"—which really appears to have peculiar pretensions to so absorbing and omnivorous a title—already have their eye on the new prey that is in preparation for them in the carcass of the Buildings' Bill which we last week dissected. Not even satisfied that the judge should be a lawyer, and that none but barristers and attorneys should be entitled to conduct and plead the cause of builders or others subject to the rule of this builders' court, the *Legal Observer* thinks that "it seems but consistent and reasonable that the clerk and the deputy-clerk should be attorneys also." Surely it is but reasonable that "the profession," if they are to have the building trades as their lawful prey, should be entitled to pick even the bones. That our own professions and trades will thus indeed become a prey, who can doubt who knows anything of the practice of the law,—who can doubt who knows anything of what the honourable members of the profession themselves admit and deplore? "Our system of law," says the attorney-general himself, Sir John Romilly, "is technical, invented for the creation of costs, and not for the due administration of justice." Yes, and an antidote, even, for the bane is pointed out by another eminent and honourable person, namely, Lord Overstone, who recently remarked to the author of an able tract on "Tribunals of Commerce," Mr. Francis Lyne, whose *exposé* we commend to the perusal of all amongst our own professions and trades who wish to know a little more on this interesting subject,—that "any plan of a practicable character, by which the administration of the law may be rendered more prompt, certain, and less costly, or by which reasonable arbitration may be established for legal redress, would be a great benefit to the trading and commercial world," and that his lordship "sincerely wished success to every effort which might have this object in view." It is not exactly commercial tribunals we are treating of at present, but after such implied as well as expressed opinions, how can we be otherwise than most jealous of such provisions, in our new Buildings Bill, as will place us at the mercy of the technicalities, quibbles, and delays, of a law court.

PROPOSED NEW YORK OPERA HOUSE.

It is proposed to erect an opera house in New York to seat 4,000 persons. It will be bounded by four wide streets and have a front of 197 feet by an average depth of 217 feet.

The first tier of boxes and the parquet are entered on a level with the street. Viewed from the parquet, the house presents four other tiers of boxes, the front of each retreating behind the one immediately below it, each having its open balcony.

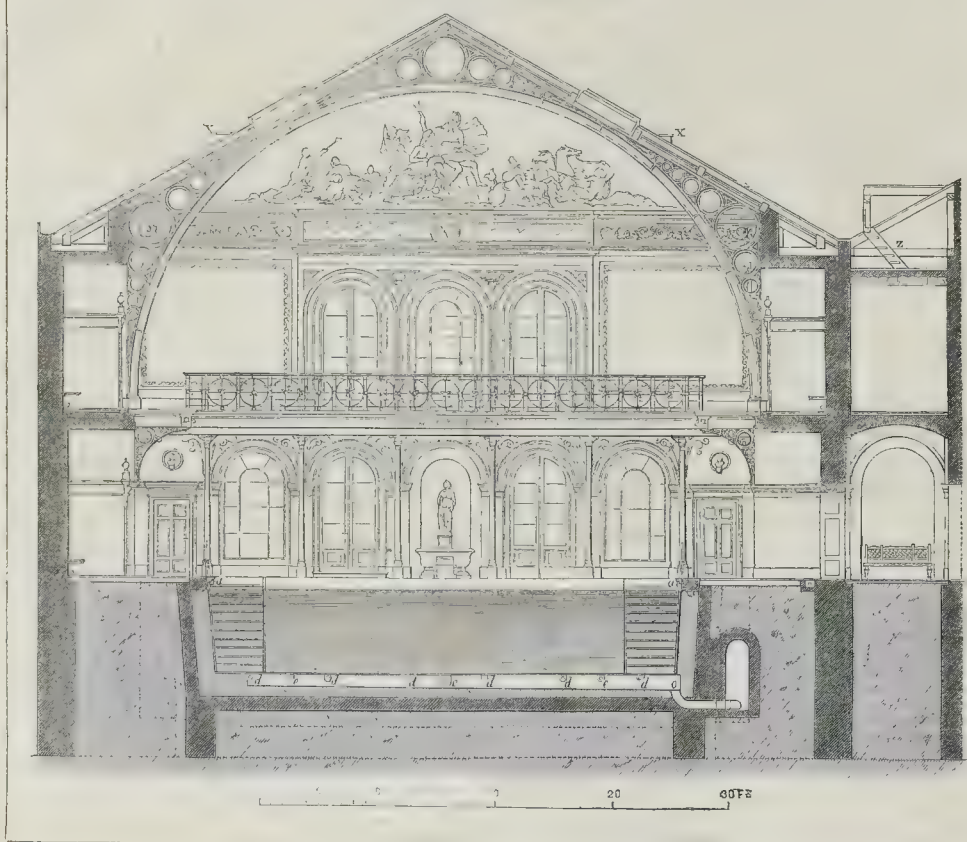
A system of ventilating, with warm air in winter, and with air artificially cooled to any required temperature in summer, forms a part of the design. It is designed with double-cased windows and extra doors to exclude entirely the external sultry air of summer, to exhaust continually the foul air, and to supply in its place an adequate quantity of pure air artificially cooled.

It is proposed, by the use of iron for the stairways and in other parts of the building for which it may be available, and by coating all the stage frame-work with a recently discovered incombustible paint, to render the whole structure nearly fire-proof.

The cost of the land and the estimated cost of the building, furnished for use, are between 250,000 and 300,000 dollars. Of this the projector is to furnish one-half, and hopes to raise the remainder by leasing 250 seats for 99 years for 500 dollars each.

THE SLATE TRADE.—A considerable increase has taken place in the export of slates from the quarries in North Wales—a circumstance justly attributed to the removal of the brick duty causing an impetus to the erection of houses.

THE DIANA BATHS, VIENNA.



THE DIANA BATHS, VIENNA.

WE complete our illustration of the Diana Baths, at Vienna, by adding, according to promise, a section of the swimming bath: *a* shows steps down into the bath; *d* and *e* the supply and emission pipes; *X* means of ventilation in the roof; and *Z* a way out to them from the upper part of the building.

THE PORTAL OF THE CLOISTERS AT CHEMNITZ.

THE portal of the old cloisters at Chemnitz, represented by the accompanying engraving, is a curious architectural vagary, executed at a period when Gothic architecture was running wild, 1530. It represents in stone an ingenious arrangement of stems and branches of trees made to adorn the doorway, and to form a series of niches, in which are placed figures of the Creator, the Virgin Mary, &c.*

SCOTTISH ARCHITECTURAL INSTITUTE.—A meeting of the Architectural Institute of Scotland was held, on the 13th, in the Trades' Hall, Glasgow.—Mr. C. Wilson, in the chair. A paper by Mr. Robert Ritchie, on the ventilation and warming of buildings and heating of baths as practised by the ancients, was read to the meeting.—At the close the Chairman made a few remarks, stating that the obstacles to the progress of architecture were principally the want of a regular course of study, the slavish fear of departing from ancient standards, the want of appreciation on the part of the public, and of unity among the architects themselves.

* We have taken the materials for our illustration from *Die Baukunst des Deutschen Mittelalters*.

EXHIBITION BY THE GOVERNMENT SCHOOLS OF DESIGN.

SOME of the works of the students of the Head School, Somerset House, and of the Branch Schools throughout the kingdom, executed during the past year, are now being exhibited, free, to the public, in Marlborough House, Pall-mall, and deserve a visit. The system of Schools of Design under Government superintendence comprises the Head Schools in Somerset House, containing 480 students, and eighteen branch schools—in Spitalfields, Manchester, Birmingham, Coventry, Nottingham, Norwich, Sheffield, Stoke, Hanley, Leeds, York, Huddersfield, Newcastle, Glasgow, Paisley, Dublin, Belfast, and Cork—containing 3,000 students: total, 3,480.

The extent of the exhibition is very considerable. It appears that the

Number of specimens of drawing, painting, and modelling sent from the 18 branch schools for inspection was.....	2,183
Of which the number exhibited is.....	1,008
The number sent from the Head School for inspection was.....	7,571
Of which the number exhibited is.....	2,234
From the 18 branch schools the number of elementary designs exhibited is.....	26
The number of applied designs (of which 104 are from Spitalfields).....	214
From the Head School the number of elementary designs is.....	81
And of applied designs.....	427

Together, these form an interesting exhibition. The rooms devoted to the Head School show a considerable advance, and prove that the masters, and the mistress of the female school, have laboured efficiently. The manufacturers, it seems too, are now availing themselves of the services of the students, and may

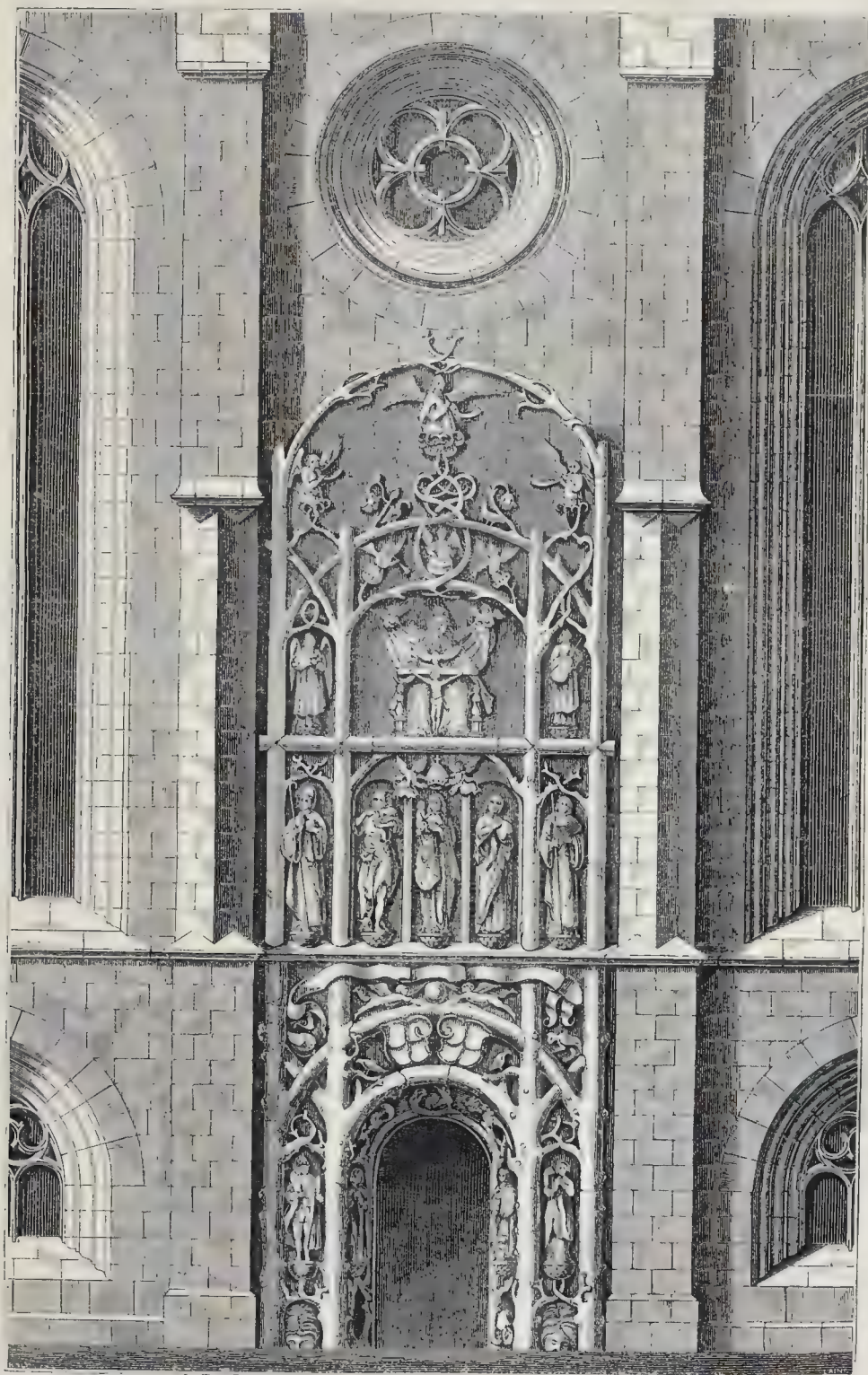
do so to a much larger extent: several of the pupils are evidently in a condition to be of service to any who might call upon them. The designs for lace are exceedingly good, and are being executed at Honiton. Some of the designs for paperhangings, table-covers, druggets, and carpets, will be found creditable. In flower-painting the students have made considerable advance. Room B, devoted to the class of architectural ornament, shows some satisfactory drawings from the round.

Amongst the specimens which appear meritorious, we may mention, in Room C, flowers in oil (107) and a design for ornamental panel (133), by J. Green; group in tempera (109), by W. Hanks; design for a tablecloth (113), by J. Rawlings. In Room D, printed drugget (53), by T. Munday; damask line tablecloth (113), by C. P. Slocombe; lace robe (1), by J. S. Cuthbert; designs for paper diapers (140), by E. Ireland; lace, by Dresser; lock-furniture, by Wills. In room A, some good modelling by J. Adams, J. Kyd, Whitaker, and others. The Female School exhibits some promising works, and we would offer especial praise to Mary Verral, Florence Collins, Annie Carey, Louisa Gann, Eliza Mills, and Susan Ashworth.

Tea-urns disguised to look like merely ornamental vases (the hot water running through a convoluted, which is turned out of the way when not wanted), and altar-clothes presenting mediæval letters amidst unconventionalised flowers, are to be avoided.*

* We have received complaints as to the omission on the labels of the age of the designer, and of the length of time spent in the school; also as to the placing of some of the models, but we are not in a position to enter into the question.

PORTAL OF CLOISTERS AT CHEMNITZ [A.D. 1530].



FOREIGN ARCHITECTURAL
INTELLIGENCE, &c.

The Musée des Thermes.—Hôtel de Cluny at Paris.—The Museum of the Thermæ, the finest relic of the Romans in the French capital, has been of late increased by the addition of a new hall, and decorated with tapestries, which, as well by their spirited composition as by their rich colouring, range amongst the best of this sort of art-works. They are ten in number, of which six are of larger, and four of lesser size: still, even these are too large for the halls of even our largest palaces. They represent scenes of the life of King David, costumed in the fashions of the time of Louis XII. Some think that they conceal some allegory, and that David represents Henry VIII., Bathsheba Anna Boleyn, &c. The name of the artist, according to whose designs these tapestries were woven at Arras in the beginning of the sixteenth century, is not yet properly ascertained. They were made for one of the family of the Spinolas at Genoa, and had remained for many years rolled up on the floor of some stores, until they were purchased by M. de Sommerand for the French Government. The new hall has been erected on the exact space occupied by one in the Roman times, which, however, exhibited a complete state of ruin, as three of its walls were broken down, and only the fourth had remained in a state of comparative preservation. It is through this wall that the hall has been lighted by a semicircular aperture. On this portion of the building but a very slight coat of mortar has been put, and the whole antique character preserved. The large opening has been converted into a balcony, whence the public now view the tapestry on the upper part of its walls. It is arrived at by an antique staircase, carved in oak, and exhibiting the arms and chiffre of Henry IV. It has been brought hither from the Palais de Justice, where novel arrangements had displaced it. This forms now the principal passage from the Thermæ, and the ground-floor of the Hôtel, to the first floor. Thus the building of the Renaissance is brought into immediate contact with the structures of the Roman epoch. The building of the new hall has been undertaken by the architect M. Albert Lenoir, who had its floor covered by an ornamental paving of bricks, the design of which has been made by M. Violet Leduc, after some antique pattern. As the spaces of the Hôtel de Cluny enlarge, M. de Sommerand will exhibit other specimens of mediæval tapestry, of which he possesses, probably, the largest collection in existence.

Mr. Stephenson's Swiss Railway System developed.—The federal Government are actively engaged in the carrying out of a complete system of railroads, for connecting the different cantons and towns of the republic. The following is an outline of the report, which the department of public works will lay before the federal assembly. It proposes the building of the following lines:—

1. A line connecting Basle and the Rhenish railroads, which extends to the great basins of the Aar and its confluent. This line will afford a great outlet for home industry to Germany and adjacent countries.

2. A great central line to follow the broad valley of the Aar in all its extent, from the lakes of the Jura to the embouchures of the Reuss and the Limat. It will then follow the course of the latter stream so far as Zurich, and extend from Zurich on one side to the Lake of Constance, and on the other from Solothurn to the Lake of Geneva; forming one great transit-line across the whole Swiss territory from N.E. to S.W.

3. A union of this E.W. line with Lucerne for connecting it with the passage of the Gothard, as, on the other side, the basin of the Lake of Zurich connects it with the Splügen and the other passes into the canton of Graubünden.

4. A southern transit line from the banks of the Lake of Constance through the large valley of the Upper Rhine as far as the centre of Graubünden, whence it may be extended hereafter across the Alps in co-operation with foreign countries. From Constance there will

be a branch line toward the lakes of Zurich and Wallenstadt.

5. A line connecting Berne, the head quarters of Government, with the main line.

6. A certain number of secondary lines for connecting the principal central towns, which lie away from the main branches of the rails, such as Thun, Winterthur, Schaffhausen, &c. This vast net of roads extends altogether to the considerable length of 650 kilomètres, and the approximate estimate of cost is 102,120,000 francs. The execution of the works will be carried on under the superintendence of the officers belonging to the federal Government, and the costs divided thus:—one-half will be defrayed by the Government, and the other by the Cantons through which a certain portion of the road passes.

Commission des Monuments, Paris.—By the efforts of this body an interesting antique monument, the Roman triumphal arch at *Saintes*, has been reconstructed. This building was erected A.U. 774. A bridge had been constructed subsequently over the arch, and hid it from public sight up to the middle of the arcades. As the bridge was to be demolished on account of its ruinous state, the solidity of the arch became endangered. It was therefore taken to pieces and re-erected a few metres behind its present position. This work is completed now, and the ornamentation on both sides of the arch is in progress, comprising the fluted Corinthian pilasters with their entablatures, which serve as imposts to the cases of the two doors, the archivolt of the arcades, &c. Above the arcades is an entablature, whose four angles will be adorned with statues on small fluted columns, placed on the angles of the building and on the imposts of the two arches. These columns will project by two-thirds of their diameter, and will be surmounted by a Corinthian cornice ornamented by mouldings. The cornice and the frieze will be without consoles, and the same will be the cornice of the attic. The ornaments of both sides of the arch will not be of the same character. On the side of the *Faubourg des Dames* there will be two Corinthian columns placed on pedestals, and pilasters of the same order on the pier of the centre, and cornices with mouldings. On each side the frieze of the entablature will be occupied by an inscription, and there will be one on the attic. These three ancient inscriptions, which have suffered much by time, will be restored to their original bearing—at least, so far as the archaeologists agree on their meaning.

STAINED GLASS.

In an article on the embellishment of Hereford Cathedral by memorial windows of stained glass, the *Hereford Times* says:—"The forms now proposed for the Bailey testimonials are,—firstly, the filling of the great west window with stained glass, suggested by us a fortnight ago as necessary to complete the restored nave; and, secondly, the completion of the choir, by the erection of a splendid altar redos, and the filling in of the two side windows at the eastern end with stained glass. Between propositions both so desirable, the committee will probably find it difficult to decide. For our own part we shall rejoice to see either carried into effect. Mr. Cottingham estimates that, for a sum not exceeding 600l. he can erect an altar redos as a screen across the Norman arch at the east end of the choir, and fill in with stained glass the two eastern side windows, the centre window being already fitted. The whole cost will thus not exceed the sum which the Bailey testimonial committee have to expend. For the Merewether memorial, Mr. Cottingham's design is to fill the five beautiful lancet windows of the east end of the Lady's Chapel with the richest painted glass of the style of the thirteenth century. The glass is in hand: all the designs and cartoons are finished; and it is expected that the glass will be all in its place in the window in the course of the present year."—Mr. George Rogers has at length been selected to prepare the Adelaide memorial

window at Worcester. The precise piece of work to be done has not yet been decided on.—St. Mary's Church, Stafford, has been embellished with stained glass as a memorial to the late Earl Talbot, lord-lieutenant of the county. The subscription amounted to nearly 800l. The stained glass work for the west window was done by Gerante, of Paris, and comprises the chief miracles by our Lord. The ten clerestory windows of the nave, the middle ones on each side, bear the arms and motto of the late Earl, and are the work of Wailes, of Newcastle.—A stained glass memorial window has been put up in St. John's Church, Dewsbury Moor, by Mr. Francis Barnett, of York. The artist has not regarded the architectural style of the church itself, but has introduced a window of the decorated period. The central compartment contains the crucifixion, and others the Virgin Mary, St. John, St. Paul, &c. The whole is a gift by a lady whose name is unknown.

ENGINEERING AND ARCHITECTURAL
WORKS IN IRELAND.

BETWEEN Jonesborough and Newry (on the Dublin and Belfast Junction Railway), a distance of six miles and a half, 100,000 cubic yards of earth, and 88,000 cubic yards of rock, have been removed, and about 50,000 remain still to be done. The large embankment at the Monaghan road is more than two-thirds done: about 90,000 cubic yards still remain to be completed: one mile and a half is already finished, and three miles are ready for ballast. All the bridges are executed except that under the Dublin and Belfast turnpike-road, and three others are nearly finished. The culverts on this division are all complete. Two of the piers of the Craigmore viaduct are built up to the impost level, and two more nearly so: the centres are being erected, and the arch sheeting has been commenced.

The Poor-Law Commissioners have determined upon erecting a new workhouse at Ballymahon, according to the drawings prepared by their architect, Mr. Wilkinson, who has issued advertisements for tenders to execute the works.

An extensive model district agricultural school is erecting at Mount Trenchard, and the execution of the works has been contracted for by Mr. Burgess, of Limerick. The drawings were prepared by the architect to the Commissioners of National Education.

The directors of the Waterford and Kilkenny Railway are pressing on the completion of the line. The contract for the portion from Knockwilliam has been disposed of to the Messrs. Elliott and Haslitt, of Leeds, and the works are progressing, the contractors being bound to have them complete in six months.

The contractors for the building of military chapel schools in Cork, Limerick, Clonmel, Kilkenny, and Belfast, (lately described in *THE BUILDER*.) have been declared, and preparations are being made for the immediate completion of the works. The contract for that at Limerick has been given to Mr. Higgins, and the erection is to cost 1,400l.

A church is to be built in the parish of Doon, Limerick, and considerable contributions have been received towards defraying the expenses.

The works on the Portadown and Dunganon Railway will soon be in progress. Mr. Wm. Dargan intends taking the line into his own hands.

A new Presbyterian church is to be erected at Queenstown, Cork.

The contract for the erection of a new workhouse at Glyn, county Limerick, has been given to Mr. Paterson, of Dublin. Ten acres of ground have been purchased for a site, and the building will be executed from the drawings of the Poor-Law Commissioners' architect.

The Dublin and Drogheda Railway Company intend erecting a permanent station at Malahide, and tenders have been received for the execution of the works according to plans, &c., by Mr. George Papworth, architect.

The total number of persons employed in the drainage districts, in charge of Mr. Frederick Barry, C.E., for first week in March, amounted to 860 daily.

The new buildings in the College of Maynooth comprise 215 rooms for students, together with an extensive library: seven lecture halls, a kitchen, refectory, and other accommodation have been added.

HOPE FOR THE FUTURE.

A MOVING STORY.

THE recent sudden departure of the Marble Arch from St. James's Park, and its miraculous reappearance in Hyde Park, is a phenomenon only equalled by what one sometimes witnesses at a Christmas pantomime, when the entire extinction and apparent extermination of a goblin at one corner of the stage is followed by his reappearance, sound, wind and limb, in another corner. After this occurrence, one seems never sure of any thing: who knows but that to-morrow morning we may get up and find that Whitehall and Whitechapel have changed places? or that the Duke of York's pillar may not have suddenly sunk into its mother earth, to emerge out of the bosom of the reservoir in Tottenham-court-road?

Now that the Commissioners of Woods have begun to play at marbles with our monuments, how are we to find our way about London if our landmarks are removed? We may now expect to become as familiar with the transfer of stones in the capital as we have hitherto been with the transfer of capital in the stocks.

Perhaps one day we may see in the *Morning Post* an announcement something like the following:—

FASHIONABLE MOVEMENTS.

Buckingham Palace, from Pimlico to Jericho.
National Gallery, from Trafalgar-square to Kensington, for the benefit of the air.

The Monument, from the bottom of Fish-street-hill to the top of Primrose-hill.

The Duke's Statue, from the roof of the lodge in the Green Park to a place of its own in the same locality.

Middle-row, Holborn, from its present seat to a little farther eastward, where it will be usefully employed in filling up the Valley of the Fleet.

The Great Cucumber Frame, from Hyde Park to Battersea Fields, for the promotion of the growth of brocoli sprouts and the encouragement of early peas.—Your's in despair,

WHAT NEXT?

SECURITY FOR INVENTIONS IN THE GREAT EXHIBITION.

IN the present state of the patent laws no model of an invention, unless patented before being forwarded to the Great Exhibition, is safe from piracy. I will give a case:—An inventor too poor to obtain a patent on the offspring of his skill, but nevertheless anxious for public praise,—space having been awarded him—deposits his invention in the Great Exhibition; say, for instance, a battery for the separation of metals. Another man has applied for, and obtained the great seal, for a battery for similar purposes: he has six months to complete his specification. What then? He can, by paying the amount of entrance, see the battery of the poor man in operation, go home, and, including the improvement on his own he may there witness, in his specification, be in a position not only to prevent the exhibitor from obtaining a patent, but to commence an action at law if he even try to sell this offspring of his imagination and toil.

I would suggest, for the security of inventions forwarded to the Exhibition, that a short Act be immediately passed, enacting that all patents at present in progress shall be fully specified before the 1st of May, or be considered null and void; and that all inventions forwarded to the Exhibition be considered secured until the termination of the said Exhibition. Any party pirating any such inventions to be amenable under the Registration Act.

I would suggest to the executive committee whether it would not be advisable to reward poor exhibitors of new and ingenious inventions, by a patent free of all costs.

I would also suggest the following ideas for embodiment in the new patent laws:—

That the first step for an inventor, in procuring a patent, be the completing of his specification.

That the expense incurred in lodging the specification be merely nominal.

That a committee of investigation, composed of scientific men, be appointed by Government to examine the specifications and models of inventions, and to decide on the propriety of a patent.

That such specification, accompanied with a model, be lodged with the committee by the patent agent immediately on the inventor perfecting his invention, and that when the Great Seal has been obtained, no further specification be allowed.

That the expense incurred in procuring the Great Seal (say 100*l.*) secure to the patentee, the fullest protection for England, Scotland, Wales, Ireland, and the colonies.

That an alphabetized descriptive list of all patents be kept at the office, the same to be seen on payment of a small fee.

That a model of every invention be kept in a museum, appropriated to that purpose, with a number affixed, such number to correspond with the number of the patent. The entrance fee to be merely nominal.

That all inventions shall be considered as new, and therefore worthy of a patent, without infringement upon an old one, after a period of, say twenty years.

That a superior court of examiners, also composed of scientific men, be appointed to decide (at a fixed charge) upon the validity of doubtful patents, the assertions of the parties interested being forwarded in writing, or being defended by the patent agent employed by them in drawing up the specifications.

WILLIAM M. ROBERTSON.

VENETIAN GOTHIC.

IT was rather bold in "J. T. W." to apply the epithet "beautiful" to what, so far from deserving it, seems to me quite unworthy of it,—at least if we may judge by the drawing given of it. I allude, of course, to the *Palazzo dei Pergoli Intagliati*, which, whatever merit it may possess in comparison with other specimens "of the Gothic architecture peculiar to Venice," must appear to the eyes of Englishmen shockingly bad Gothic, and to those of architects a decidedly bad composition. It would, therefore, have been more discreet to have called it a "characteristic" specimen, instead of a "beautiful" one. We might also have been informed whether we are to understand that the whole of the front is coeval with the Ca d'Oro, for the ground-floor windows look precisely like those of an ordinary house, except that they are remarkably small, being scarcely at all higher than the balcony above them.* If we take the balconies as a scale, the columns and all the rest must be diminutive, unless the balconies themselves are so preposterously large and high that they must seem to encumber the front, and produce a certain appearance of clumsiness. A good deal of clumsiness and coarseness there is, too, in other respects,—at any rate seems to be,—together with no little poverty and meanness also in some of the details.

Hardly is the cause of good taste promoted by indiscriminate praise, or by claiming admiration in the lump, even though defects should preponderate over merits. What is so spoken of is apt to mislead quite as much as to instruct. In their "Examples of Architectural Art," Messrs. Waring and Macquoid say of Palazzo Manzoni (an edifice most strangely omitted by Cicognora, in his "Fabbriche di Venezia," although many subjects of far less merit are there to be found)—"this palace is a favourable specimen of its period (about 1500), showing the good and bad points very distinctly;"—a candid and praiseworthy remark, that may perhaps prevent some of its worse points being mistaken for beauties, and blindly copied in some Pall-mall club-house.

Apropos to club-house architecture, Mr. Ruskin is so far from being an admirer of what we have done in that way, that in his "Stones of Venice," he condemns it as "feeble cox-

comby!" So far, too, is he from being at all propitiated by our Pall-mall plagiarisms and copyings from Sansovino, that he condemns both Sansovino himself, and Palladio also, as notorious offenders; and he likewise goes so far in his antipathies as to talk of "the pestilent art of the Renaissance! Pestilent!!!!!! it is enough to make one's hair stand on end with horror, each particular hair assuming the attitude of "a note of admiration." It will be well for Ruskin, if his "Stones of Venice" be not universally declared by architects to be a most pestilent book; for, however widely they may differ from each other in their tastes and opinions, "they are likely to agree very cordially upon that point." I should not be surprised should these same Stones of Venice tumble down upon Mr. Ruskin's head, or else should be stoned to death with them, in return for flinging with them at so many respectable persons and prejudices. ZETA.

BOWOOD PARK, WILTS.

A CORRESPONDENT informs us that various improvements are in progress at Bowood Park, the seat of Lord Lansdowne. For some years past there has been an intention of forming another approach to the mansion from the new lodge on the road from Chippenham to Devizes, built by Mr. Barry, and known by the name of the "Golden Gates," but the many difficulties with which an alteration to effect an embellishment has had to contend have led to the abandonment of various plans. The approach now in course of operation avoids the rising ground, taking a gradual sweep round its base, and leading more directly in front of the building, which it will now approach by a broad and straight road at right angles with the mansion. A platform, inclosed by a perforated stone balustrading with piers and pedestals, surmounted by the family crest, and ornamental iron gates, form the entrances into the platform in front of the principal entrance portico.

A garden on the south-west side of the mansion is in progress: it incloses a space of 496 feet by 80 feet, in connection with the present flower garden, and will form a lower garden with upper and lower terraces. The central turf walk from the side portico terminates with a pedestal and reclining statue, having a fountain at the base, and on either side semi-circular stairs. At the summit is a terrace, with at one termination a pavilion, from which is a fine view of the garden, park, and house.

Mr. George Kennedy is the architect, and Messrs. Strong, of Box, are the contractors.

OUR ROADS AND THOSE WHO MANAGE THEM.

ALLOW an old correspondent and friend of your paper space for a few remarks on subjects which have already engaged the attention of some of your friends, viz.:—THE LONDON STREETS.

Your correspondent, "A District Surveyor" (see *ante*, p. 157), has properly complained of the disgraceful state of the macadamized and paved streets of London. It is not only lamentable to ride over some of them, but really dangerous; for the numerous inequalities of surface and holes endanger axles, springs, and wheels of carriages, as well as the knees of horses, and the limbs and lives of riders. Yet several Acts of Parliament have been made to regulate and provide for the efficient pavement of the metropolis. Every housekeeper is also taxed, and that in many instances very heavily, to pay paving rates; yet thousands of these payers never ride either in a carriage or on a horse, and consequently cannot use or injure the roads they pay for. There must be some radical defect either in the laws or in their administration. The bulky and really important Act, called Michael Angelo Taylor's, was intended and calculated to make "all our ways" sound and lasting; but, alas, its provisions are too much evaded, and its principles rarely carried into effect.

A Bill is now before Parliament to regulate and provide good roads and foot pavements within the parish of St. Pancras,

* These are near the water.

where there are no less than seventeen paving boards, formed by as many Acts of Parliament. This subdivision of trusts and management—the heterogeneous mixture of so many persons as belong to these boards, all affecting knowledge, and many of them over officious in council and dictatorship, occasions perpetual conflicts of opinion and diversity in the execution of works. Hence one street, belonging to two or three estates,* may be seen paved or macadamized in as many different ways, i.e. paved with 6-inch or 9-inch granite, with pebbles and old stones, and formed in the macadamized manner. An examination of the streets of this parish shows that they are, and have been, not only improvidently, but unskillfully, formed, made, and repaired. The surface, in many of them, is full of inequalities, deep holes, and ridges, whereby a person may as well ride or drive over a newly ploughed field. It seems as if there was a conspiracy between the surveyors and coachmakers. The variety and amount of rates levied on every household of this parish are subjects of frequent remonstrance and vexation. They vary from eightpence to eighteenpence, and even three shillings, in the pound, on the rack-rent of every house. It must be apparent that a bad system prevails in all these boards; whilst their original formation was founded on unsound principles. Each is encumbered and taxed with a clerk, collector, and surveyor, whilst some have to pay a gardener also; likewise for an office with commissioners' rooms, &c. The majority of the inhabitants of St. Pancras parish, have long and repeatedly complained of their grievances, and have made efforts to remove them. The Bill now before Parliament is intended to amalgamate the trusts, and place them under one set of commissioners, with a greatly reduced staff of officers, and the adoption of an uniform and effective system of road-making and repair, over the whole area. If this be effected, and the management be honest and good, the rates may be reduced from two-thirds to half of their present amount.

It is to be regretted that the present intended reform is sought by the parish vestry—a board which has obtained no small notoriety in the parochial annals of London for its mismanagement of the trusts reposed in it. Constituted under the authority of Sir John Hobhouse's Act, its members have mostly been persons of small property, and their ambition has been to obtain patronage and influence for personal advantages. For some years past they have succeeded in carrying the election of their partisans and clique by unwearied perseverance and intemperate and personal vituperation and abuse of the more respectable part of their board. Hence many of the wealthy and honourable inhabitants have declined to attend the meetings, if elected, or have refused to be put in nomination. To such men, and under such a government, it is hoped that no new power will be intrusted; but if an act can be obtained to place the whole district under one efficient board, much good may be effected. Having lived in and paid rates in the parish for more than forty years, and having been a vestryman, a commissioner of paving, and a surveyor, I speak from long experience, and from an intimate acquaintance with persons, localities, and the continued mismanagement of the whole district. CORRESPONDENT.

GUIDANCE OF BALLOONS.—It is alleged that the inventor of the fish-shaped balloon exhibited some time since at the Hippodrome, Paris, has succeeded in forming a new balloon that has made way from one end of the Hippodrome to the other against the wind. It is provided with fins or wings, and tail rudder, and is worked by clock-work apparatus beneath. The inventor is a poor workman who has suffered frightful misery during the last ten years by his enthusiastic devotion to the subject of balloon-guidance.

* The numerous experiments, alterations, and extravagant expenses of Oxford-street, serve to show the expediency of making some sweeping change in the management of that great thoroughfare. The householders are heavily taxed, whilst every carriage that is driven over its surface is endangered, and its occupants are constantly in risk of limb and life.

BOLTON MARKET COMPETITION.

As the readiest mode of affording information on this subject to some who have asked for it, we give the material portion of the report of the architect to whom the designs were referred:—

"The designs are numbered from 1 to 25 inclusive: two of these arrived after the date fixed for receiving the drawings. Several of the designs are worked out with great care, and show a devotion of time and thought to the matter, which entitles the authors of them to the thanks of the committee.

The five designs that I have selected for your consideration are—

- No. 3, marked "*Non quo sed quomodo.*"
- No. 5, "*Deo non Fortuna.*"
- No. 7, "*Quod petis hic est.*"
- No. 12, "*Haut et bon,*" and
- No. 15, "*Non sine spe.*"

As you requested me to specify, in making my report, some of the distinctive features of the designs recommended, and to state how far, in my judgment, the estimates of cost may be relied on for securing the execution of the designs to which they refer, I add the following observations.

No. 3 is an excellent design, presenting a frontispiece of Corinthian columns at the principal entrance, in Knowlesy-street, and a good architectural elevation (of brick and stone) on all sides. The plan is nearly a parallelogram (it should be quite so, I think), and is divided into seven aisles by iron columns and arches. The roofs are of iron and wood. The central aisle, both longitudinally and transversely, is made higher than the others, and has a ventilating turret at the intersection. Vaults are formed below the whole area, the lighting and ventilation of which are assisted by a shaft and ornamental staircase (down) in the centre of the market floor. Butcheries are provided. [The committee will probably consider further before they decide on forming abattoirs under the market.]

The architect's estimate is.....	£18,000
Less value of old material.....	2,000
	£16,000
Heating apparatus	500

£16,500

The area covered by the market-house is about 650 squares.

No. 5 is a parallelogram in plan, divided into five aisles by iron columns, carrying either wood or iron roofs: the centre division is more lofty than the others. The entrances are sufficient in number. The building is proposed to be wholly of stone externally, and the elevations, although plain, are appropriate. No feature is made of the fish-market, which consists simply of a series of disconnected shops fronting the street.

The architect states that the whole may be executed for the sum named in the instructions, with the exception of the dwellings in Knowlesy-street.

The area covered by the market-house is about 670 squares.

No. 7 has been placed amongst the five selected, as the type of a class of designs, whereof several have been submitted, founded on the building for the Great Exhibition in Hyde-park. The structure above the cellarage is wholly of glass, iron, and wood. The four fronts have shops accessible from a continuous covered gallery. The interior is divided into seven aisles by columns and girders carrying a "ridge and furrow" roof, wholly of glass. It will be for the committee to consider if the amount of light and heat entailed by this mode of construction be advisable for the purpose in view; also as to the cost of maintaining enclosures of the character in question.

The architect considers that the expense of the works would be within 17,000*l*.

The area covered is about 630 squares.

No. 12 provides for bringing the end of the market-house up to Bridge-street, but the author points out that the building would be limited to the site marked out by the committee, without injury to the design. It presents effective elevations (of brick with stone dressings) on all sides, and has a clock-tower next Knowlesy-street. The area is divided into five aisles by iron columns and arches: the centre aisle is seventy feet wide. The roofs are of iron, on the principle of that over the Lime-street station at Liverpool. The whole of the basement is vaulted. A position for abattoirs is pointed out, but their introduction not recommended. The fish-market forms a complete building; the shops being within the walls.

The area covered by the market-house is about 790 squares. No estimate of cost is given.

No. 15 includes six sets of designs, which show an intimate acquaintance on the part of their author with the site and requirements. The plan of the

market-house is a parallelogram. The entrances are numerous and well placed. Vaults are formed beneath the whole area. Plans are given for abattoirs, and, should these be omitted, for an inferior description of market for casual dealers in their place.

The area covered, by the ground-plan No. 18, to which the architect more particularly refers, is about 560 squares. The plan is divided into three spans by iron columns and arches. The roofs are of iron. The elevations are less satisfactory than the plans. The framed view may be regarded as the author's principal proposition in that respect. The building is proposed to be externally of stone. The fish-market is a complete building; the shops within the walls.

The cost (on plan No. 18) is estimated at 21,150*l*., including approaches.

In answer to the inquiry as to the correctness of the various estimates of cost submitted, I beg to state that I have, with some labour, looked into the question, and am disposed to think that the improvements and accommodation desired by the corporation cannot be properly provided for the sum named in the printed instructions.

Nos. 5 and 15 approximate most nearly to the views of the committee in this respect, and I am of opinion that the estimate given by the author of the latter will be found tolerably correct.

I must add, that the premiums were offered by advertisement "for the best designs," without allusion to cost; and that, although a certain sum is mentioned in the instructions, adherence to this is not made a stipulation, but is merely suggested as desirable.

I take the liberty of expressing a hope that a building will be raised worthy of your important town, and have the honour to subscribe myself, gentlemen, your very obedient servant,

GEO. GODWIN, Architect."

The Markets Committee of the corporation have since considered the matter, and have awarded the premium of 50*l*. to No. 3, found to be by Mr. G. T. Robinson, architect, Wolverhampton, and No. 15, found to be by Mr. Leigh Hall, architect, of Bolton.

DRAIN PIPES AND THEIR EVILS.

SIR,—Stoneware pipes should not be hastily adopted for trunk lines. If the bottom on which they are to be placed is sloppy, or a running sand, it is found impossible to lay them to a correct line: they will consequently be found to be irregular in their inclination, some being depressed by sinking into the soft soil, and others "cocking up." The pipes are frequently broken by the workmen employed in laying them, or in filling in the trench after they are in position. Sometimes a paving stone, or other hard substance, is shovelled in, inadvertently, with the earth, and fractures them. Stiff clay, or gravel, when filled in from a height of 12 or 15 feet, will cause the same damage. In spite of the most vigilant supervision, these breakages will frequently escape the attention of the superintendent. It will be easily understood that it is a troublesome and costly process, subsequently, to discover and rectify these defects.

As to the size of tubular drains, I am compelled, in opposition to modern views, to maintain that tubes of the dimensions at present laid down, are inefficient. It is well known that the best pipes which can be procured are defective, and scarcely ever form a perfect joint with each other. The smallest piece of wood, or other matter, lodging in this imperfect joint, forms an obstruction, and becomes the nucleus for accumulations which are constantly increasing. When the joints are cemented, the cement is frequently forced into the pipes, and, when set, offers an impediment which produces the effect already described. The accumulations, consisting of house sewage, road stuff, and various refuse, gradually indurate, and cannot be expelled by any flow of water. This is particularly the case in the Surrey and Kent districts, and especially in Bermondsey, where the sewage from the tank-yards, consisting of hair, lime, schumack, &c., adds infinitely to the mischief. The contents of the drains being penned back several hours every day, the various substances in suspension subside and consolidate, and form at length a compact deposit, which gradually chokes the mains, which no force of water can scour out, and which manual labour alone can remove.

When a complete stoppage occurs, it is impossible, by inspection, to ascertain at what particular point on the line the impediment exists: it is therefore necessary to sink trial holes at certain distances, to rip up the pipes, and probe with flexible rods, in order to discover the seat of obstruction. When these trials take place, or when the tubular drains are opened for the purpose of forming junctions for house drains or branches, they are uniformly found to be more or less choked, leading to the conclusion that in a short time they must necessarily be replaced by brick sewers of sufficient sectional area to allow them to be inspected, and to employ manual labour for the removal of the deposit.

MURATORE.

Books.

An Essay on the Origin and Development of Window Tracery in England. By E. A. FREEMAN, M.A., Author of the "History of Architecture," &c. Oxford and London: J. H. Parker. 1851.

SOME papers on window tracery, read before the Oxford Architectural Society by Mr. Freeman, during 1846 and 1848, have here grown into a goodly volume, and the ingenious and industrious author mentions the dates in his preface, to obviate any suspicion of rivalry with Mr. Sharpe's work on the same subject. It contains 356 examples in outline, simply showing the forms of the tracery; and the main endeavour of the book is to obtain a "systematic arrangement and nomenclature of the numerous divisions and subdivisions of Gothic tracery." In his main classification Mr. Freeman assumes the same four divisions which he took as the groundwork of the Gothic portion of his "History,"—viz., Lancel, Geometrical, Flowing, and Perpendicular.

As the writer says,—"Among all the beautiful and majestic features which are so conspicuous in the architecture of the middle ages, a rank inferior to none must be assigned to the varied and graceful forms of its window tracery. The window itself, in the prominent position which it holds in the most perfect forms of Gothic art, is a feature peculiar to that style of architecture. In the Grecian, and even the Italian style, the window can hardly be looked upon as any thing but an intruder; a necessary evil, which, on account of physical requirements, cannot be dispensed with, but which it is extremely difficult to bring into harmony with the rest of the building. Even in the best Italian churches,—for in secular erections the fault is hardly so conspicuous,—the windows are for the most part little better than eyesores. In Romanesque architecture, the windows enter far more into the general composition of the building, and are often highly ornamental features; but they are still comparatively small and unimportant, and are perhaps the last thing taken into account in judging of the merit of a design. It was reserved for the Gothic architect to assign to a portion of his building so physically indispensable, its fitting and natural place as the most important and characteristic feature of the exterior."

It follows that the traces of each successive change in Gothic architecture are deeply impressed upon the window, and there the main divisions of the style are most easily recognizable. But while this is the case, we agree with the author in saying that "no inquiry can well be one of greater difficulty than to unravel the different shapes which that tracery actually assumed."

Whether or not the study, beyond a certain point, is worth the pains to the practical architect, or is calculated to advance the art of architecture amongst us, may be a question.

Emblems of Saints; by which they are distinguished in Works of Art. By the Rev. F. C. HUSENBETH. London: Burns and Lambert. 1850.

THE ostensible object of Mr. Husenbeth's manual is to enable tourists and lovers of archaeology to identify the holy persons of past times represented in painting and sculpture. It is divided into two parts; the first giving

the name of the personage, and the date of his death, with the emblem with which he is found represented; and the second part giving the emblems alphabetically, with the names of those with whom they are usually associated.

The Commercial Aspect of the Great Exhibition in 1851. By Mr. W. FELKIN. Hall and Virtue, London.

THIS very able pamphlet of thirty pages should be circulated by those who desire to remove any doubts which may exist as to the goodness of the results of the Great Exhibition. The author of it, Mr. Felkin, is mayor of Nottingham.

In answer to those artisans who think that the profits which support retail trade are a needless tax laid upon themselves, he has the following paragraph:—

"The silk of China is woven in Coventry, and sold wholesale in New York; retailed amongst a thousand other articles in New Orleans; and consumed by a neighbouring planter's wife, as a ribbon attached to her dress. That American planter grows cotton wool, which is exported and woven into cloth in Manchester. This cloth finds its way into the interior of Bengal; and is retailed by a trader, who probably gives two seasons' credit upon the sale; and may be paid for it at last partly in produce, which will be sold for food in the English market ten thousand miles off. A halfpenny worth of meal from America, a halfpenny worth of coffee from Jamaica, a halfpenny worth of sugar from Brazil, are sold at the same humble counter, to the occupant of a neighbouring garret in Saint Giles's. A chandler's shop in the dirtiest, darkest thoroughfare of the outskirts of London or Limerick, cannot exist without supplies from every quarter of the globe. A respectable country grocer keeps six to seven hundred articles in his stock,—a country haberdasher, fourteen or fifteen hundred different kinds of goods,—a country ironmonger, four or five thousand distinct articles. These particulars may serve to show the often unthought of, but wonderful diversity of human wants and wishes; and the equally admirable arrangement for their supply. Each tool, implement, and article of food, clothing, and furniture, comes from a different set of hands to every other; and the selection, combination in stock, and disposal at suitable times and in the needful quantities, is the office and operation of retail trade."

Miscellanea.

ORDNANCE SURVEY OF SCOTLAND.—The slow progress of this national work is a subject of great dissatisfaction in Scotland at the very moment when the intermeddling of the Ordnance with the livelihoods and businesses of local surveyors in England might lead any rational being to suppose that they had already used up all such national employment, and were anxiously waiting for more. It appears from an article in the *Scotsman*, showing how "scandalously" the survey of Scotland has been neglected, that "at the present rate of progress, fifty years would be necessary for its accomplishment;" so that five times the present force might have the most rapacious of appetites for work more than satisfied. The subject has been under consideration in the Royal Society of Edinburgh. A committee of the latter, appointed for the special purpose, has issued a circular to the conveners of counties and magistrates of burghs, showing the necessity of prosecuting the survey with greater vigour, and suggesting that the county and burgh constituencies should memorialise the Government, and, in particular, press the subject on the attention of the members of both Houses of Parliament connected with Scotland.

RESTORATION OF TREFRIW CHURCH.—At about ten miles from Conway, Carnarvonshire, celebrated for its time-honoured castle and for one of those stupendous structures of modern art, at once the pride and wonder of the present age, is situated the village of Trefriw, with its well-known mineral waters of Caecoch. In this village the small, but ancient church, has lately been undergoing consider-

able repairs and restoration. The interior of this venerable building has been renovated, the mullions in the windows restored, the buttresses rebuilt. To the east gables have been added, new pinnacles and a bell cot, with an entrance-porch on the south, and vestry on the west. The interior has been fitted with open benches, having carved oak ends, altar piece, and railing, pulpit, &c., principally of oak, and the roof thrown open to the church, with framed trusses, &c. The works were executed from plans furnished by Mr. George Kennedy, of London.

THE ARCHITECTURAL ASSOCIATION.—At an ordinary meeting of the Architectural Association on Friday evening, the 14th March, a paper was read by Mr. Arthur Billing, entitled "The Coloured Decorations of Gothic Architecture,"* in which the several methods used were described at considerable length, numerous instances being referred to in the different churches of England, of many decorations of which there were illustrations exhibited. The lecturer contended for the application of colour over every part of the interior of ecclesiastical buildings. In the discussion which followed, the opinion was expressed by several of the members that it was in the decline of Gothic architecture alone that every portion was brilliantly coloured, the earlier examples being more subdued; and that when painted windows were used, the walls which could not vie with their brilliancy should be treated in a much simpler manner. The paper for the next ordinary meeting, March 23, was announced to be by Mr. Soppitt, on "English Architecture as it is."

NEW PATENTS.—C. W. Tupper, Oxford-terrace, Middlesex, and Alphonse Rene la Mere de Normandy, of Dalston—improvements in galvanised iron; C. Cowper, Southampton-buildings—improvements in moulds for electro-metallurgy; G. A. Buchholz, Norfolk-street, Strand—improvements in motive power and in propulsion; D. F. Masirata, Golden-square—a new mechanical system with compressed air, adapted to obtain a new moving power; W. Beadon, jun., Taunton—improvements applicable to the roofing of houses, buildings, and other structures; H. F. Marie de Pons, Paris, improvements in constructing roads and ways, and pavements of streets, and the ballast of railways.—*Mechanics' Magazine.*

BRISTOL FOREIGN TIMBER TRADE.—In 1848, the importation was 67,958 loads, which fell in 1849 to 52,192; but in 1850 it sprang up to 71,481 loads.

REFORM OF OUR NATIONAL COSTUME.—It will certainly be no easy task to design a substitute for our present dress, likely to be generally adopted; but if we look back and see what great alterations have been made from time to time, it will be evident to all that the thing may be done. I would only instance the abandonment of the *cocked hats*. I am not old enough to recollect how it was accomplished, but I do recollect one or two old gentlemen who wore it to the end of their days. However, as there may now be said to be little or no difference between the dress of the old and the young, I do not look for many recants in the alterations we are now talking of. The only difficulty, therefore, on my mind is, what is the alteration to be? and here I must echo your correspondent "Amateur," that this must come from the *artists themselves*, and that they must not only give the design, but set the example. I beg, therefore, to call on those who signed the memorial advocating the change, to let us know what they would wish us to do; and as they say themselves the change at first need not be very violent, I feel sure their example will be followed generally—by the *young*, because they are naturally fond of change,—by the *old*, that they may still appear young, which I believe they are also fond of. A lady to whom I was reading the letter of "Amateur," begs me to ask why the *male* costume only should be altered? She says she is conscious that her bonnet is as ugly as our hats, and that there are many parts of her costume equally susceptible of alterations for the better as any part of ours.—**ANOTHER AMATEUR.**

* At a previous (dinner) meeting a paper was read on another branch of the same subject by Mr. Rowley.

FALL OF A TANK AT SPALDING.—For many years an immense tank has been erected at the brewery of Mr. H. Bugg, as a reservoir for water for brewing during the summer months. A building of brickwork was run up to a great height—higher than the roof of the present brewery. On the summit of this the tank was fixed. It was composed of large iron plates screwed together; and across the top were a number of ribs, intended to bear the weight on the suspension principle. The tank weighed about 100 tons, and was constructed to carry about 160 tons of water. For filling, force pumps were started for the first time on 19th ult. The contractor for the brickwork, Mr. F. Cunningham, went up to the top at intervals to watch progress. The workmen left at dusk, and about half-an-hour afterwards, with a sound like a clap of thunder, the tank fell, with about forty tons of water in it. The beams and sheets of iron cut or damaged everything with which they came in contact. The brickwork withstood the shock, scarcely a brick being displaced. The damage is estimated at upwards of 600*l*.—*Stamford Mercury*.

LIQUID LEATHER.—Dr. Burland, of Larria, in Germany, is said to have discovered a method of making leather out of the waste refuse of animal substances. He has established a manufactory near Vienna. No part of the process is explained, but it is stated that the substance is at one stage in a state of fluidity, and may be cast into boots, shoes, &c. What will gutta percha say to this? There is "nothing like leather," after all.

COVERINGS FOR ROOFS.—J. B. A. Brunet, gentleman, of Paris, has taken out a patent in this country for improvements in the manufacture of coverings for roofs, walls, partitions, furniture, and other similar articles, and in boxes, tubes, and other hollow articles, and in the preparation or manufacture of materials to be employed for such purposes, and also in machinery to be employed in such or similar manufactures.

DISNEY PROFESSORSHIP OF ARCHEOLOGY AT CAMBRIDGE.—The Vice-Chancellor has intimated to the senate the transfer and gift of 1,000*l*. Three per Cent. Bank Annuities, by Mr. Disney, to found a professorship of archaeology, the professor to deliver annually six lectures on antiquarian research, and on the fine arts, and to be subject to re-election or dismissal every five years,—the appointment, however, to be left in Mr. Disney's hands during his lifetime.

NOISE IN PRIVATE DWELLINGS: A NUISANCE.—At the City Sheriff's Court, it was lately decided, that a defendant was liable to 9*l*. damages for loss of sleep and other disturbance, from noises over head, occasioned by the chopping of wood, turning of a lathe, and other operations carried on by a turner, who occupied the floor as a workshop. The vibration of the wheel had also alarmed the plaintiff's family, by throwing down part of the ceiling, and shaking the casements. The defence was, that the trade was a lawful one, in which the noise was unavoidable. The sheriff stated that no one had a right to carry on any trade, however lawful, to the injury and annoyance of his neighbour.

THAMES TUNNEL.—We rejoice to hear that the pecuniary value of this noble work is increasing, although no dividend has yet been presented to the shareholders; and that it remains in the most perfect order, without either crack or flaw. The tolls for 1850 were 3,962*l*. odds, or 482*l*. over those of last year. The expenditure on the gross receipts and rents (5,502*l*. odds), left a surplus of 532*l*. odds. The capital now due to Government is 323,000*l*. The passengers weekly average 18,000.

DECEITFUL BUSES.—Pray call attention to an imposition now practised by the proprietors of the Paddington and Bayswater omnibuses in placarding their vehicles with "Exhibition, Hyde-park," thus misleading strangers to suppose they can be taken to or near the Building by these conveyances, whereas they do not approach it nearer than a mile. This, if permitted, would be especially cruel to strangers, the aged, and the infirm.

—S. H.

CITY SEWERS REPORT: HALTING PLACES.—Mr. Haywood, the diligent and able surveyor to the City Commission, has just got published his report of works executed in 1850, from which it appears that nearly every place needing it within the jurisdiction of the Commission has now been sewered, and that for the remainder, sewers are either in course of execution or in preparation. It is well the public should be made widely aware of one very obvious result of such an extension of sewerage and drainage, namely, that wherever new sewers have been constructed, basements formerly damp and useless have been rendered so dry, that more or less throughout the whole city they are now used for the storage of goods not unfrequently of a very valuable description. The improvement in dwellings of the poor thus effected is a matter of still greater public interest and importance. In a separate report, Mr. Haywood directs the attention of the Commission to thirty-four distinct positions throughout the city, where 142 separate halting-places might be run up, with little inconvenience and great advantage. These, added to the 111 at present clustered in 75 different spots, would pretty well accommodate the citizens in the meantime, on an average of five halting-places to every mile of way throughout the city. The surveyor advocates the necessity of a certain moderate degree of publicity in their positions, and has selected the proposed new sites, accordingly, adjacent to main lines of thoroughfare, and especially beside the now closed city churchyards, and near the cab-stands and public buildings, as suggested in THE BUILDER.

THE PROPOSED MUSEUM OF MEDIEVAL ARCHITECTURE.—We should like to know what progress, if any, is being made with this desirable project. Mr. E. B. Lamb reminds us that the idea was suggested to the trustees of the British Museum in 1842 by himself, and that, in 1844, he announced, in a small pamphlet on the subject, the unsuccessful result of his proposal. It is to be hoped that a better fate awaits it in these days of glass and iron, when, at a very moderate expense, a very great expansion of the national museum might be at once effected by simply enclosing the central area under a roof of iron and glass.

NEW HOSPITAL FOR KING'S COLLEGE.—The corporation of King's College intend making application to Parliament in the present session, for a bill to authorise the purchase of the old burial ground of St. Clement Danes, in Portugal-street, Lincoln's-inn-fields, and to erect thereon a new and enlarged hospital, to accommodate an additional number of patients.

ROYAL LITERARY FUND.—The general meeting of this important charity was held on March 12. The four new members added to the general committee were Mr. Robert Bell, Dr. Beattie, Mr. Godwin, and the Lord Londesborough.

WORSE AND WORSE.—SIR,—The following tenders were delivered at the Strand Union, in Bow-street, on Tuesday last for a new board room.—R.

Cooper.....	£330
Rowland and Evans.....	315
Chutter.....	279
Hill and Son.....	259
Geary.....	238
Rackin.....	248
Gadsby.....	237
Scott.....	164

Here are tenders for the alteration of two houses in the Borough, Mr. Broadbridge, Architect. Quantities furnished:—

John Clemence.....	£621
Richards.....	495
Taylor.....	449
Carter.....	397
Wilson.....	360

SEWERS.—Tenders received on the 12th instant, for constructing brick sewer and laying down glazed stoneware pipes near the Albion Road, Woolwich, Messrs. Church & Son, Surveyors:—

Hart.....	£297 16 11
Moxon & Gent.....	263 0 0
Tongue (Woolwich).....	182 6 0
Murray (London).....	179 10 0
Tamsett (Woolwich).....	174 10 3

MR. HENDERSON, THE CONTRACTOR.—We hear with regret that Mr. Henderson, of the firm Fox and Henderson, is dead. It is to be hoped that the exertions and anxiety consequent on such an undertaking as the erection of the Great Building in Hyde Park have not hastened this event.

CONTRACTORS' DISPUTES.—A difference, it is said, involving an amount of upwards of 30,000*l*. has occurred between the Central Gas Consumers Company and their contractors, Messrs. Rigby. The parties have wisely submitted the matter to arbitration. Mr. Raikes Currie, M.P., has been appointed arbitrator.

TENDERS

For four dwelling houses, Derby; Mr. T. C. Hine, architect, Nottingham. Quantities furnished.

Moody.....	£3,237 0 0
G. Thompson.....	3,200 0 0
Ferguson.....	3,175 10 0
Humphreys and Bradbury.....	3,170 0 0
Wood.....	3,169 12 0
Green.....	3,166 0 0
E. Thompson (accepted).....	3,000 0 0

TO CORRESPONDENTS.

"Tiling."—Next week.
 "Flints."—A correspondent asks, "where gun flints are made, in England; and what are the tools used?"
 "H. W." & "E. C." "H. W." "G. W." "W. E. C." "H. W." & "E. C." (we cannot say). "B." (we cannot forward addresses); "E. B." (ditto); "M. P." (ditto); "C. H." (get an introduction to one of the secretaries); "H. M." "One of your Readers." "E. L." "S. S." "J. H." "Friend to Improvement." "Constant Reader." "T. W. T." "G. M. H." "J. E." "B. B." (Leds); "K. Hertford." (we must decline giving an answer which might prejudice a case. Papers will be found in our previous volumes on the responsibilities of architects); "W. C." "J. J. B." "Practical Man." "C. G." "G. W. B. P." "A. A. P." "Bard." "H. B." "Architectus."
 "Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editor, and not to the Publisher.

ADVERTISEMENTS.

ALTAR AND COMMUNION CLOTHS.
 ECCLESIASTICAL CARPETS, CHURCH DECORATIONS, &c. HARRISON, 21, Broadway-street, Bedford-row, London.—Decorations from the most simple to the most elaborate designs, at moderate prices.

IN ANTICIPATION OF EASTER.—The Subscriber has prepared an ample supply of his well-known and approved SURPLICES from 3*s*. to 50*s*. each. Various devices and DAKK COMMUNION LINEN, well adapted for presentation to Churches. An illustrated price Catalogue sent free by post to the Clergy, Architects, and Churchwardens on application to LEBURY & FRENCH, Bolton, Lancashire.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN.—Established for the Relief of Decayed Members, Widows, and Orphans.
 GEORGE BAKER, Esq., Governor.

PATRON.
 The Right Hon. EARL OF DUCIE.
 S. Angell, Esq. G. Russell, Esq. F.S.A.
 G. Baker, Esq. W. Harrison, Esq.
 H. Calvert, Esq. H. E. Kendall, Esq. F.S.A.
 W. Cubitt, Esq. H. Lee, Esq.
 O. H. Cockerell, Esq. R.A., F.R.A. W. Nixon, Esq.
 J. W. Dondras, Esq. T. Piper, Esq.
 T. L. Donaldson, Esq. G. Rennie, Esq. C.E., F.R.S.
 G. Godwin, Esq. F.R.S., F.S.A. W. Thos. Esq. F.R.S.
 The ANNUAL DINNER will take place at the London Tavern, Bishopsgate-street, on THURSDAY, March 27, 1851.

The following gentlemen have kindly consented to act as Honorary Stewards on this occasion:—

H. N. Arncliffe, Esq. P. Hawfield, Esq. T. Nye, Esq.	M. Foss, Esq.
V. Belmont, Esq. R.A., F.R.S. T. Peake, Esq.	S. M. Peto, Esq. M.P.
Deimus Burton, Esq. T. Jackson, Esq. J. Ploves, Esq.	H. Richardson, Esq.
F.R.S., F.S.A. A. S. Johnson, Esq. W. A. Rose, Esq.	T. Shaw, Esq.
W. P. Barlow, Esq. J. Jay, Esq. W. Smith, Esq.	T. Stirling, Esq.
C.E., F.I.N.S. J. Locke, Esq. M.P. J. Taylor, Esq.	H. Treason, Esq.
Geo. Barrett, Esq. C.E., F.R.S. G. M. Leaman, Esq.	W. Tuckwell, Esq.
H. W. Cooper, Esq. G. Locke, Esq. E. A. Gammon, Esq.	J. Wallen, Esq.
J. Clarke, Esq. J. Leadbeter, Esq. G. Grimdall, Esq.	S. Wallis, Esq.
H. Christie, Esq. H. Lee, Esq. J. Ginn, Esq.	W. Webb, Esq.
W. L. Curtis, Esq. F. M. Mason, Esq. E. A. Gammon, Esq.	T. Wilson, Esq.
G. W. Dennis, Esq. G. M. Leaman, Esq. G. Grimdall, Esq.	
V. Francis, Esq. E. A. Gammon, Esq. J. Ginn, Esq.	
E. A. Gammon, Esq. G. Newton, C.E. T. Haynes, Esq.	
G. Grimdall, Esq. T. Neillman, Esq. J. Bonnett, Esq.	
J. Ginn, Esq. W. Neillman, Esq. C.E. J. Bridgeman, Esq.	
T. Haynes, Esq. W. N. N. Esq. G. Watnough, Esq.	

ACTIVE STEWARDS.
 W. T. Waller, J. Wilson.
 Tickets to be had at the Bars of the London and Day-tree Taverns.
 W. ALLARD, Secretary.
 Day-tree Tavern, St. Swithen's-lane, March 6, 1851.

MONEY ON LOAN at £3 per Cent. per Annum.—ARNEWAY'S CHARTER.—NOTICE IS HEREBY GIVEN, that the Trustees of this Charity are anxious to lend out the Trust Money to poor occupiers or traders resident within the City and Liberties of Westminster, that is to say within the parishes of St. Margaret and St. John the Evangelist, St. Anne, Soho, St. Clement Danes, St. George, Hanover-square, St. James, St. Martin-in-the-Fields, St. Mary-le-Strand, and St. Paul, Covent Garden. The amount of each Loan is not to exceed 10*l*. to be repaid after the rate of 3*l*. per cent. per annum, and is to be secured by the bond of the borrower, with two sureties. Printed Forms of Application, and all necessary information, may be obtained by applying personally, between the hours of Ten and Three o'clock in the day, at the office of the Clerk and Solicitor to the Trustees, No. 14, Great Queen-street, St. James Park. By order, EDWARD S. STEPHENSON, Clerk and Solicitor to the Trustees.

NOTE.—The Trustees meet on the second Wednesday in every month, to consider such applications for loans as have been sent in one week at the latest before the first day of the month.—The sureties must be unexceptionable.

The Builder.

No. CCCCXXV.

SATURDAY, MARCH 29, 1851.



THE Report by Messrs. John Mellor and Joseph Gwilt, to Lord Seymour, as Chief Commissioner of Woods, "on the subject of the course of proceedings adopted in the Metropolitan Buildings Office," does not contain much that will be new to our readers on that special point, as they have been long aware of the dissensions which have unfortunately prevailed there between the official referees and registrar, to the scandal of the office and the injury of the public. The paper is dated December 14, 1850, and consists of seven pages: the reporters set forth at starting that they have availed themselves "of the opinion of Mr. Tite, upon some *unimportant* particulars" (a rather curious expression). Mr. White, too, seems to have been consulted. They express early their opinion of the differences which have arisen in the office thus:—

"We are satisfied that serious as are the defects in the constitution and the distribution of the functions of the official referees and the registrar, they have been aggravated by a struggle for authority on the part of the registrar, and a consequent jealousy on the part of the official referees, very prejudicial to the interest of the public."

We see no reason to suppose that the registrar has been influenced by any other than a conscientious desire to discharge his duty, even when he has, in our opinion, exceeded the limit of his authority, although his frequent interference with the function of the official referees may not unnaturally have given rise to their misconceptions respecting him."

It seems that, from the passing of the 7 & 8 Victoria, c. 84 (The Buildings Act), to the passing of 9 Victoria, c. 5, to amend it, the registrar, although differences arose, did not refuse to affix his seal to any document which required it. Difficulties were experienced in the working of the first Act, and part of the purpose of the second was to distinguish the duties of the registrar from those of the referees. The Act proceeds accordingly, in the second section, to provide that all acts, matters, and things, formerly permitted to be done by the official referees, or by one of them, with the assent of the registrar, might be done by the official referees; and that the acts, certificates, and awards of any two of them should be as valid as if done by all, and that the assent of the registrar should not be required to give effect to them.

The referees, upon this, considered that it was the duty of the registrar to seal all such documents as appeared on the face of them not to be contrary to law, nor defective in any of the requisite forms, nor beyond their competence, and that he was not authorized to interfere with their conduct of the business, nor to inquire into the technical regularity of their proceedings, when acting within the scope of their jurisdiction, nor to question the propriety of any decision at which they had arrived, whether upon a matter of fact merely, or upon questions of law and fact.

* This blank is in the original.

The registrar, however, thought differently, and then began the struggle, concerning which we need not say more now. The opinion of Messrs. Mellor and Gwilt upon it is thus set forth:—

"The registrar has supported his opinion as to the extent and nature of his functions, and has endeavoured to justify his practice by reasons of considerable weight and ingenuity, and by statements as to irregularities in the conduct of business, which he alleges that he has witnessed, as well as by the decisions of the Commissioners in certain cases, in which his reasons have been submitted to them, and his refusal to affix the seal approved; but we are bound to state, that upon the best consideration of the Acts of Parliament, and of the expressed opinions of the Commissioners in such of the cases as have been specifically brought under our notice, we are unable to agree with the registrar, that his general exercise of authority has been confined within the true limits prescribed by the Acts of Parliament."

They then proceed to point out other objections to the present mode of proceeding. They, with justice, consider the manner of appeal to the Commissioners of Works very objectionable: the forms in use are cumbersome; difficulty is found in inducing the magistrates to enforce the awards; and they point out that there are no efficient means for the supervision and control of the district surveyors. As to the latter they say:—

"Legislative interference is imperatively required to check attempts made by certain of the district surveyors to exact accumulated fees under the most flimsy pretences."

They then submit the amendments in the law which the inquiry has suggested to them, premising that expedition, simplicity, and uniformity appear to be the principal objects to be kept in view. The suggested amendments have been mainly adopted, in the new Bill, with which our readers are already acquainted, and include the legal judge, dominant. The power given in the Bill to the Office of Works to dismiss at pleasure any district surveyor, and to *consolidate districts*, is founded on a recommendation that every opportunity of a vacancy should be made available for diminishing the number of the district surveyors, and re-arranging and equalising, as far as practicable, their districts, until they are *reduced to twelve*; and that provision should be made to enable the Secretary of State to determine whether or not any vacancy which may occur should be filled up, or whether permanently or provisionally, or whether the vacant district might not be partitioned and assigned to other districts.

The desirability of diminishing the number of district surveyors has often been forced upon us by consideration of the enormous cost to the public of the present system,—say 30,000*l.* a-year. Ten or twelve qualified officers, at say 600*l.* a year each, devoting their whole time to the duties of the appointment, might carry out the Act efficiently.

Since our last, several bodies have expressed their opinions on the Bill, and, so far as we are informed, have mainly adopted our view. The Master Carpenters' Society, for example, have addressed a memorial to Lord Seymour, wherein they say that as it is impossible to define, in any Act of Parliament, one-half of the practical points which must of necessity arise in a Bill of this character, it is desirable that those questions should be decided by practical professional architects, disentangled from law quib-

bles as much as possible; and they suggest that a court of three architectural referees, sitting in open court, and with power to decide all questions at once, without the technicalities and delay of sealed awards, with an able solicitor to assist them on points of law (when requested by them to do so), would work better for the public interest than the proposed wholly legal court. They entertain great dread and apprehension of being subjected, in the various questions on construction which go before the court, to all the technicalities which gentlemen of the legal profession confessedly throw around all business which comes before them. They also suggest that, instead of *one* architectural referee, there should be power of appeal, in case of differences arising between the architectural referee and the architect engaged, to *two consulting referees*, and the opinion of the majority of the three to be decisive.

To clause 29, p. 14, whereby the principal, if he cannot attend, is thrown, per force, into the hands of lawyers, with all the attendant expenses and technicalities, they, of course, strongly object, as we did; and they urge that a small increase, of half a square, upon second and third-rate buildings, would be a boon to the public, without any prejudicial effects.

Attached buildings (not to be included in calculating the area of the main building) they suggest should be permitted to have the ceiling up to the *one-pair floor* of the main building, instead of the ground story. The present permissive height they consider practically of little benefit, these attached buildings being chiefly needed for dressing-rooms, and water-closets of bed-room stories.

They also suggest that the eaves of roofs which have a corbel of incombustible material a certain distance from the centre of the wall, separating adjoining houses, might be erected of wood, or cemented, as has been the custom for many years, instead of the same materials as are required by the Act for the walls. [Power is given to the district surveyor to say what other materials are proper and sufficient, but this would lead to great diversity of practice.]

To No. 9, schedule D, which provides that no timber or wood-work may be placed within two inches from the face of brickwork, where the substance of such brickwork about any chimney or flue is less than 8½ inches thick, they object that this would practically reduce the size of all rooms having flues in party-walls, of the smaller rates of buildings, two inches, because flooring, bracketing, and lathing, being invariably of wood, it follows that the room must be reduced to that extent by the prohibition, and they suggest that the rule might with safety be relaxed to flues exceeding eight feet from the fire-place to which they belong.

Some of the district surveyors are less pleased with the additional power proposed to be conferred upon them than others. One writes to us as follows:—

"I propose to make one or two remarks with respect to the position of the district surveyor under the proposed new Bill, and in doing so must state that I am quite unable to accept the Bill with those feelings of unmixed satisfaction expressed by many district surveyors, because,

1. Duties of a very responsible and onerous character are sought to be imposed upon the district surveyor.

2. The surveyor is liable, and will be exposed in consequence, to all kinds of litigious

and vexatious proceedings, arising from his becoming the judge and referee in cases where no appeal can be made from his decisions.

3. That the increase of duties is unaccompanied with any corresponding increase of fees.

4. That his holding office at the will and pleasure of a triumvirate, and that triumvirate liable to constant change, and such a body being more accessible and likely to be influenced by extraneous causes than a body of some three hundred magistrates, does not place him in as independent a position as the one he had previously occupied.

5. That the establishment of a "Court of Metropolitan Buildings is the one redeeming feature of the Bill."

It appears to me, therefore, desirable to frame clauses whereby these objections may be met. The Bill is I know a popular one among the surveyors, but the tide will turn when they discover what duties they have agreed to undertake, and by how frail a tenure they hold office."

A deputation from the District Surveyors' Association, consisting of Mr. Pownall, Mr. Gutch, Mr. Mayhew, Mr. Hesketh, and Mr. Richards, had an interview with Lord Seymour on Saturday, and, we believe, obtained the promise of amendment in several particulars to which we have objected.

PROPOSAL FOR ESTABLISHING A SCHOOL FOR ART-WORKMEN.

"BECOME," said Professor Cockerell, in one of his last lectures, "acquainted with the *handicraft* of labour,—thus combining the skill of the head and hand."

"There can be no doubt," say the Society of Arts, through their chairman, Mr. H. Cole, "that the Exhibition will give rise to many new relations between men and things: already a stronger connection between the artist and the manufacturer is springing up beneficial to both. It will be the duty of the Society to foster this connection; and they feel that much remains to be done to educate the mass of the people in the perception and practice of art, which the Exhibition is likely to make too apparent; and taking advantage of the lesson we are likely to be taught, the Society propose making an effort to establish elementary *drawing and modelling* schools throughout the country. They have submitted this to his Royal Highness, the president, and he has expressed his approval of it, thinking it may prove useful."

In what respect schools thus constituted for the purpose of teaching drawing and modelling differ from the present schools of design, *except in name*, does not appear; but even this difference, slight as it may seem, is of no small importance.

It should be observed, that Mr. Cole proposes to establish elementary schools for drawing and modelling. He has probably seen that the majority of those who enter the School of Design enter it under the full impression that something is taught of which they know nothing, but have a vague idea of something which is to raise them entirely above their fellows. He has avoided this, and proposes only a school in which drawing and modelling are to be taught. Let him go further, and use the power now possessed by the Society of Arts, and offer to the workman the means of improving himself in the way in which such improvement can really benefit him and others,—by teaching him to carry out the ideas of the artist,—by showing him what that work is, and how he is to render it, and to tell him when he has done it,—to make him an art-workman,—to make his labour more valuable, and his pay better,—and to create, as it soon would do, a national want.

I say, to create a *national want*—a thing of no little importance, and which will in no very long time force itself on the attention of thinking men. The vast power of machinery growing more and more omnipotent every day, doing, as it will do and is almost doing, all the work of society, and the increase of popula-

tion beyond the call for their labour, and consequently beyond the means of subsistence, as is proved by the vast numbers of the unemployed feeding at the public expense, makes this a subject of singular interest, even to those who are altogether indifferent to art. To cope with this necessarily growing evil, the combined increase of machinery and population, should be the endeavour of a society such as this; and how can they better do it than by creating a national want, by so raising the character of art as to place beyond the power of machinery to imitate,—a thing perhaps more easily done than many might be disposed to think. Indeed, it is partly already done to their hand: they have only to foster it: already the public are beginning to feel dissatisfied with all objects, even in daily use, which have not some mark about them of art, and which, by a judicious example set by the upper classes of society in such matters, would be speedily spread, for it will be found that each layer of society lives, not in itself, but in the one immediately above it: it is the object of the one to creep into the other—to climb up; and this it does chiefly, as a matter of course, in a purely mercantile community such as ours, by the incessant pursuit and accumulation of wealth, and through the next most powerful feeling, the wish to be thought better than it is; to have, besides, more money, more refinement, more gentility—the evidence of this refinement being sought for, not in the mind, but in outward show—in the possession of works of art of all kinds—in pictures—the service of the table—in furniture, fine rooms, and dress. By thus taking advantage of a powerful feeling, common to all classes in society, a want, almost unknown but to a few, will in time be created,—the want not only of art, but of art workmanship. The Exhibition will probably itself do much towards creating it, by showing to the public what things ought to be, and will, perhaps, show the absolute necessity of the art-workman, by exhibiting the contrast between the workman as he exists in other countries and as he is here. By his works will he be known: there, in very many cases, will he be found to work with his *head* as well as hand: here, he is a workman and a workman only; and it will evidence, too, the great defect there is, not only in the design, but in the way in which the design is carried out—is put together, or carved, or coloured. It will, I hope, make the public dissatisfied with what is now called art, and make them ask for *art-workmanship* as well as art-design, and make them see the difference between art as it comes from the hand, and art as it comes from patent machinery. Our miserable shortcoming in this respect is already, I believe, a mournful fact to not a few. The late Marquis of Northampton said, at one of the meetings of the Society of Arts, "there is a great difficulty, almost an impossibility, in getting a workman competent to carry out even the most common-place design," and all who have ever made a design of anything which they have intrusted to a workman must have had it painfully made evident; for the thing, whatever it may be, when executed is scarcely known, even by the artist himself, so wretchedly is it worked. There is, indeed, no greater want now than art-workmen, skilful artisans in all the various trades in which art enters, intelligent men able to see the merits of any design intrusted to them, and able, and willing, and proud to carry it out.

I do not know that anything is necessary to prove to those to whom this letter is addressed, the incompetency of the workman as he now is; but a few instances of what he has done when at his best may not be amiss, and will assuredly disarm all opposition as far as *that fact* is concerned.

Let the reader go to St. Paul's and carefully look at the carving in stone (now painted unfortunately) or in wood, by Grinling Gibbons, and let him examine and note the masterly way in which the leaves, flowers, and fruit are grouped together, the freedom and life of the carving, and the wonderful delicacy of hand indicated in them. The leaves he will find to be not of lifeless stone, but living leaves, suddenly petrified. Let him recollect that all this

is not by the very hand of Gibbon himself, although much of it is; but by his pupils and assistants, his workmen,—art-workmen educated and always under the eye of the great artist; for Gibbons, although an artist second to none, was not *above* (as we are in these days) carving foliage on a building: his fine mind was equally at home everywhere. No beautiful object in nature was beneath him: he scattered them everywhere: he carved the beautiful faces of children with a rare skill, and the same skill cut the simple leaves and flowers for Christopher Wren. And this is the true love of art: it comprehends and is equal to all things, and scatters them everywhere, knowing well that the eye of taste will find them, if not in its own, at least in a future age.

Now, then, let the reader, with all this in his mind, go to the palace of the Earl of Ellesmere, a work beyond all comparison the finest of its day, and let him examine, first, the very simplest thing that a workman in stone can be set to do, viz., the vermiculations in the quoin stones: how are they done? They are of all imaginable shapes and sizes, and styles of workmanship: in some they are rough, no vestige of a plain face, in others there is a fillet all through, half an inch wide; in some the vermiculations are cut deep into the stone, in others but just sunk; and yet this is the simplest and easiest thing, the design being given, that a workman can be put to do.

Now let him examine the flowers in the tympana of the windows, and how are they done? Not to find fault with the fact of all the windows being alike, having the same flowers, Wren would have varied them, for Gibbons would have found it *easier and far more delightful* to have made each window a study in itself: for to the real artist the greatest difficulty is to get two things alike. But these flowers are all alike, hard as the stone they are cut in, and lifeless as the mind of the workman: the connecting fibres are sticks; the flowers like star-fish, if like anything; and the leaves stiff as the stone they are cut in. Now let him steadily contemplate the strange animal forming the keystone of the doorway, and let him compare it with the masterly heads at Somerset-house, carved by the Academician Augustine Carlini, not for the purpose of comparing a human head with an animal's, but to compare artistic skill and mere chiselling together; and he will see that, let the design be what it may, without hands and heads capable of carrying out the idea of the master mind, the artist has worked in vain. Let it, too, be recollected that in this case there was no stint, no economy. The nobleman who built it built a palace,—not a town-hall, or a market-house, or a cheap church, but a noble palace; and let him recollect that its accomplished architect is no ordinary architect—with the idea before him in bits—lost in heterogeneous precedent which can never come together—and to whom the "office" is everything.

One more instance will perhaps suffice, and will convince the most sceptical. Let him go to Westminster Abbey, to the tomb of Aymer de Valence, and study the figures in the niches. Nothing in Greek art before the time of Phidias can be finer than the exquisite beauty and grace and finish of these figures: the design, drawing, and chiselling are as fine as they can be: they are sadly mutilated,—have been painted, but happily not yet destroyed by the restorer, and I wish I could hope that my calling your attention to them would induce some one to preserve them on paper before their destruction is determined on. The whole abbey is doomed, and their turn must come. So much for the drawing of figures and drapery by the Gothic artist: they completely put aside the common opinion that a figure to be Gothic must necessarily be badly drawn, ill-proportioned, and gaunt. What strikes us as fine in the stiff figure of the Gothic artist is not, as so many think, the *form* or the *drapery*, but the *life* and *spirit* there is in them—the life and spirit struggling through the hard lines and the quaint form. The Gothic artist was un-instructed in the drawing of the figure: he had

no Phidias to refer to; but, he had sometimes that within him which could animate any form and breathe life into the hardest stone; and sometimes, as here, he could do more,—he could clothe with form and grace the living spirit.

Now let him turn to the carving of the foliage between the windows of the south transept, ruinous as it is, but still happily not scraped and touched up, as in the opposite transept, and see how that is done: he will wonder how it is that it has not all been destroyed long ago, not by the soldiers of Cromwell, but by the restorers. Being there, let him wander through the desecrated place—through the dirty chapels—pass the scrubbed monuments, interesting to the visitor for the familiar name on each, but for no other—for the gift of the third Edward, worthy of a Greek chisel, is passed by unheeded, to stare at the new monument to Southey. Let him wander into the chapel of Henry VII. and examine the carving on the stalls: he will find it endless: every stall, every panel, is different: all are covered with the most elaborate carving, each panel a new idea: neither skill, pains, nor time has been wanting to their production: they are the work of the *mind* as well as the hand; and let him not forget to look up at the endless tracery of the vaulted roof above: this beautiful chapel might indeed have been chiselled by the hands of fairies.

Now let him go to the Palace of Westminster,—by the same able hand as the Bridgewater Palace, assisted by another mind no less able: no want of design will be found: no part left to an office clerk: all, every line, has passed under the eye of the architect. He will not find a panel stolen from St. George's, Cambridge, put by the side of a window from York Minster: all is from the same mind, and is one from base to finial. Well, let him look at all the carving: let him look at the figures: they are all alike,—all brothers and sisters, but all dead; not a spark of life in a single form. He will soon get sick of this after the living dust of Aymer de Valence. Let him turn to the flowers, the leaves, the heraldic shields, the crockets, the finials: let him leave the place,—no, not leave it before he has descended into the crypt of the lost St. Stephen's. Let him there listen with wonder to the echo of his own footsteps: let him look round and see its fine proportions, its mastery detail, and then let him look at the carving of the bosses: he will see, in spite of age, ruin, and the hand of the destroyer, the lizard in the centre boss still creeping among the leaves, and he will see, too, what can be seen only in places of bygone centuries such as these, the full, deep, enduring colours to be given only by the hand of time. He will then search in wonder for the chapel of St. Stephen.

All this equally applies to iron and brass work. Compare the workmanship of the brass gates in Henry the Seventh's Chapel with those in the House of Lords. It applies, also, to all works in clay, such as tiles: compare the colour of the best of modern tiles with those in the Chapter House at Salisbury; but perhaps it is best seen in painted glass. Now, of all the works of the dark ages that are left to us, I think the painted glass the most wonderful: indeed, the older it is, the finer, and deeper, and more glorious in colour. The windows in the clerestory at Canterbury Cathedral seem rather to emit the light coming to the eye than to transmit it. The drawing of the figures is rude enough, and the composition may be unlearned, but not so the colours. Each of the colours, as the ruby, seems as deep, and rich, and vivid, as the marvellous stone from which its name is borrowed. If the whole of the interior of the archiepiscopal church, in the dark ages, harmonised with these matchless windows, we have good reason to regret, as far as art is concerned, the coming of more enlightened times. When will the lost palette of the old painters be found?

To descend, to go to other buildings, will be needless: enough has been said to convince any one of the want of art-workmen, as any one can make the comparison for himself; and I feel quite sure that the more he sees, and the more deeply he goes into the subject, the more

fully will he be convinced of the great want of the art-workman.

Various means have been suggested, and some tried, for, as it is called, "*educating the eye of the workman*" by lectures, by books, and by teaching him mechanically to draw: all these have been failures. Lectures must fail, because the mind of the workman is usually unprepared for their reception, and because, however numerous they may be, and however able, he cannot follow them up so as to retain them in his memory: he hears a very able lecture, and perhaps remembers some striking part—probably some illustration—but of the principles which the lecturer would wish most fully to inculcate, he remembers nothing,—and, if he did, he could not apply them: he comes to the subject, whatever it may be, in profound ignorance, not of it only, but of all other collateral branches of knowledge. Giving a number of lectures to a working man, on sculpture, for instance, is a different thing from delivering them to an academy student: the workman comes to them profoundly ignorant of everything but his own handicraft,—while the student, although needing to be taught, comes to them with a practised mind and cultivated ear. It is, I believe, from thus confounding together the student and the working man, that nearly all have failed who have come forward to help him. Nothing can be more unlike than the two cases.

A school such as I propose would, I believe, be attended with not a few advantages, even in a moral point of view. Thus, suppose we meet a workman, and he be induced to attend such a school regularly, all the knowledge he has he brings with him to bear upon the task of teaching himself. He comes to the school, and the first thing he is set to do would be to carve in stone, in his most careful manner, some simple object, such as a leaf or flower from some good model: when done, it would be the duty of the teacher to point out to him in what respect he had been successful, and where he had failed. This would at once interest the intelligent workman: he would say, "I see now what I never saw before. I'm afraid of the stone, or I'm too clumsy, or I'm in too great a hurry: I'll try again, and correct, at least, one defect." He begins again, and carves another leaf or flower, bearing in mind what has been told him,—a comparatively easy task, for he has seen his shortcoming, as well as heard of it; and when this second task is completed, the teacher would again point out to him how nearly he had come up to his model: its merits would be shown to him, and, in proportion to his advancement, the principles upon which it was originally produced would be explained; and in this way he would be likely to retain them in his memory,—at least, he would strive to do so, as he would soon discover how much easier and more delightful his labour was by keeping them constantly before him. He would thus gradually, and almost without his being aware of it, come to understand the great principle upon which art is based,—a thing he could never learn from lectures or books: we must teach the workman *through his hand, and so reach his mind*. In the workman the hand is the instrument, the head guiding it: in the artist the mind is the instrument, and the hand follows it; and there is between them all the difference, although to many who cannot split the hair, they may seem the same.

I cannot but think that in an institution of this kind all of us must, of necessity, feel an interest.

To the workman himself, as having for its object the improvement of his mind, to make his labour more valuable, and, through it, his pay better, and to educate his eye, and refine his taste, in the only way in which that can be done.

To his employer, the manufacturer, it must be especially a subject of great interest, as it is through the skill of his workmen that he lives, and the more skillful they are made, the greater his profits,—and what, perhaps, is more, the growing taste of the public for art will, in time, compel it; for the design of the artist, however fine it may be, is lost without efficient

and skilled workmen to carry it out, as I have endeavoured to show.

To the architect, again, it must be a subject of far more than ordinary interest,—indeed, to him, it must be, of all things, the most interesting; as, whatever his design, in whatever style, and whether good or bad, the able and artistic rendering of the decorative parts must always be of the very first importance, for if the design be indifferent, the able carving will improve it, and if it be good, it will make it better; but, be it ever so fine, as we have seen, the unskilful working of it out will mar it, and, in a measure, destroy its beauty.

And to the public generally, especially to those of them who take an interest in the fine arts, it must be a subject of interest, as that which chiefly takes their attention in a work of art is the decorative portion of it; and, besides this, they must always feel gratified at any effort made—at all promising to be successful—to improve the condition of the working classes; and such schools would, I believe, more than any other plan of education yet tried, have that tendency.

There is one other reason, which will, without doubt, have its weight with its higher members, and must interest them in it: it is the rank England should hold with respect to other nations, and especially her colonies, in the fine arts. England has produced—and has good reason to hold their memories in cherished remembrance—painters, sculptors, and architects, second to none: of Reynolds, Chantrey, and Inigo Jones, any country would have reason to be proud, and she has some now worthy to be ranked with them: she has, however, only followed other countries in this: she cannot be said to have led. Her original minds have led the way, in poetry, in science, and in fiction, but not in art: in it they have followed,—worthily followed. Let her, then, lead the way in showing the nations how well she can appreciate what they have done, and how well she can follow them; but, let her show them, that not only do her higher minds see and enjoy the loveliness of art, but her whole people.

Let her colleges and academies afford aid to the artist worthy of him, and let her be the first to found schools for the education in art of her working men. This leading of other nations is a noble way, and far higher and more enduring than the ruling them by force: for force they will in time free themselves, as they advance, but from a debt of gratitude they never can. "England," says Mr. Cobden, "is, of all countries, the best placed for being the world's *mart*," and so she is for being the world's *example*. She should not be the guard-house—as some would wish to make her—but the lighthouse of the world.

And such will she be, if her higher minds be true. C. B. A.

A PROPOSED NEW ENTRANCE TO HYDE-PARK.

THE Parks of this metropolis, forming one of its leading features, call forth the admiration of all foreign visitors from their picturesque beauty. They lose much of their grandeur, however, from the want of effect in their approaches and entrances. Those which claim superiority from their architectural details are unfortunately the worst placed, as they have only lateral approaches, and no direct road facing them. This subject is more successfully carried out on the continent. The *Victoria Gate*, opening on to the Bayswater-road from Hyde-park, being the only carriage entrance available to the inhabitants of the important neighbourhood it adjoins, is altogether unworthy of its name and unsuitable for its purpose. There is no direct road leading to it on either side; and from its fronting on the line of road with a sudden fall on the outside, carriages on going out are liable to accident from the constant traffic on that line of road, and the turning at Stanhope-terrace is equally inconvenient.

We have recently seen a design by Mr. Alfred Beaumont (whose suggestion for the improvement of St. James's-park we illustrated some time ago), to obviate these objections by

substituting a direct and more imposing entrance in a line with Westbourne-terrace, in lieu of the present circuitous route. It proposes also to afford the opportunity of opening a more convenient entrance to the adjoining gardens. The present one, though very inadequate, from its size, for the convenience of the numbers that are constantly passing through it in fine weather, still is duly appreciated by the public, who had, previous to its formation, to go round by the above-named gateway. These entrances would be brought under one superintendence. To gain a more gradual ascent, and to afford room for carriages on entering or going out, the gateway is placed 145 feet back from the line of road, and an open space left in front of it. This design proposes a double carriage-entrance with a footway on either side. The centre forms a circular temple, in which a statue of her Majesty might be placed.* On the west side, adjoining the foot entrance, a lodge is proposed, with a campanile, containing two very essential accompaniments to a park entrance (though seldom adopted), namely, a striking clock and a bell to warn the public of the time for closing the gardens, in lieu of the present

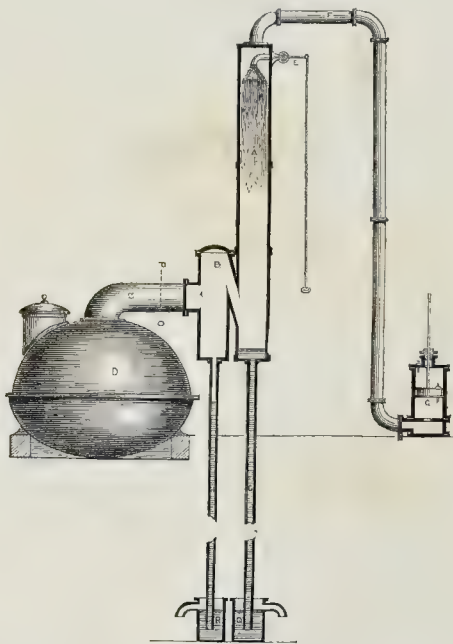
vocal chorus by the keepers of "All out." To carry out the notion effectually, the main road would have to be raised gradually from the present gateway to Stanhope-terrace. This would prove beneficial in every respect.

Mr. Beaumont also points out the want of drinkable water in this neighbourhood, and suggests the formation of an *artesian well* in the vacant plot fronting Stanhope-terrace, which would afford an opportunity for an ornamental monument.

IMPROVEMENT IN THE STEAM-ENGINE.

SUGAR HOUSES.

LAST year I obtained a patent for certain improvements in the manufacture of sugar. One of these improvements consists in a new form of condensing apparatus for the vacuum-pan, which I consider to be equally applicable to the steam-engine. The following sketch and description of the vacuum-pan condenser will explain it. I presume I need hardly observe, that in applying this condenser to the steam-engine, the receiver B would be unnecessary. G.



D, the vacuum-pan; B, the receiver; H, a pipe inserted into the bottom of the receiver B (it is 34 feet long, and is shown broken in the drawing: it dips into the small box R, which is filled with water); A, the condenser; E, the injection-cock for the admission of cold water; C, the air-pump; F, the pipe of communication between the air-pump C and the condenser A; G, a pipe inserted into the bottom of the condenser A: it is of the same length as the pipe H, and dips into a similar box, Q, filled with water.

The following description will explain the mode of action. Any "liquor" which boils out of the vacuum-pan D falls into the receiver B, and from thence down the pipe H into the box R, from whence it flows away into some suitable vessel. By this means the necessity of shutting off the air-pump and destroying the vacuum, in the event of a "boiling over" out of the vacuum-pan, is entirely obviated. The steam from the "liquor" in the vacuum-pan D passes into the receiver B, and from thence into the condenser A, where it meets the

injection-water coming in an *opposite* direction, by which it is condensed and falls through the pipe G into the vessel Q, from whence it runs away. By this mode of condensation the entire of the condensed water may, if desired, be obtained at 212 deg. Fahr. whilst the top of the condenser is quite cold.

As the whole of the steam which is produced in the vacuum-pan (with the exception of that of vacuum tension) will be condensed by the above described plan, it must be obvious that the air-pump will have much less work to perform than in the ordinary way, consequently a much smaller air-pump will be sufficient.

As there may be sugar houses where there is not sufficient height to enable these improvements to be carried out in the manner described, the following substitutes may be used. First: Instead of the pipes G and H, small pumps may be applied in their places. Second: The exhaust arm Z of the vacuum-pan D may be carried up such a height as will give the necessary elevation for the condenser A. For the purpose of preventing any condensation of steam in the exhaust arm Z, this arm might be encased in another pipe into which steam could be admitted.

SCULPTURE AND IRON.

THE GREAT EXHIBITION.

We are informed that a well-proportioned room for sculpture has been set apart in the Exhibition Building, 70 feet by 48, and 30 feet high. The following arrangement of colours has been suggested by a sculptor. The floor stained dark oak, the pedestals of the statues dark crimson, the walls a warm grey, of an atmospheric retreating quality, the ceiling light grey, and a centre concentrated light of 36 feet by 12, with a thin white linen spread beneath. The arrangement of colours is different from that hitherto received as appropriate for sculpture-rooms, but would, we have no doubt, be effective. The neutral tint of the walls would afford a distinct yet soft fleshy outline to the marble and plaster, and the dark floor preserve the works from the upward reflective gleam so injurious—in the British Museum, for instance.

No bronzes are to be admitted in this apartment, another place being found for them in the fine-art room. It is probable, and to be hoped, that in neither of these rooms will be admitted statues above life size, for which spaces will be found appropriate to them in the nave and transept.

In the west nave there is to be a cast-iron open-work dome, the joint emanation of the Coalbrook Dale Company and Mr. Bell, sculptor. It is supported on six double pillars, is of elaborate rustic cast-iron work bronzed, and to the top of the weather-vane (formed by a statuette of "Eolus"), is 49 feet, weighing 15 tons.

A cast-iron park-entrance from the same foundry, 60 feet wide, of elaborate decoration, is to be placed across the north transept. The pillars, we are told, are of novel construction in cast-iron, bronzed, with finials of fine-art character, and large vases at the two ends of the fencing.

In front of this last is to be a cast-metal fountain of Cupid and a swan, life size, in a tazza 7 feet across, decorated with an ornamentation of the white and yellow water-lily,—the whole in a basin 13 feet in diameter.

SOCIETY OF BRITISH ARTISTS, SUFFOLK-STREET.

THE present exhibition consists of 693 pictures and drawings, by 317 exhibitors: of these works, 183 are by the members of the society, twenty-seven in number, being an average of seven each. It contains several pictures of very considerable merit, and many that are very pleasing, but is not a collection that will give our foreign visitors a very elevated opinion of the state of art amongst us, being wanting in the higher efforts of the mind,—works which come of thought and give thought,—the picture that teach and elevate.

Mr. Hurlstone stands on this occasion high above his colleagues. He has been painting in Spain, and has brought back some vivid and life-like representations of the denizens of that beautiful and unhappy country. (184) "A Spanish Girl of Alcala de Guadaira;" (222) "A Spanish Girl, Seviliana;" (490) "An Andalusian Girl, with a Water Jar;" and (494) "A Gitana;" are all equally characteristic and beautiful: (141) "A Street Scene in Seville" is damaged by the countenances of the models.—In 423 Mrs. Hurlstone has given a view of the artist in his Spanish studio.

Mr. J. W. Allen has several excellent transcripts of nature: (11) "South Downs," (56) "Near Cranley," and (446) "Foot of the Wrekin," may be particularly mentioned.

Mr. Baxter's "Rose, Shamrock, and Thistle" (42), three female heads, is full of beauty; and his portrait of Topham (327) an admirable likeness.

Mr. Gale's Studies of Heads are also very excellent (9, 90, and 475).

Mr. Anthony exhibits several pictures of wonderful power, which in some, however, degenerates to coarseness. (24) "The Old Churchyard" is a fine specimen of those strong sunlight effects which he strives after, but we prefer (505) "A Dewy Day," (357) "A Rocky Lane—Sunshine after a Shower,"

* In the drawing, the side pier, ornamented with sculpture, seem too large, as compared with the campanile, &c. The point, however, with us is the general question, not the particular design.

and (427) "The Gate of Honour, Caius College," are very clever;—the latter is not a picture, but a building. Mr. Anthony possesses much genius, but should put himself into harness.

Mr. Herring maintains his position as a painter of horses and farm-stock, as is evidenced by No. 72, "Cavaliers Regaling;" 412, "Seven for Sixpence;" and 485, "Farmyard, Winter."—Mr. Wilson, jun., has, amongst others, a fresh and breezy sea piece (34), "Clearing up after a Storm."—Mr. J. J. Hill, in (54) "The Gleaners," No. 214, from Thompson, and (388) "A Shepherd Boy," shows a mastery of rustic forms and expression.

Mr. Pyne has but one picture (60), "Landing Herrings on Yorkshire Coast," which to our minds has less beauty than some of his previous works.

Mr. H. Boddington has several pretty landscapes: his most important work "An Autumnal Noon on the Mountains" (81) is nearly a fine work.—Mr. Cole in cattle and landscape (112) and (439) shows great advance.—Mr. Woolmer has refined his style. (100) "From the Sleeping Palace, approach of the Prince;" (363) "Greenwich Park" and (474) "An Italian Villa" more particularly pleased us.

(No. 118) "Near Teeson, Kent," and (154) "Don't be Afraid," are pleasant specimens of Mr. Tennant's art.—In Mr. Clint's largest picture (123) "St. Brelade's Bay, Jersey," the mist clearing off is injurious to the effect. (156) "Sunset," (374) "Hampstead Heath" (which is charming) please us better.

In Mr. Hassell's principal picture (179), "The Thames at Lambeth" (a clever work), the Royal Tower of the New Houses of Parliament is made to appear out of upright by a light on the lower part of it.

Mr. G. Smith has two pictures, which, though small, are entitled to great praise,—No. 257, "Labour," and 265, "Enjoyment."

(259), "The Wreath," by Mr. Salter, is more successful than his more ambitious attempt, "The Marriage of Bacchus."—(333), by Mr. W. West, "Mountain Torrent, Norway," is one of his best, though not his largest. We would further mention Mr. Clater's (401), "From Burns;" and 445, "Carting Sea-weed," by Mr. Wainwright (reminding us of Collins), and will close our notice by mentioning that the sales at the private view amounted to nearly 800*l.*, and comprised thirty-two pictures.

THRONES AND CHANCELS IN PRIMITIVE CHURCHES.

It must surely be inherent consciousness of the weakness of the position he is advocating, which induces your correspondent "S" to attempt to prop it up, by asserting that "the case is so obvious, that it seems like trifling to go on with it," and that "I failed in bringing any kind of evidence in favour of my opinion, the passage cited from Justin Martyr being absolutely silent on all the questions at issue." Such assertions on the part of your correspondent go for nothing, and are simply begging the question.

I quoted Justin Martyr, as proving incidentally, in connection with St. Paul's reproof to the Corinthians for certain errors in their mode of celebrating the Lord's Supper, that that mode of celebration was by sitting at a supper-table, the president presiding; first partaking of a solemn meal, and then receiving the sop and wine, precisely as the holy rule had been first instituted. And as Justin observes, that all were assembled together both from town and country, his evidence is conclusive, that the communion was not celebrated on an altar, and not in the chancel, which in no ancient church bore such a proportion to it as to be capable of accommodating a number of persons,—a point which it requires no laboured argument to prove, because the still existing ancient chancels put this matter beyond dispute.

The fact that Christianity was, in course of ages, Paganised and Judaised, corrupted and changed from its original simplicity and purity, both in doctrine and practice, no student of

church history will, I should imagine, venture to dispute: these corruptions and changes were not made all at once, but insinuated themselves by degrees; one error bringing on another, and each change introducing a friend. Bearing this fact in mind, we shall be at no loss to account for the fact which I asserted in my last letter, that erroneous notions respecting the Lord's Supper prevailed in the writings of the Fathers long previous to these notions being able to produce those changes from the ancient architectural precedents, which ultimately were effected. Thus they wrote about "altars" and "holy of holies" long before any semblance to such things existed in a Christian church; just as ambitious presidents, inflated with pride, wrote about their superiority to all earthly powers, and forged documents to prove their position, ages before they could get kings and magistrates and people to be foolish enough to believe in, and to submit to, such priestly pretensions. In fact, these very pretensions relied mainly for support on this very conversion of a table into an altar, and the minister's platform into a "holy of holies." It is curious to trace the remarkable ingenuity with which those writers who support these priestly usurpations over the rights of the people, first couple the proper designation of the chancel with an *alias*, and then gradually adopt the adjunctive term to the exclusion of the original one. Thus the original simple seat of the apostolic presidents is termed a seat or throne; and Cardinal Wiseman at last boldly claims it as having always been "a throne;" the table or altar eventually is only known as the latter; and the minister's platform, the "bema," which is merely the Greek word for an elevated platform, and identical in application with the Latin word *Cancelli*, first becomes the Bema or Sanctuary, and then is known only as the "Holy of Holies." Only conceive what an *or* that must be that can thus couple and transmogrify at will two words,—the one conveying such homely common-place notions,—the other, ideas of such infinite purity and holiness that the devout mind can only think of them with awe and bated breath,—the *platform*, or the *HOLY OF HOLIES*,—the minister, or God!

In the only material "holy of holies" that ever existed on earth, the high-priest entered once only in the year, and then with shoeless feet. The purest gold formed its floor, and lined its walls and roof; and seven times in the fire was the gold purified, ere it was deemed pure enough, to form the vessels used in that sacred place.

With this glorious, symbolical "holy of holies," did impious writers, in after ages, dare to compare the unpretending platforms in the Christian church. When bishops wrote and called it by this name, it could only have been because they sat on it. Wheatly, as quoted by "S," speaks of "the Sacrament, since called the chancel." The proper way for Wheatly to have written would have been, the chancel or platform, *since* called the Sacrament. That which Eusebius designates the "holy of holies," was not the chancel, but the *table* itself, when in the centre of the church in which it stood. Eusebius, with all his talent as a writer, indulged in the most high-flown hyperbolic expressions, and his servile adulation of the Emperor, to flatter whose vanity did he write his pompously inflated description of the churches which Constantine had built, is most disgusting. It is not much to be wondered at in such a writer, that he resorted to the gorgeous descriptions of the Jewish Temple for terms by which to set off to greater advantage the works the Emperor had constructed (which Mr. Pugin sweepingly condemns as "Pagan"),—perverting the Scriptures to the extent of stating that the divine oracles had this church in view when these words were uttered,—"*And the glory of this latter house shall far exceed the former.*" And because the roof was covered with cedar (2½-inches thick, ploughed and tongued), asserting that on this point the divine oracles had not been silent, "In which it is said, the trees of the Lord shall rejoice, even the cedars of Libanus which he hath planted." Eusebius further states, that "when the Emperor had

thus finished the Temple, and adorned it with thrones, which he erected in the highest or chiefest place in honour of the *presidents*, and also with lower seats, placed in decent order *all over the Temple*, he at last placed the holy of holies, to wit, the altar, *in the middle*, which he made every way accessible to the multitude, by a separation of net-work of wood, wrought and carved with such accurate skill and art as makes as wonderful a spectacle as eyes can behold."

Reduced to the language of common sense, Eusebius's statement amounts to this, that there was a raised platform at one end of the church for the president, and seats round the church for the people, the table being in the *middle*, and surrounded by a carved railing. So that if this "altar" was rightly designated the "Holy of Holies," the people clearly had it all to themselves, and the president and his associates at the far end of the church must have been shut out from it.

We have seen that Eusebius designates Constantine a second Solomon, which he certainly was not;—the church, a temple, to which it bore no resemblance whatever;—the table, the holy of holies and the altar, both of which terms were equally inappropriate. The altar, even in the tabernacle, and partly of wood for convenience of transport, was yet lined with brass, and had its four horns and trenches: in Solomon's temple it was of stone; and in the Pagan temple, stone was also the material employed. In all, one form appears to have been followed, that which its use required, in offering up a material sacrifice; and to Jews or Pagans, there was therefore absolutely nothing whatever in the Christian communion table to suggest any idea of an altar. If Rome tell truth, she has got the actual table, a wooden one, used by St. Peter: compare this relic as it exists in the church of St. John Lateran with any of the ancient altars, and see if there be a shadow of resemblance between them. The simple fact is, that the Fathers your correspondent quotes, use the term "altar" in the same sense in which St. Paul uses it when he says, "We have an altar not made with hands, eternal in the heavens;" but the Fathers, not content with the simple language of Scripture, loaded their sentences with hyperbole to such an extent, that they were obliged to add others to explain that they only meant to convey a spiritual meaning. Even without this explanation of theirs, the fact that it was at a *table* the early Christians sat, when partaking of the Lord's Supper,—that the faithful were all *within* the place of worship, instead of, as in the temple, *without*,—that the president was only separated from the people by a low railing, and at the most important part of the ceremonies sat amongst his brethren at the head of the table,—these practical commentaries, so significant to a people previously accustomed to usages so totally opposite, must have sufficed to prove to those to whom such writings were addressed, that the language employed was symbolical, and so employed because the images were, to them all, those of old familiar things, that, to them, had passed away for ever.

With such practical commentaries as their daily customs supplied, how significant becomes that answer of the Christians to the Pagans who reproached them with having no altars! "altars and shrines we have none." Your correspondent, while admitting the truth of this quotation, attempts to explain it away, and puts in italics these words: "It is true that the early Christians admitted, *as between themselves and the Pagans and the Jews*, that they had no altars." "As between themselves and the Pagans and the Jews,"—why that meant between themselves and the world; and if the Romanists are right in their views respecting transubstantiation, the Christians, in giving that answer, were uttering a contemptible falsehood for the express purpose of making their own religion appear worse in the eyes of its enemies.

Your correspondent, with that respectable authority, Mr. Bingham, appears to have got into a sad mess about the ancient positions of the communion table, from their ideas being so biased by its *modern* position, as to cause

them to shut their eyes to the evidence against this which the ancient churches still supply. We all know what confused notions prevailed respecting Grecian architecture, so long as the public were content to derive their ideas of it from written descriptions, instead of from the buildings themselves: when they were examined, measured, and published, what a host of prejudices disappeared! Now, as we have got plenty of remains of ancient churches, surely their speaking living evidence is to be preferred to all that has been written about them: let any architect, with his eyes open, go into one of them, and he will see at once that the Roman Catholics now owning them do not use them as those did who built them: in the first place there is that unlucky chair, or "throne," as the Cardinal will have it, carefully shut out from all use by the "altar," with its trumpery modern scene work around it, in front, but not even to this day within the ancient chancel; and then the old walls on each side have been cruelly cut through to admit of side chapels to saints, so that if an ancient president were revived, he would be perfectly bewildered to know where he was to sit, or why, if he occupied his ancient place, he was so carefully shut out from sight of his brethren.

Your correspondent quotes Siegel, who says that in the latter half of the fourth century, the Council of Laodicea (A.D. 361) refused the laity admission to the "altar," and that it was early the custom to separate the choir, the place where the altar stood, from the nave of the church with screens. Your correspondent is truly unlucky, in having fallen in with this passage, because it establishes my position beyond further doubt. Before the council in question passed this decree, it is clear that, at all events, the laity were admitted to the "altar;" and if that had been placed on the chancel or platform, the laity must evidently have been admitted there too, which, so long as this platform was confined to its legitimate original use, that of a raised seat for the president, would have been a violation of order and propriety, even had there been room for them. If Siegel had said *cancelli*, which were not "screens," but low railings, he would have been nearer the mark: the passage, however, proves, that the table was not even then on the minister's platform or chancel, as the choir was the place of the singers, who were not of the clerical order.

Your correspondent's ingenious manner of reconciling those two opposites, a Gothic cathedral and a primitive church, reminds me of a case which occurred a few years since in the Palais de Justice; wherein Louis Philippe was plaintiff, and a French artist, who had caricatured his Majesty, by publishing a comical resemblance to him, in the shape of a pear, was defendant. The artist defended himself; and, with pencil and paper, produced a series of sketches, which he successively handed up to the jury. "Gentlemen," said he, "is not the first one like a pear?—You admit it. Well, is not this second like the first?—That cannot be denied. Now, see if this family likeness does not run through the whole of them, and then tell me if this last one be not the very image of his most sacred Majesty? Ah, gentlemen, you laugh, but you cannot deny it. Well, then, if this second be like the first, and the third like the second, and so through the series till we come to the last, and that a facsimile of his Majesty, it is self-evident that Louis Philippe must be like a pear;—and why, then, should he object to my so representing him?"

It may be all very well as a *joke*, to say that Canterbury Cathedral was like this church, and that church like the other one; and so ring the changes till we get up to a really ancient church, and then say the last was like its predecessor, and that similar to others, which had some features in common with other others, and that therefore there was no real change after all between the arrangements of a Gothic cathedral and an ancient Basilica: that, I say, may be all very well as a *joke*, but for any one, with the two structures actually before his very eyes, seriously to assert that there was any similarity between them, either in arrange-

ment or use, really surpasses the bounds of fair discussion. If the one be "sacramental," the other must be diabolical; for good and evil are scarcely more opposed to each other than are those opposite ideas of religious worship which are embodied in a Gothic cathedral and a Christian Basilica.

Your correspondent is again most peculiarly unfortunate in attributing the gradual lengthening of chancels, which I maintain to be solely owing to the progressive advancement of the doctrine of transubstantiation, to "the increase in the number of the clergy;" it so happening that the parochial division had taken place before this chancel increase, and that this increase is the most remarkable in parish churches, where only one, or at the most three, ministers were located.

JOHN ELLIOTT.

FOREIGN ART INTELLIGENCE.

Cairo and its Buildings; by a German Architect.—The gigantic king's halls of Thebes have now been mute for many a day, and the place once occupied by Memphis changed into a forest of palms. Alexandria, that creation of the Macedonian, was also nigh vanishing away, when the increased communication between east and west called her into new existence. The real centre, however, of Young Egypt, its splendour and glow of colours reflect from that city which the Oriental calls, in conjunction with the whole land, *Masr*—we Europeans, *Cairo*. It was founded by the rebel Fatimites, in 970, A.C., and its citadel, far-sighted, possesses in its gigantic wall, hewn 600 feet down to the level of the Nile in the solid rock—a work not quite unworthy of ancient Pharaohism. Whoever wishes to understand how Egypt speaks to the mind of the artist, may ascend the castle, and place himself on the large terrace of Saladin. The colossal pyramids lay in sepulchral quiet on the brim of the desert, and three to four hundred Moschee steeples, many of gilded lead, glitter in the radiant sun, and proclaim the splendour of the African capital. The rubbish heaps of Memphis and Heliopolis define the picture on both sides. Cairo is now one of the world's cities, as its area, including that of the old town and Boolak, equals that of Paris. The symmetry of European cities, however, is here sought for in vain: it is an inextricable chaos of short *cuis de sac* (no-thoroughfares), districts closed up by gates, streets running and diverging without order or system, and exhibiting a real zig-zag, without any inscriptions or numbering. A broad canal of considerable depth conducts the water from the Nile-island, Rudha, right through the city. The only pharos for guiding the stranger towards some orientation, are the large squares, of which that of Eskebieh, covered with shadowing trees, is double the size of the Luxor-place, in Paris. The houses, rising to two or three lofty stories, according to Oriental fashion, are mostly made of bricks, moulded of Nile loam, and dried in the sun, without burning, and only those of the rich have the lower story constructed of hewn stones, and above a glare of most varied colours. One of the minarets, called Sultan Hazan, has a vast and towering dome and two minarets, which proudly rise even above the height of the citadel. This building may justly be called the finest in Cairo, from the wasteful display of arabesques, made of marble, bronze, and fine stone, and the gigantic passages of the Koran, written in gold and every hue of colour. As Constantinople was built in emulation of Rome, so at old Cairo the Fatimite Sultan wanted to surpass the seat of the Caliphs at Bagdad. There are plenty of gardens here, like in most cities of the Orient; none of our French trillix-work, but tufts of shadowy foliage, citrons and oranges, the vine, yellow-blooming acacias, sycamores and date palms, mulberries, myrtles, and pomegranates. We thus better understand the meaning of the *chiosks* (*garden pavilions*) which surround these spaces: their most gaudy colours are but the reflex of that nature amongst the scenery of which they have been erected.

Berlin: Art for the People.—One of the

great effects resulting from the world's exhibition at London, has already made its appearance in Germany—and its author is no less a man than Peter Cornelius. It is the plan to produce, at the Royal Porcelain Manufactory of Berlin, a sort of majolica, which albeit of little cost, should still exhibit the highest perfection of form, colouring, and painting. In the fourteenth and fifteenth centuries, those periods where popular culture was, in some parts of Europe, at its highest *acmé*, the fabrication of majolica in Italy had been carried to the highest perfection. There exists a tradition that Raffaele had a set of plate made for one of his mistresses, who kept a tavern, and that he himself furnished the drawings of the forms and ornamentation. That his pupils have not neglected to follow such example, may be gathered from the fact, that the making of majolica reached a high degree of perfection at Urbino from 1530 to 1580.

Augsburg: Art and Improvements.—The present exhibition of the Art-Union of this city has been a very good one, as the committee have purchased about twenty pictures from the Munich union, amongst which were paintings by Stangi, Morgenstern, Valtz, &c. King Ludwig wished, of late, that the memory of Holbein should be still further honoured in this city, and a fine marble bust of this master had been executed by M. Læson, in Munich: this also graced the exhibition. As some years ago two hitherto unknown pictures of Holbein had been discovered in the lofts of the convent of Sta. Anna, they had been restored and placed with the bust of the old master. They represent an Augsburg patrician and his young wife. The bust will be ultimately placed in the Holbein Hall of the Gallery. As the wish becomes prevalent at Augsburg that more travellers should avail themselves of the facility of its present access by railway, it is proposed to erect covered arcades, once usual in Italian and German cities, and to have them ornamented by frescoes, representing scenes from the history of this old commercial emporium. Besides the paintings of Holbein, the Augsburg Gallery is very rich in works of the old school of Upper Germany (*Oberdeutsche Schule*): the locality of the Art-Union, moreover, is decorated with Italian frescoes from the times of the Fuggers, fifteenth century. At the same time, the inconvenience of having placed the railway terminus outside the town, becomes severely felt, and a plan has been started to transfer it to some more central locality; which, however, would imply an outlay of two millions of florins.

The World's Art-Exhibition at Brussels.—The following royal decree has appeared in the *Moniteur Belge*, dated 16th March: "Reviewing our decrees relating to a National Exhibition of works of art which has taken place every three years at Brussels; and taking into consideration that the Exhibition of 1851, which would commence on the 15th of August, and close on the first Monday in October, coincides with the Universal Exhibition of Industry which will open at London in the course of the present year; considering also, that on this occasion, it is requisite to impart to the Belgian Artistic Exhibition a more general character, by inviting thereto competitors of all nations; pursuant to the report of our Minister of the Interior, We have decreed and do decree:—Art. 1. A general exhibition of works of living artists will take place at Brussels, on the 15th August next. Art. 2. The organisation and direction of the Fine Art Exhibition of 1851, are entrusted to a commission, the members of which will be appointed by our Minister of the Interior.—Leopold, Regius."

Members of the above Commission.—Messrs. Alvin, keepers of the royal library; Count de Beaufort, inspector-general of fine arts; Deman, architect; Geefs, statuary; Madon, artist.

A NEW DAGUERRETYPE GALLERY.—A new Daguerreotype Gallery is to be built at 107, Regent-street, for Mr. Claudet; Mr. Eppy, architect. The following is a list of the tenders:—Saunders and Woolcott, 496l.; Yardley, 490l.; Taylor (Regent's-park), accepted, 425l.

SCENERY AND THE STAGE.

Her Majesty's Theatre.—The great theatre in the Haymarket, which, as we have before said, presents one of the most successful pieces of theatrical decoration in London, has been thoroughly renovated, and looks as well as it did when first completed: the gold-coloured hangings have been refreshed, and the pictures which filled the panels of the ceiling, proscenium, and drop-scene, have been cleaned and strengthened, so that our foreign and provincial visitors will see it in its best aspect. A brilliant season is of course expected, and Mr. Lumley has made his arrangements to be equal to the occasion. In a new ballet produced on the opening night, called "*L'Île des Amours*," Mr. C. Marshall has given some very brilliant scenery: the effects and groupings, such as Watteau painted, are also good. The first scene is of practical attainment,—a pleasant place by the river's side, with its church, and trees, and houses, such as one meets with on the Rhine or the Moselle: the last is a bower of roses, more bright and beautiful than one finds in the world, but none the less pleasant to look at. The rain was pouring mercilessly out of doors, and we were grateful for a little sunlight, justifying pink and white satin for peasant's wear. Mons. Van de Weyer lamented the other night that we did not transfer the architecture of our stage to our streets: it would be very desirable at the same time to transfer the atmosphere and climate.

Diorama of a Tour through Europe.—As we have mentioned Mr. Marshall's name, we will take the opportunity to say that great improvement has been effected in the lighting and management of his large moving Diorama at her Majesty's Concert-room, Haymarket, already previously described by us with commendation. Here, truly, more than

"Fancy, like the finger of the clock,
Runs the great circuit, and is still at home."

Here are the places themselves in their true similitude, some of them from daguerreotypes, and the others from sketches on the spot. It forms at once an instructive and charming exhibition.

The Vanbrugh Club.—"When the drama has flourished, so have the sister fine arts, especially architecture." The club of young architects and others who have taken this sentence from the chair of the Academy for their motto, Vanbrugh for their godfather, and once in the year don the sock and buskin to show their powers of assumption, good memory, and facility of utterance, gave a performance at the Soho Theatre on the 20th. The pieces selected were Jerrold's "*Beau Nash*," "*Time tries All*," and "*The Critic*,"—the first, a professional joker might say—seeking a reason for the selection,—because the hero was a Bath brick; the second, with an eye to the houses of some speculative builders; and the third, because architects are not usually very fond of having it played by other people. All the pieces were very creditably acted,—"*Time tries All*," in particular; and to two or three of the performers individually, stronger praise might with justice be given.

The Adelphi Theatre, Strand.—The new drama here, "*The Disowned*,"—a stirring romance in three volumes, with all the Adelphi effects: there are some very truthful interiors. The last scene, too,—a wood-road by moonlight—is very effective.

THE OLD POOL BRIDGE, LIVERPOOL.—The Old Pool Bridge, which formerly crossed the Pool of Liverpool, has been recently examined during some excavations by the gas companies. It consists of a single arch of about 12 feet span, semi-circular in form, and of two orders, and is built of coarse yellow sandstone. This bridge was built by Lord Molyneux in 1672, to the road across the common, and is now short of the centre of Liverpool. The Pool, a small river and estuary running from the Moss Lake (all long since built over) was filled up within the memory of persons still living. The bridge is now about three feet below the surface of the street.

FIRES IN CRAZY CHIMNEYS.

ANOTHER fire, through the improper construction of chimney flues, very nearly destroyed Gannabury-house, a few days ago. It appears that timbers in close contact with the flues had become ignited, and that, as is the case with one-half of the accidental fires, the flames burst forth when least expected, after the fire in the chimney had been extinguished.

In the erection of chimney shafts even of new houses, very rarely is sufficient attention paid to the laying of bricks with mortar in compact courses, and when the workmanship is least faulty, the mode of fixing dressings and fittings in wood is extremely reprehensible: while the work is green the carpenter follows on with floorings and skirtings, drives plugs into the chimney-breast to take his nails, lays trimmers on close to the wall (never more than 9 inches and often only 4 inches in thickness), and completes his flooring also up to the brickwork. Hence it happens that the plugs so driven form an aperture and frequently force off the plaster (or *pagetting*) within the shaft.

The new mode of sweeping flues with whale-bone brooms protruded up the shaft, soon abrades any loose particles; and the frequent recurring raps of the iron joints by which the cane rod is connected, lays bare the bricks and prepares the flue, already roughened within, for the adhesion of a dense sooty concrete: in this state, when a chimney accidentally becomes ignited (and it is then a happy accident if the wooden plugs, by this time pretty inflammable, or dried to touchwood, do not lend their aid as occult and dozy incendiaries!) away goes the structure like oil and flax.

Old houses are notoriously ill-constructed as regards these particulars: all the defects before noticed are found in them; and, moreover, the venerable usage of laying beams of timber directly across chambers having a bearing on the brickwork of the chimney-breast and after exposing the end *flush* with the inner surface or *parget* of the shaft, perhaps a corbel, or as the masons call them (very properly in this case), a cobbie, is laid in the wall for its support; but the chimney end is exposed none the less to danger, and there is no builder who (having extensive practice) has not pulled down old houses with beams charred and part consumed, showing that the fire has so reached them through the above-mentioned crevices, and that the safety of the building was due to the absence of the atmospheric air alone. There is also in old buildings danger to be apprehended from the plugs driven for the adjustment of wainscot panelling, now grown into disuse; and the covering or casing with canvas and paper these linings and decorations of antiquity, though it may mislead one not critical in this respect, adds nothing to security.

Strike the wall, it sounds like a drum, for it is a hollow device, and when the fire comes the sound, or the canvass, will increase the fury.

Even in old houses all this can be remedied: all wooden skirtings should be severed from the breasts of chimneys: the whole space, in central stories, for 3 or 4 feet on either side of a fireplace, is a series of flues almost as close as the pipes of an organ: a fire in any one of these endangers the skirting, floor, and house; therefore every plug should be withdrawn, and the chinks be carefully filled with cement: the hearthstones should be raised, and the entire range searched lest any beam or trimmer come in contact with the flimsy screen of brick, [which only seems to be a solid wall: then a coating of Keene's cement should be laid on, and in that material the skirting could be worked out conformably to the pattern of the remainder of the room.

As to the wainscot, if any there be, it ought to be wholly removed from the face of chimneys.

With respect to the divisions between flues, which are by Act of Parliament qualified at 4 inches only, it is a question if that be enough to withstand the cane, ram, and brush, and when steam-engines and furnaces are taken into common flues, these are manifestly insufficient. The

recent method of constructing chimney-shafts in new houses by the use of the *tubular flue* in terra cotta or ironstone pottery ware deserves consideration: each length runs about 20 or 24 inches: fitted as joint and socket they form an incombustible pipe, extending from the fire-place to the top of the chimney; and, as no thick lodgment of soot can adhere to the smooth surface, although such a flue take fire, it will burn out before a dead heat can be generated, and timbers even in contact with it will escape unscathed. The extreme facility for cleansing, and the improved draught, make the tubular shaft by far the better on all accounts. We have heard it objected to them that the soot falls, and should be glad to have information on this point. New Buckingham Palace, and many of the mansions and hospitals erected within the last three or four years, have adopted them.

NEW CONGREGATIONAL CHAPEL,
ST. MARY CRAY, KENT.

A new congregational chapel is now being erected at St. Mary Cray, Kent, from the designs of Mr. R. M. Phipson.

The plan consists of two towers connected by an arcaded porch, the staircases to galleries being placed immediately behind, and entered through the inner sides of each tower. The chapel in the clear is 66 feet long by 44 feet wide, and is lighted entirely by a dome of cast-iron 46 feet long by 26 feet wide, glazed with ground glass in 44-inch lengths, bent to the curve of the dome. The weight of the glass is 30 ounces to the foot. To avoid the unsightliness of the interior of the dome being intersected by the beams and principals, the whole roof weighing, with the dome, upwards of 25 tons, is carried by a double pair of trussed principals 47 feet apart, connected by double purllins also trussed, their ends resting on saddle-shoes of cast-iron.

The galleries are also entirely carried by double guides trussed with 2-inch rods, and are capable of seating nearly 300 persons. The total accommodation provided is about 900 sittings. The ground floor is benched throughout, and has a row of ten carved stalls at the north and south sides of the eastern end. The pulpit, entered through a semicircular archway in the eastern wall, is carved in oak. The passage ways are laid with black and red tiles, and the building is heated by hot water.

The walls and ceiling are intended ultimately to be adorned with paintings.

The exterior is faced with squared flints laid in courses, and is almost the first attempt of any consequence to adapt this material to an Italian structure. The dressings are of Caen stone.

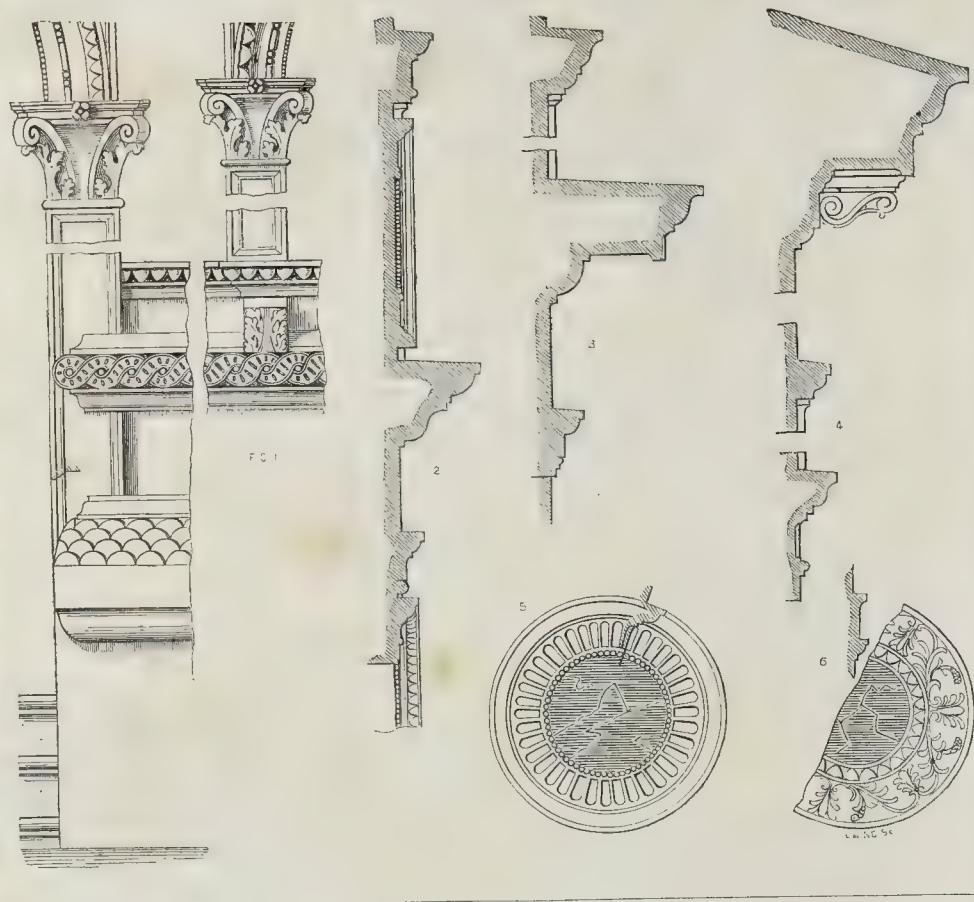
The whole has been built at the sole expense of Mr. W. Joynson, the well-known paper maker, at a cost of about 5,000*l.* Mr. John Goodwin, of Lewisham, is the contractor.

When we say that over the porch there is a Venetian window, and that the side towers, crowned with a cornice and balustrade, have two stories of dwellinghouse windows, it will be seen that the external appearance of the building is domestic rather than ecclesiastical.

AN INTERNATIONAL CONVENTION OF INDUSTRIALS.—A "delegate from the Industrial Congress of New York," Mr. Parsons E. Day, gives notice that there is to be a World's Convention of Mechanics and Working Men held in London, during the Fair of 1851, for the purpose of effecting an interchange of opinions in relation to the state of labour and the condition of the working classes in all parts of the world.

LIVERPOOL ARCHITECTURAL SOCIETY.—At a meeting of this society, last week, Mr. Pieton in the chair, Mr. Styrpe contributed the paper of the evening, pointing out "the objects and advantages of the study of archaeology," which gave rise to an animated discussion, in which the Chairman, Mr. Reed, Mr. Boulton, and Mr. H. P. Horner took part. Mr. Reed announced that the next subject for the students' design was a roadside inn, in the Italian style, to be sent in that day month.

DETAILS OF "PALAZZO DARIO."



THE PALAZZO DARIO.

THIS is one of the numerous small palaces to be found on the Grand Canal, Venice. It is, as may be seen by our illustration, in the *cinque-cento* style, and a remarkably interesting specimen. The lunettes are filled with choice pieces of *verd-antique* and *brocatello*, which, being very numerous over the whole surface of the front, give the palace a sparkling effect. There is a fault, however, in this building which should not be imitated, that is, the almost equal height of all the stories.

This palace has lately become the residence of the Russian Consul.

Detail.—Fig. 1 shows the base mouldings, with the dressings to the door and windows in the basement; figs. 2, 3, and 4, the cornices and string-courses; fig. 5, one of the paterae or lunettes under the windows of the one-pair story; fig. 6, the lunettes between the door and windows of the basement. J. T. W.

* * * Mr. Ruskin, in "The Stones of Venice," mentions this palace as one of the earliest specimens of the Renaissance engrafted on Byzantine taste. The date of it he considers about 1486.

CAMBRIDGE ARCHITECTURAL SOCIETY.—The concluding meeting of this society for the present term was held at the society's rooms, on Thursday, the 20th inst., Professor Willis in the chair. Mr. J. N. Smith, B.A., Trinity College, read a paper upon "The History of Church Music." This was followed by a paper on "Homden Conventual Church, Yorkshire," by Mr. John Denton, St. John's.

MEMORIAL WINDOW TO THE LATE ARCHBISHOP OF CANTERBURY.

WITHIN the last few days a stained glass window has been placed in Canterbury Cathedral, to the memory of the late Archbishop of Canterbury, by the subscription of some friends of his Grace.

The cathedral at Canterbury contains, without doubt, the finest collection of illuminated windows of the twelfth and thirteenth centuries to be found at the present day, both as regards the number of windows and the diversity of pattern: a casual comparison of them with the famed windows of Bourges or Troyes will at once show their superiority both in design and execution. It is, therefore, a severe test to place a modern window in the very centre of such glass. We are glad to hear that the new window bears the ordeal satisfactorily. It is well spoken of in respect of the arrangement of the border, groundwork, and medallions, on different coloured grounds, and the proportion each bears to the whole.

The window is Norman, with circular head, about 18 feet in height and 8 feet in width. The glass is in the style of the thirteenth century. The medallions for the subjects forming the central portion are alternately squares and lozenges, on the deep blue ground usual at this period. These are encircled by scrolls of the Early English style of foliage, on a ruby ground, forming a wreath round each medallion. The white stems of the scrolls are intertwined, each stem terminating with a bunch of feathery leaves, of various colours. The scrolls spring from the outside ring of a star, composed of

similar foliage, on a blue ground, which star is set in the broadest part of the ruby ground of the scrolls. Round the whole window runs a border, about 10 inches in width, composed of arabesque foliage, on a ruby ground, encircling a number of circular stars, on a blue ground.

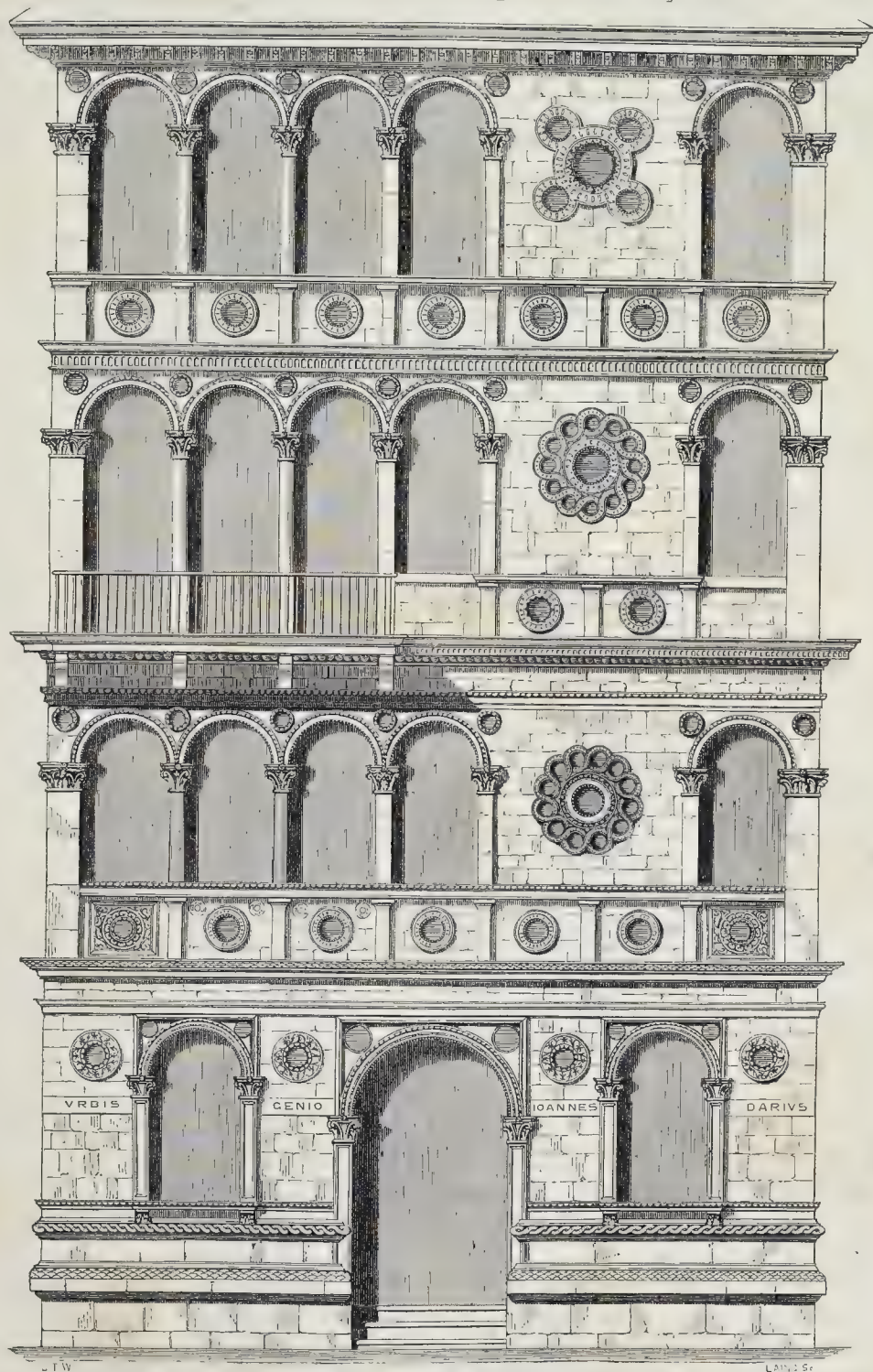
There is an inscription beneath the border to the following effect: "In memoriam feliciter extensi Episcopatus Provinciæ Cantuariensis in partibus Transmarinis, Gulielmo Howley hujus Ecclesiæ Archiepiscopo." The subjects of the medallions illustrate the inscription.

Our informant says that the effect of the window is extremely good, both on a near approach, and when viewed from a distance, at which, though the whole forms a piece of glowing and harmonious colouring, yet the separate portions, as medallions, &c., stand out in clear relief, and the amalgamation and consequent neutralization of colour, which so often renders modern windows a failure, is avoided.

ROOFING THE ROYAL EXCHANGE.—The Gresham Committee have refused to cover the area of the Exchange with glass, as requested by Messrs. Rothschild and a numerous list of city merchants. Meetings in the Hall of Commerce instead of the Exchange are talked of.

PEEL MONUMENTS.—Mr. Noble, the successful competitor for the Salford Peel Monument, has obtained, it is said, the commission to execute a similar work at Tamworth,—the result of a subscription amongst the friends and tenantry of the late baronet in that locality.

"PALAZZO DARIO," VENICE. [FIFTEENTH CENTURY.]



CAMBRIDGE LUNATIC ASYLUM
COMPETITION.

THIS competition, involving many excellent designs, was finally decided on Tuesday last by the committee, in favour of the motto, "Au Bon Droit," proving to be the design of Messrs. Kendall and Pope, of London, the architects of the Essex County Asylum. Upwards of fifty designs, we understand, were sent in, the estimates varying from 17,000*l.* to 70,000*l.* The style of the approved design is Collegiate, like the charitable institutions of olden times; with a chapel, tower, and spire forming the central object. The accommodation is for 200 patients. The estimate, 26,000*l.*

NOTES IN THE PROVINCES.

SUBSCRIPTIONS are being entered into for the resetting of Boston Church, at a cost of about 3,000*l.* The number of seats will also be increased by 500.—The churchwardens of St. Swithin's parish, Lincoln, are about to call for tenders for the formation of a parochial cemetery on a plan already prepared for a site also ready fixed on. The ground is to be laid out on the continental system.—On Tuesday in last week the first stone of a new chapel, for the accommodation of the inmates of the Norwich Infirmary and Asylum, was laid on the ground adjoining that institution for aged persons. The guardians voted 250*l.* for that purpose. Mr. Kitton, architect, supplied plans, and Messrs. Howard and Stone contracted for the erection. The chapel will be cruciform, built of brick, and covered with slate. The interior will be fitted up to accommodate 200 persons. Arrangements will be made for the separation of infirm, insane, and epileptic persons.—A companion memorial to the monumental window recently placed in the church of Litcham, Norfolk, by Mr. Douglas Lynes, of that place, in memory of his late father, has recently been dedicated by Miss Lynes to the memory of her late mother. The two windows are severally placed at the east end of the south aisle, and in the easternmost compartment of the south wall of that aisle. Both are of three lights, and have the same tracery: in each the two side-lights have emblematical devices, within quatrefoiles, and trefoiles upon a field of diapered quarries, within rich borders, while the two central lights have canopied figures. In Miss Lynes's window the central light is occupied by a group, consisting of the figure of our Lord, having the sister of Lazarus sitting in rapt attention at his feet: at the base of the composition, in an architectural panel, is an appropriate text. Messrs. Ward and Nixon, of London, are the artists of both windows: the designs were furnished by the son of the incumbent of Litcham, the Rev. Charles Boutell.—The tender of Mr. Denham, of Ryde, builder, is accepted for the building of a new house for Lord and Lady Downes, at Binstead, upon the original site.—Great excitement prevails at Dudley, in consequence of the castle ruins, walks, and caverns having been leased by Lord Ward to the South Staffordshire Railway Company for a period of seven years. It is understood, however, that the company do not intend to exclude the inhabitants. The object they have in view, says *Aris's Gazette*, is annually to produce a series of castle *fêtes*, as a speculation to bring traffic on their line to Dudley.—The idea of erecting a new church amongst the villas now being erected on the Cook's Folly side of Durdham Down, Clifton, is entertained by the inhabitants in that district. The bishop of the diocese has given his consent to the project.—The foundation-stone of St. Paul's Parochial Schools, Bristol, was laid on Thursday in last week. The contract, according to the *Bristol Journal*, has been taken by Mr. John Lawrence, builder, and the erection is expected to cost about 800*l.*—Nearly 20,000*l.* have now been raised for the erection of the new General Hospital at Bristol, and the selection of a site is engaging the attention of the committee.—The banks of the Wye, at Chepstow, near the intended bridge, now bear a business-like appearance, and the immense tube, manufactured on the spot, will shortly be removed; the heavy castings from Dublin

having arrived. The chains and blocks are on the spot, with six large crab winches, capable of lifting nearly fifty tons each, and in two months a walking passage, at least, over this rapid stream is anticipated.—It has been agreed to expend the fund for the Bailey Testimonial, at Hereford, on the cathedral choir, in preference either to the erection of a church, or the formation of a statue, &c.—The new martello tower, west of the dockyard at Pembroke, has been finished, and the other is in a very forward state. The small fort on the Stack Rock, at the entrance of the haven, is progressing under the hands of the contractors. It is in contemplation to erect another and more powerful battery of heavy guns on Thorn Island, commanding the southern entrance.—When the last stone was placed on the top of the spire of St. James's Church, Devonport, the clergyman, architect, builders, workmen, and others, partook of luncheon on a platform round the top-stone, 150 feet from the ground.—The foundation-stone of schools in connection with St. Ann's Roman Catholic Chapel, Edge-hill, Liverpool, was laid on Monday week. The new edifice will be in the early English style, and its interior being about 93 feet by 30, it will afford accommodation for about 850 boys, girls, and infants. The design is by Mr. W. Willis Lloyd, of St. George's, Hull; and it is expected that the erection will be completed within the present year. The purchase-money of the land has been contributed by subscriptions, amounting to about 600*l.*, and the total estimated cost of the building, including the land, is 2,000*l.*—It is intended to take up and relays the paved approaches to the various entrances to St. Giles's parish church, New-castle-under-Lyme. The grave-stones are to be replaced.—The Darwen Gas Company have recently declared a dividend of 7 per cent., and the Durham Gas Company one of 8 per cent.—The Rev. Dr. Hamilton's Monument, recently erected in the Woodhouse Cemetery, Leeds, is about 23 feet in height, and covers a space 7 feet square at the base. It is composed of base or pedestal supporting four Grecian Doric columns, 6 feet 9 inches high, surmounted by an architrave, frieze, cornice, &c. The architrave is ornamented with guttae: the triglyphs are omitted, and sculptured representations of the cross, a book, and olive branches substituted. The four angles are ornamented with honeysuckles and hanging wreaths. On the top of the pedestal is placed a large urn, partly covered by drapery. The design was prepared by Mr. J. Dobson, architect, and executed in cleansed stone from Park Spring Quarries, by Mr. Geo. Hogg, of Leeds, builder.—The foundation stone of a chapel for the Wesleyan reformers, was laid at Dock-street, Monkwearmouth, on Wednesday in last week.—Docks are about to be constructed at Shields.—The foundation-stone of the new slaughter-houses at Edinburgh is to be laid on 31st instant.

COMPETITION FOR ST. GEORGE'S
HALL, BRADFORD.

THE competition for St. George's Hall, Bradford, which was advertised in *THE BUILDER* for weeks, inviting architects to submit designs, and relative to which about 200 architects applied for "instructions," has, like other similar affairs, been decided. How? I will tell you, Mr. Editor, as briefly as its importance will permit me.

On Saturday, the 15th of this month of March, the designs were sent in to the secretary, Mr. Hailstone; and I am told a goodly number were received, but the exact number has not transpired to the public at the time I write this. On Tuesday, the 18th, three days after the designs were sent in, the directors met for the first time to examine them, when it was declared that most of the designs possessed very considerable merit, and many of them were very eligible and suitable for the purposes for which the building is intended. But, notwithstanding the eligibility of so many of the designs, the directors, before they broke up their first meeting, decided the fate of all the

competitors *except six or eight*; and designs which had cost competitors weeks of study and labour, independently of expense, were adjudicated upon and rejected in a few hours by these directors.

On Wednesday, the 19th, the directors met again for the second time, and it was rumoured in the town that the final decision would be made that day; but I could not credit this report: however, the Bradford paper, which was published the day following, said, they had made every inquiry about the music hall, and they had been in hopes of being able to publish the decision of the committee that day; so that, after this statement, I thought my information received on the Wednesday was not far from being correct, and I concluded that the directors were about to decide this important matter *too hastily*, to come to an honest, impartial, and correct decision, such a decision which every competitor had a right to expect at their hands.

On Friday, the 21st, the directors met, for the third time, when they selected the design by Messrs. Lockwood and Mawson. So you see, Mr. Editor, that at three sittings, the directors of the St. George's Hall, Bradford, decided, in as many hours, what would have taken you, or any other professor of equal respectability and standing, as many days to decide.

And this decision accords with a report which was current in the town a fortnight before the plans were sent in.

A gentleman has informed me there are several plans of considerable merit by architects in Bradford, Leeds, and London, and as there is much jealousy with regard to the decision of the directors, I hope they will make a public exhibition of all the designs, in order that the competitors and the public may judge for themselves.

A LOVER OF FAIR PLAY AND A
COMPETITOR.TO LAY PLAIN TILES.—TILE ARCHES
FOR ROOFS.

IN reply to "W. X.," as to the best method of laying plain tiles on a roof so as to make it completely weather-tight, I would advise the following method, viz., first, let the tiles be well damped in water previous to being laid on the roof, and let all the heading joints of each course of tiling be carefully jointed with good mortar, and the edges of the tiles rubbed together. The joint of mortar should only extend from the top of the tile down to 5 inches above the bottom end of the same—the lower 5 inches of joint to be left entirely without any jointing whatsoever, so as to allow the rain water to find its way freely through the joint between the tiles down to the middle part of the tile immediately under the joint, and from thence downwards to the eaves or drip. If the tiles are 10 inches long there will, by this means, be 5 inches of weather-tight work higher up on the roof than the gauge of the tiling, and a lap of 2 inches where the three thicknesses of tiling are. It is most essential that the tiles be all whole and entire at the top ends, and well jointed, as that is the place where the wet is likely to find its way through the inside of the roof, if not properly taken care of. It will also be seen that the open part of the joints between the tiles extends 1 inch higher up on the roof than the lower ends of the course of tiles immediately lying on the same, thereby allowing the rain water that may be driven upwards by the wind or capillary attraction to find its way freely downwards again.

By this method there is no occasion to bed the tiles; but if they are bedded the mortar should on no account be laid any lower down on the tiles than 5 inches up from the lower ends of the same, and which has the effect of making the finished tiling look very open at the bottom of each course. Bedding the tiles with hay or straw is of little or no use, except to steady them.

A CLERK OF WORKS.

IN reply to "W. X.," who is anxious to know the best method of laying plain tiles, permit me to say, first, if round end

tiles are used (or any other ornamental tiles) the lap should be three-fourths of an inch more than in the common plain tiles: the length of the tile (as they vary) will give the gauge two inches, being the usual lap of common tiles. Secondly, with ornamental tiles the lath should be laid to a line-mark upon the rafters, and the upper edge of the laths should be perfectly straight, and so make the tiling weather-tight. The tiles should be laid in very fine mortar, made of loam and new horse-dung, well tempered and mixed together: if the tiles be nearly straight, great care is required in the laying. Fine blade moss, if procurable, carefully laid on the heads of the tiles, and not too thick, will be found effectual against the weather.

W. C. S.

In your third volume (p. 371) I find roofs mentioned formed of plain tiles (flat in cement) three courses thick; the span about 19 feet, &c. Wrought-iron bars were used 4½ inches by 1½, four feet apart, and others of smaller size for strutting. I should be glad to know how these answer in point of economy and durability.

It seems to me that the roofs of third-rate houses, 15 or 16 feet span, might be formed (if cambered about a foot) with iron of about half the size of the above, bearing on stone corbels. For some houses (to save loss) the roof might answer for the ceiling by composing the under side.

By properly bedding the tiles in good cement I have no doubt a strong roof can be made: the top course, if Peake's ferro-metallic, would be all the better, as being hard and straight.

No doubt some of your readers have executed roofs of this description, and can speak as to their merit.

A WORKING BRICKLAYER.

IMPROVEMENTS IN KENSINGTON GARDENS, &c.

Now that glass and iron are so cheap, would it not be worth while to expend a few pounds in placing a glass roof over the building in Kensington Gardens (designated a conservatory), and make a few alterations so as to allow the light to enter in front, making it a fit receptacle for plants, and not, as at present, a miserable dungeon, where they are condemned to linger out a miserable existence. The expense could be but small.

I would also direct your attention to a great eye-sore,—the state of the margin of the ornamental water, almost a second edition of the mud banks of Father Thames. This might be effectually remedied, and the general appearance greatly enhanced, by the erection of a stone plinth and balustrade all round the margin, making also a few handsome inclines for the water-fowl: a few statues or vases would add to the beauty of the whole. The land here is sadly deficient of drainage: even as late as last Sunday I was almost over shoes' top in trying to effect a crossing from the water to the bridge. I would also direct attention to the footpath in Hyde Park. The one along Rotten-row is now trodden to twice its original width with the present traffic: this I would propose at once to increase, and so prevent the grass being destroyed. The other to which I particularly allude is that running from the Marble Arch to the lower end of the Serpentine; not one-third wide enough for the traffic, and therefore the grass in the neighbourhood proportionably trodden away. This could be remedied at a small cost, and would be a great public convenience, especially in wet weather. As there seems no probability of the lions mounting guard at the foot of the Nelson column this year, I would suggest, by way of a temporary finish, that four field guns complete be placed on the four projections.

H. B.

MR. HENDERSON.—We are glad to learn that we were misinformed as to the death of this gentleman, who, although dangerously ill, is, we are told, still alive. The information came to us from a source that we thought trustworthy. However careful an editor may be, he will sometimes be imposed on.

MODERN MONUMENTAL BRASS.

A TABLET in monumental brass to the memory of the officers of Lord Hardinge's staff who fell in the battles of the Punjab, has been recently made by Mr. J. W. Archer.

The brass is entirely of oriental design, and is composed of—a canopy embattled and worked in sunk panels (by a method of the artist's own production), which contain ornament in geometrical figures, and the word "Moodkee" upon a ground of colour.

A figure of an angel upon a ground of deep azure and stars, displays the inscription.*

Buttresses, on which are a trophy of British arms, the trumpet, banner worked with the royal arms, &c., and the national flag, on the one side; and on the other a trophy of Sikh arms, containing the peculiar Sikh head-piece with heron plumes, nasal, and coif de maille, minutely worked in double rings, the shield ornamented with a tracery in low relief, the tulwar crese, richly-ornamented gauntlet, banner bearing the lion of Scinde, &c. Beneath the inscription, the word "Feroz-sha-hur," in large bright characters upon a ground of scarlet.

The base is composed of elephants entwining their trunks with the flowers of the lotus, upon a ground of diaper, bright flowers upon green,—a bracket completing the design.

The brass is intended to be inlaid in Purbeck stone, and will be sent to India.

GENERAL INSTITUTION OF THE BLIND, BIRMINGHAM.

THE following is a description of this proposed Institution:—The building, which is about to be erected on a piece of land bounded on two sides by the Carpenter-road and Church-road, Edgbaston, is in the Elizabethan style, and will present its principal front to Carpenter-road. In plan it will consist of centre and wings, the former 88 feet, and the latter 22 feet in length. The music-room will be placed at the north-west angle, being partially detached from the main building, and will be 45 feet by 25 feet. The centre, on the ground-floor, will consist of entrance-hall, 20 feet by 12 feet; sale shop, 26 feet by 18 feet; secretary's offices, master's, mistress's, and matron's rooms; store-room, spacious kitchen, and pantries. Immediately in the rear will be the domestic culinary offices, and the kitchen court; and beyond them the basket shop, 60 feet by 18 feet. The right-hand wing will contain dining-room, 40 feet by 20 feet; boys' school-room, 34 feet by 20 feet; and staircase, 20 feet by 9 feet; the opposite wing, girls' basket-room, 20 feet by 32 feet; girls' school-room, 34 feet by 20 feet; and staircase 20 feet by 9 feet; and these wings will be connected by a corridor, 90 feet by 6 feet. The music-room will be set back from the line of main front, and will be contiguous to the girls' school-room. The first floor will consist of the wings and the front portion of the central building, which will be arranged as dormitories, sick-rooms, &c. A store-room will also be erected over the basket-shop, of the same dimensions, namely, 60 feet by 18 feet. At the rear of the institution, and separated from each other by the basket-room building, will be the play-grounds, 150 feet by 94 feet. The entire site of the institution and grounds will enclose an area of 2 acres. The

* The following is a copy of the inscription:—

To the memory of Major George Broadfoot, C.B. 34th Regiment of Madras Light Infantry, who fell gloriously at the battle of Feroz-sha-hur, in the 38th year of his age, the last of three brothers who died on the battle-fields of Asia. Political agent for the affairs of the Punjab; Acting A.D.C. to the Governor-General in the battle. Second to none in all the great qualities of an accomplished officer.

Also, to the memory of Major Arthur Fitzroy Somerset, Grenadier Guards, Military Secretary and A.D.C. to the Governor-General, who fell mortally wounded, conducting himself with the hereditary valour of his race.

Also, to the memory of Major Charles Herries, of H.M. 3rd Light Dragoons, A.D.C. to the Governor-General, whose zeal and intelligence were most conspicuous.

Also, to the memory of Captain William Hore, 18th Bengal Native Infantry, acting A.D.C. to the Governor-General; a very meritorious officer.

Also, to the memory of Lieutenant John Munro, 10th regiment Bengal Light Cavalry; an officer of the greatest promise.

All of whom fell during the Sutlege campaign in their country's service, and whose imperishable reputation will be found recorded in the orders of the Governor-General. This tablet is erected by Lieutenant-General Viscount Hardinge, A.D. MDCCCLXIX.

building is to be executed in red brick and Derbyshire stone: the windows will be mullioned and transomed; and each of the wings will have a bold bay window, whilst the slightly projecting centre will have an oriel over the entrance doorway, which will form a principal feature, having an entablature over it, supported by semi-classic square columns and pilasters. The building is being erected by Messrs. Branson and Gwyther, under the superintendence of Mr. Samuel Hemming, architect.

PARK WICKETS AND GATES.

SIR,—As a resident of Westbourne-terrace, I think I have a right to complain of the ill-nature of the ranger of Hyde-park in shutting the wicket-gates which lead from this point to Brompton and Kensington Gore, as indeed all the other foot entrances, at eight o'clock p.m. There are families who reciprocate visits with me, and the distance which is but half-a-mile across the park, is made into three miles (!), when we are forced to take the round of Park-lane or Kensington.

It is churlish to obstruct people from using the public thoroughfares at any hour, and accommodates many a poor man whose time is an object.

Now, sir, pray ask the Commissioners of Woods and Forests to show a little more courtesy in this respect. Of late there does appear to be somewhat more alacrity in public jobs, for instance, in the prompt reconstruction of the marble arch; but whether this was done to get the start of remonstrance, or with the desire of doing something remarkable before giving up office, is uncertain: it is, however, most certain that the curtailment of liberties complained of is a general nuisance, and particular grievance to me and many more. My friends in Mayfair say it is most fortunate that the passage between Lord Lansdowne's and the Duke of Devonshire's (leading to Curzon-street) is private property, and not under the ban of the Woods and Forests; for, if the latter, instead of being locked but once a year, it would be shut up every night at sun-down, like Kensington-gardens.

Perhaps, sir, you can reply to a query, as many other editors do: if my footman should be spiked on climbing Hyde-park rails, could I recover the loss of his services and the surgeon's bill on an action at law against the Commissioners of her Majesty's Woods?

THERESA.

P.S. I send my card as a voucher. See what you can do for us.

COLOURED HOLLOW BRICKS.

In a public paper written by Mr. Chadwick some time ago on the means of diminishing the absorbency and damp of brick walls, he urged, on sanitary grounds, the use of hollow bricks, burnt hard, and glazed for outside walls, so that they might be made entirely non-absorbent of moisture: he urged that hollow bricks, of similar quality, as hard and non-absorbent as they could be made, should be used to prevent that absorption and retention of the mephitic gases which is perceptible in the offensive smell of small rooms which have been slept in, or crowded by a number of people. He recommended that the walls of rooms, on this account, should be made of the hard non-absorbent naked bricks, so glazed that they could be readily washed down, and suggested that to make the surfaces more seemly in appearance, the bricks should be dipped in "slip" or clay of a finer texture, white, or of such colour that they could be readily washed. By the selection of proper colours, polychromatic effects of a high order might be produced.

We understand that two rooms in the model cottages built for Prince Albert will be constructed on this principle. We have seen some specimens of hollow bricks with exterior colourings prepared by Mr. John Ridgway, potter, of Stoke-upon-Trent, of bright colours, not glazed, but dead, which certainly present new means, and those of a cheap and yet a good order for decorative architecture. But at present, at least, such bricks must be made

not by the common brickmaker, but by the potter. The process of covering the surface of a common clay body by a skin of superior clay of closer texture, by a veneer of clay, as it were, or by smearing or washing, has been applied in chimney-pieces and water-pipes, and is evidently capable of a far more extensive application.

VENETIAN GOTHIC.

WHEN I penned the brief description with which I accompanied the illustration of the Palace dei Pergoli Intagliati, published in the BUILDER of the 15th instant, I little thought that such an accomplished critic as "Zeta" could so far misconstrue the little I said, as to require the more full explanation which I now offer. I intended to direct attention particularly to the balconies, which are decidedly beautiful, although a classic spirit pervades the composition. I did not for a moment expect that any one would institute a comparison between our Gothic and that of Venice, and I intended to lay particular stress on the words, "the Gothic Architecture peculiar to Venice." I again assert that such parts of the front as conspicuously belong to the same period form a beautiful specimen of Venetian Gothic. The lowermost story with its diminutive windows is of course modern: probably there existed here formerly an entrance door from the water, as in most of the Venetian houses, the necessity of which is done away with by that to the next palace being now made common to both. "Zeta" may then conclude that the whole of the front, with the exception of the part just alluded to, is coeval with the Ca d'Oro. The height of the balconies from the landing to the top of the rail is 3 feet 8 inches, and this may be taken as a scale for the whole front. I do not expect "Zeta" to agree with me in pronouncing this Palace to be beautiful, unless indeed he has been to Venice (?), for we must forget entirely our own Gothic, before we can contemplate with pleasure that of the sea-girl city.

J. T. W.

TRANSATLANTIC ANTIQUITIES.

VAST regions of ancient ruins were discovered last year at the head of the Gulf of California. In describing them it was said at the time that "portions of temples, dwellings, lofty stone pyramids (seven of these within a mile square), and massive granitines of circular walls, round venerable trees, columns and blocks of hieroglyphics—all speak of some ancient race of men now for ever gone, their history actually unknown to any of the existing families of mankind. In some points these ruins resemble the recently discovered cities of Palenque, &c., near the Atlantic or Mexican Gulf coast; in others, the ruins of ancient Egypt; in others, again, the monuments of Phœnicia; and yet in many features they differ from all that I have referred to. The discoverers deem them to be antediluvian, while the present Indians have a tradition of a great civilised nation, which their ferocious forefathers utterly destroyed. The region of the ruins is called by the Indians 'The Valley of Mystery.'"

In connection with this very curious and interesting subject, it occurs to us to draw special attention to the singular terms in which the following well-known passage in Plato's "Timæus" is indited. In place of taking the original, which we suspect might now admit of a little improvement in translation, we merely adopt the first English translation that happens to come in the way, preferring it, in the meantime, to any re-translation of our own, even with all the—it may be equivocal,—advantages this suggestion, as objection might be taken to a re-translation made under such circumstances. The passage occurs, as will be recollected, in the detail, by Critias, of his great grandfather's version of his kinsman Solon's intercourse with the priests of Egypt, to whose ancient "sacred records" or traditions the allusion is made by one of these priests in the outset, who narrates the tradition as one even then of extreme antiquity:—

"Our sacred records relate what a prodigious force your city once overcame, when a mighty warlike power, rushing from the Atlantic Sea,

spread itself with hostile fury over all Europe and Asia. That sea indeed was then navigable, and had an island fronting that mouth which you in your tongue call the Pillars of Hercules; and this island was larger than Libya and Asia put together; and there was a passage hence for travellers of that day to the rest of the islands, as well as from those islands to the whole opposite continent that surrounds that the real sea. For as respects what is within the mouth here mentioned, it appears to be a bay with a kind of narrow entrance; but that sea is indeed a true sea, and the land that entirely surrounds it may truly and most correctly be called a continent. In this Atlantic island, then, was formed a powerful league of kings, who subdued the entire island, together with many others, and parts also of the continent; besides which they subjected to their rule the inland parts of Libya, as far as Egypt, and Europe also, as far as Tyrrhenia. * * * Subsequently, however, * * * the Atlantic island itself was plunged beneath the sea, and entirely disappeared; whence even now that sea is neither navigable nor to be traced out."

The mud of the subsiding island, and the earthquakes and deluges made to account for the disappearance of this trans-atlantic land, may well be excused a place in so momentous a record; and had the loss of the power or skill of previous generations to navigate the "real sea"—the Atlantic, and hence to cross from and to the disappeared land, been placed amongst the causes of its disappearance, instead of amongst its consequences, Plato, or Critias, or Solon's priest, would have been a little more logical, and nearer the truth, perhaps, over which the "mud" or dust of ages had cast its obscurity.

At all events, it would now really almost appear as if it were here recorded, in something else than mere ideal terms, however much obscured by error or tradition, that, at one time, our own hemisphere, or a very considerable portion of it, was overrun (just as America has been since the Atlantic has again become "navigable") by a great and enterprising people, who navigated the Atlantic ocean from "the great Atlantic island," or, in fact, from that transatlantic continent, or one or other of its island dependencies, of whose actual and wide spread civilization (and hence possible skill in navigation) in the most remote antiquity even of what we call the ancients of our own hemisphere, we are now attaining for the first time some important and unequivocal glimpses, in at least singular and heretofore unlooked for accordance with Plato's obscure tradition,—hitherto denounced as "a mere myth" full of improbabilities.

NEW RAILWAY TERMINUS AT GALWAY.

THE works at the Galway terminus of the Midland Great Western Railway have been commenced, and the new buildings, which consist of an extensive hotel in connection with the station offices, have been designed by the company's architect, Mr. Mulvany. The hotel will front Eyre-square, and the terminal offices are to be parallel with the departure platform. The booking-office (central on side elevation), 33 feet by 20 feet, is approached by a road with an incline of 1 foot in 14 feet. This apartment is situate at a level of 2 feet above the pathway at that point, is 18 feet in height, and entered by three doors, 4 feet 6 inches wide, and 11 feet 6 inches high. In the centre will be a metal dome, 10 feet 6 inches in diameter, supported on strong girders. A cornice and ornamented frieze course will surround the office. The exterior wall is 2 feet 8 inches thick; the landing, 5 feet 10 inches wide, ascended by three risers, and covered by a flat roof. On this platform are situated the various terminal offices, which are arranged as follows: to the left of the booking-office is a third-class waiting-room, 34 feet 9 inches by 26 feet, and lighted by three windows, 4 feet wide by 9 feet 4 inches high; a third-class females' waiting-room, 24 feet by 13 feet, with water-closets, 6 feet by 3 feet 6 inches; a first and second class private room, with three water-closets, urinals, &c., which is entered by a porch 11 feet 6 inches by 6 feet; a parcel office, 24 feet by 26 feet; mislaid luggage-room, 18 feet by 14 feet; third-class yard, with two water-closets, urinals, &c., and en-

tered by a porch 8 feet by 5 feet 6 inches. To the right of the booking-office is a second-class waiting-room, 26 feet by 21 feet; a first-class waiting-room, 24 feet by 16 feet; ladies' waiting-room, 24 feet by 14 feet 6 inches, with ante-room, 14 feet 6 inches by 6 feet, in which are two water-closets; superintendent's office, 24 feet by 10 feet 9 inches; refreshment saloon, 26 feet by 21 feet, lighted by two windows; porch, 10 feet 6 inches by 6 feet 9 inches, leading to coffee kitchen, 16 feet 6 inches by 9 feet 6 inches. The main wall, which will support the segmental corrugated iron roof, 80 feet span, constructing by Mr. Richard Turner, of Dublin, will be 3 feet 6 inches thick. The platform doors are intended to be 4 feet 6 inches wide by 10 feet high, of Riga oak, with plain architraves and dressings. Between the hotel and terminal offices is a house for the exclusive accommodation of the superintendent. The basement of the station offices contains various apartments. In the centre of elevation of station offices, is the entrance to booking-office, with three doors, having chiselled recesses, 13 inches wide, surrounding them, and central on the piers are brackets firmly secured to the wall, upon which an architrave, frieze, and cornice, 3 feet 7 inches deep, and blocking course, 1 foot 6 inches deep, and 14 inches in thickness, are constructed; a verandah being formed by their projection. The piers are 4 feet wide, composed of ashlar courses, of punched and drafted stone. At either side of this verandah is a wing 25 feet wide, with two windows, having chiselled recesses and pier similar in character to those before described, surmounted by a frieze course 1 foot 10 inches deep, a cornice with modillions, 1 foot 9 inches deep, and a parapet 4 feet 6 inches high, composed of pedestal, die, and capping. This portion projects 2 feet from the main wall. At each extremity of the station office building is a wing similar in all respects to those just described. The total length is 231 feet 6 inches. The parapet is broken at intervals by projecting piers. The frieze and cornice are continued the same from each extremity: Height to bottom of frieze, 15 feet; total height from ground line to parapet capping, 24 feet 7 inches; from floor of principal story to level of wall plate, 15 feet. The exterior of the building is composed of punched and drafted work, in ashlar courses, with the exception of the mouldings, cornices, plinth courses, recesses, round windows, &c., which are to be of chiselled stone. The offices will be enclosed by a roof composed of framed trusses, with girders, king post, principal rafters, purlins, common rafters, and strapped with Swedish iron. The elevation of principal story of superintendent's house will be of rock ashlar work.

The total dimensions of the hotel are 138 feet 10 inches in length, by 53 feet 7 inches in width. In the centre is a hall 23 feet square, which leads to an inner hall 23 feet by 11 feet, communicating with the principal staircase, 23 feet 3 inches by 21 feet, and a corridor at either side, 32 feet 8 inches long by 14 feet, off which the various apartments of the hotel are situated.

The principal elevation of the hotel consists of a centre portion, 30 feet 10 inches wide, and projecting about 2 feet beyond the main wall. In this the main entrance from the street to the building is formed, which consists of four punched and drafted piers, with French rustics, and having ante of chiselled stone at either side. In the centre of this portico is a door 4 feet 6 inches wide by 10 feet 6 inches high, leading to the hall; and in the inter-columns are two windows, 3 feet wide by 7 feet high, with architraves round same. The portico will be surmounted by an entablature. At each extremity of this elevation are wings 25 feet wide, of the same character as the centre projection, except that the principal story piers are wider and have no ante attached.

Mr. Dargan, the contractor for the extension line to Galway, is executing the works, and has undertaken to have the line open and the buildings completed against the 1st of August next. The probable cost will be 18,000*l*.

ASCALON AND ITS ANTIQUITIES.

The following is an extract from a letter, dated Jerusalem, Feb. 28, from Mr. E. T. Rogers, cancelliere to the British consulate at that place:—On the morrow I visited the ruins of Ascalon, which I found to be well worth seeing. Here are the remains of two churches, with beautiful white marble prostrate columns of about 20 feet long, with Corinthian capitals and bases also of white marble. Amongst the other ruins are columns of red, blue, and grey granite, and sculpture in many varieties of marble. A great many curiosities are found here by the peasantry, who sell them to the European travellers that pass through the village. They also find a large number of gold and silver coins, figures, ornaments, and idols: these they sell at a weekly fair held in the village of Medg'del. They are bought by the gold and silversmiths from Gaza and Jaffa, who repair to Medg'del for the purpose. Thus are lost to the antiquarian world all the beautiful works in gold and silver which must and do exist in this ancient city, for they are thrown into the melting-pot almost as soon as they are found.

NEW OLD-STAINED GLASS.

Does it not appear absurd to say that nothing is correct but what is a direct copy of what was done in the middle ages? Why is not progress to be allowed in glass painting and staining? Surely a figure drawn in a natural and easy position is much more pleasing than if put in distorted postures—postures in which no human being could put himself unless deformed. Much of the glass of the present age fixed in our churches is in this mediæval style, so far as its defects go; and, not content with this, many professed judges have their windows daubed and splashed with colour, to give it the appearance of glass which has been exposed to the atmosphere 300 or 400 years. If the question be asked why this is done, the reply given is, that the building is in the Early English, decorated, or perpendicular style; therefore it is absolutely necessary that the glass should be of the same character. To this I do not object; but why dirty it with colour to give it the appearance of age, and why copy all the defects of drawing? Copy the ancients when good, copy their colouring, but do not give your windows the appearance of age: let your glass have the same appearance as you suppose the old windows had when put up. It would be perfectly ridiculous for a mason, having finished the carvings and decorations of a church, to knock off parts of the bosses, mouldings, limbs of figures, &c., because there may be examples of old churches in the same style that have their decorations and embellishments injured by time. If this be not tolerated in masonry, why, then, should it be so in the art of glass painting? Why are the glass painters to stand still?

What could look worse than to see a beautiful Italian church, rich in all its decorations, with its windows filled with painted glass after the Norman style? yet such specimens are to be found even in London. This I must say is not always the fault of the artist executing the work: those who give the orders are frequently to blame. They may have seen in their rambles some good examples of Norman glass—perhaps at Canterbury or elsewhere—which they thought looked very well (no doubt it did where it was); they then go away with the idea that it will look equally well in their church, without considering its style,—and perhaps, being on the church committee, recommend it: the remainder of the committee acquiesce, knowing perhaps nothing about it: the windows are ordered, executed, and fixed, and, as a matter of course, condemned by every one capable of judging.

E. B.

EFFECTS OF NOT ADVERTISING.—A clerk in one of our mercantile establishments writes to his friends at home: "I have a plucky easy time of it now-a-days—very little work to do—our firm don't advertise."—*American paper.*

Miscellaneous.

RAILING AT BUCKINGHAM PALACE.—With reference to my remarks in February upon the uncouth line which the new arrangement of the railings now forms on the south side of Buckingham Palace, you said in a note at the bottom of page 99, it would not be understood without a diagram. As, however, I think the present line most unartistic and defective, and that an alteration should be made, and the public attention called to the propriety of it, involving no expense but a little labour, I submit it might be explained as follows without the drawing, viz.,—the iron gates separating the Bird-cage Walk from the space by the side of Buckingham Palace near Pimlico Gate, to have the enclosure of St. James's Park on one wing, and Pimlico Gate Porter's Lodge on the other wing. The railing on each wing of these Bird-cage Walk gates ought, for uniformity's sake, to be alike. On the Bird-cage walk side it is so, both wings being circular, but it is not so on the Palace side, the railing round the Lodge being circular while that to the Park is straight: this latter railing forms a very awkward nook in the park, as well as a very unsightly appearance in the Drive; and as the space can be well spared from the latter, it should be altered to correspond with the circular line of railing round the Lodge.***

RUINS ON THE EUPHRATES.—In a paper by Capt. Lynch, read at a recent meeting of the Asiatic Society, descriptive of the remains of antiquity on the banks of the Euphrates, from Ethdeheen to Asharah, the writer said:—At fifteen miles from Ethdeheen, on a rising ground, lie the ruins of Resaphé, or Sergiopolis, once the property of the Christians of Syria, and where remains of their churches are still found. The lower portion of one magnificent church is nearly perfect. The nave, which is 150 feet long by 80 feet broad, is divided from the isles by rows of white marble columns, of no recognised order. Three splendid arches spring from low buttresses between the columns. A small colonnade ran round the upper part of the church, on which the roof appears to have rested; but this has entirely fallen. The nave is semi-circular at the eastern end; but the place where the altar stood is covered with the ruins of the roof. Behind the altar are several small rooms, beautifully adorned with rich cornices, carved window-frames, and screens which admit the light through delicately-executed trellis-work, carved in marble. The whole area of the city is a mass of ruins; but the external wall is nearly perfect.

BELFAST SCHOOL OF DESIGN.—A brilliant *conversazione* was held in the Royal Institution, Belfast, on 18th inst., at the first annual distribution of the prizes and scholarships of the Government School of design in that city, the Bishop of Down in the chair, when the Earl of Belfast delivered an eloquent address, in course of which he said, "Let the student be assured that the time will soon come—is now at hand, when the diffusion of artistic ideas will drive manufacturers to exceed the narrow and unnatural limits to which they would fain confine their artisans, and forcing them to shake off the trammels of conventional forms, compel them to seek, not only an imitation of nature, but a combination of the numerous elements which nature affords, into forms as graceful as they are truthful. Thus will art serve manufacture by forcing her to her excellence, while manufacture, on her part, will encourage art by inciting her votaries to that honourable competition, that generous emulation, which arouses dormant talent into energy, and brings genius, 'mute and inglorious,' to light." The *Belfast Newsletter* of 18th inst. gives a full report of his lordship's address, and of the other proceedings connected with what appears to have been a very successful exhibition, which will do credit to the teacher, Mr. Nursey, and his assistants. From the annual report of the committee, which had been previously issued, we find that the number of male pupils taught during last year was 286, comprising a numerous and miscellaneous class of industrials. The female pupils, it is

to be hoped, will be shortly increased in number in a country such as Ireland, in the sewed muslin trade of which, in the north, no less than half a million of females derive a livelihood: the number of female pupils in all last year was only twenty-nine. The contribution of Government in 1850 was 500*l.* and there is hope of additional aid if the public of Belfast do their duty by equivalent subscription. The amount subscribed last year, however, seems only to have been about 300*l.* The densely crowded *conversazione*, at which a great many of the most influential and able inhabitants of the city and its vicinity attended, augurs well, we hope, for the future prosperity of their School of Design.

DREADFUL EXPLOSIONS.—A boiler at the Park-mills of Mr. Marsland, cotton manufacturer, Stockport, exploded on Monday in last week, knocked down one of the mills, and set fire to the ruins, thus killing and burning no less than twenty persons, and injuring many more, while a number escaped only by leaping into the river, and swimming for their lives. The boiler, it is said, was only nine months old. Professor Hodgkinson and Mr. Lillie have been investigating the matter, and a suspicious circumstance has transpired, viz., the extraordinary act of screwing down the steam junction valve, which appears to have been deliberately done by some one yet unknown. Otherwise, so far as we learn, the boiler appears to have been efficient, except in its indications of danger, which, however, may have been also tampered with. The inference, however, seems to be almost too diabolical for implicit belief.—An equally shocking explosion of another kind took place in the Victoria Coal-pit, near Glasgow, on Thursday in last week. Thirty bodies were discovered in exploring the pit after the disaster. They were all blackened and swollen by the fire, besides being mangled by the fall of masses of the strata in the pit during the explosion of the fire damp. It is alleged that 40,000*l.* have been expended in sinking this pit, and bringing it into what was deemed a state of perfect safety.

DEADLY EFFECTS OF WHITE LEAD.—A coroner's jury at Newcastle recently gave a verdict to the effect that a young woman employed in a white lead factory there had died from the effects of white lead. A surgeon employed by the manufacturers stated in evidence that, during the past twelve months, he had about 100 cases of lead colic, but no other death. The women were very careless of consequences, and uncleanly in habit. No personal blame was attached to the employers, Messrs. Locke, Blackett, and Co.

TENDERS FOR SURVEY OF WOLVERHAMPTON.—It is with some pain that I make public the following tenders to the Wolverhampton Board of Health for survey, for I am sure that you will at once agree with me that all such exhibitions of outrageous discrepancy are moral evils; for not only is the public business in question positively retarded thereby, and the opinion of the acting committees totally unsettled, but a direct stigma is cast upon the profession; the common honesty of all conscientious members thereof standing, as it were, impeached:—

Geo. Long, Stafford, 18 months	£1,600
Edward Gisborne, London, 15 months	1,275
H. Bayliss and Belliss, Stourbridge, 15 months	1,250
T. B. Bang, Liverpool, 3 months	1,100
Benjamin Bedford, London, 8 months	1,100
George Taylor, Wolverhampton, 12 months	1,100
Geo. Bate, Wolverhampton, 12 months	1,080
Clark and Mackinnon, London, 9 months	800
Wm. Doyley, Bayswater, 3 months	750
Messrs. Gandell, London, 6 months	640
Wm. Wilson, London, 12 months	625
J. M. Cleary, London, 2 years	595
M. Warren, Cardiff, 6 months	580
James Waddell, Manchester, 9 months	570
Hugh Leonard, Manchester, open	510
Edw. Ryde, London, 9 months	508
Henry Beckett, Wolverhampton, 12 months	450
J. E. Blenkard, Newark, 9 months	286
R. J. Hoggar, Oxford, 9 months	274

T. MEYRICK, Town Surveyor.

THE TEMPEST PROGNOSTICATOR.*—The fact that leeches tend to rise to the surface of the water, or the top of the vessel, containing them, when some preliminary meteorological change is in progress, has been long known, and is alluded to by various writers; but it has remained for Dr. Merryweather (most auspicious name!) to mature this fact by experiment into what he regards as an invention of momentous interest to mariners, to agriculturists, and, indeed, to all more or less interested in a foreknowledge of storms. The result of his experiments he states to be, that the rise of the leech indicates the accession of a storm often long before any barometer does so; and, in explanation so far of this circumstance, he adduces Dr. Faraday's account of Pelletier's discovery, that the electricity of the air, as indicated by an electrometer, increases as the instrument rises through each stratum of the air, while it is the same in amount horizontally in each stratum at any one time. It is on something like scientific principle, therefore, that Dr. Merryweather's Suctorial Barometer is constituted, and at all events we can better understand how leeches may thus be weather-prophets, and prognosticate storms, than how snails may constitute electro-magical telegraphs without connecting wires. By the way, it is an odd circumstance in connection with this latter somewhat *outré* discovery by a Frenchman, that that singular physio-philosophist, Oken, tells us the snail is the emblem of prophetic life! More singular still it is that Plato declares the liver to be the seat of the spirit of prophecy, and we know that snails are anatomically remarkable for relatively enormous livers!! Alas, for the dignity of the prophet!†

AGREEMENTS WITH THE WOODS AND FORESTS NOT SUABLE.—In the case of W. M. Nurse v. Lord Seymour and Others, in the Rolls Court, and lately decided, the plaintiff prayed that the defendants should be decreed, in accordance with an agreement of 18th May, 1831, to remove certain projections and encroachments made by the trustees of the Charing-cross Hospital on the footway on the north side of King William-street, and to cause the south frontage of the hospital premises to be made in conformity with the printed plan, so that there might be an uninterrupted passing in a straight line immediately before the buildings throughout that side of the street. Lord Langdale said that there was nothing to show that the Commissioners of Woods, Forests, and Land Revenues were liable to be sued for the specific performance of an agreement. They could enter into an agreement with the consent of the Lords of the Treasury, but those actions which could be brought against them were in relation to certain matters only, and there was nothing to show that they could be sued in respect of the performance of an agreement. The plaintiff was not entitled to sustain his bill. The demurrer must be allowed, and the plaintiff must pay the costs.

STREET CROSSINGS AND HALTING PLACES.—A correspondent, Mr. H. Baylis, of Stourbridge, suggests the adoption of tunnel crossings, with steps descending and ascending 8 feet only beneath the street, in preference to bridges requiring a greater ascent and descent above the same level. Although such tunnels have been repeatedly suggested in our columns, we confess we would prefer bridges in the open air to tunnels in the dark: to be sure they could be lighted constantly, but tricks might be played with the gas-pipes by evil-disposed persons. Our correspondent suggests, also, that halting-places might conveniently be placed as off-shoots to such tunnel-crossings. The injury to health from the inexcusable want of such places is pointed out by another correspondent, who suggests the formation, about the parks especially, of a sort of double pavilion, with inner entrances only at

right angles to the outer, and including every requisite, with glass in place of slate, &c. The injury to the health under present circumstances we have repeatedly pointed out,—an injury, doubtless, the more general and severe from the calcareous impregnation of the water in general use within the limits of the metropolis, and which ought never to have avoidable opportunity for deposit within the human body.

IRON PAVEMENT.—Iron is daily coming into more general use for almost every purpose. A letter from Paris, of a late date, says: "A new pavement, to upset the Macadam and other inventions of the kind, has been proposed by Mr. Tobard, who intends paving, in his way, the streets and boulevards of Paris. This gentleman proved by figures that melting iron is only worth 11 francs in Paris, 7 francs in Belgium, and 4½ francs in England; whilst the stone costs 25 francs in London, 15 francs in Paris, and 8 and 10 francs in Belgium. This new mode of pavement will be grooved, in order not to become slippery, and it is said that the electricity occasioned by the rolling of the carriages will prevent rust."

WATER-WORKS FOR AMSTERDAM.—This project, or a new one, again presents itself in the form of an advertisement, from which it appears that the capital is to be 500,000*l.*, divided into 25,000 shares of 20*l.* each, or 20*l.* each; deposit 12 francs, or 1*l.* per share. A board of directors has been constituted—of whom eight here are "home" directors; the others being at Amsterdam, in accordance with the Dutch law, *Société anonyme*, which limits the risk of the shareholder. Of the capital, which consists of 25,000 shares, two-fifths are reserved for Holland and the continent—7,000 having been already subscribed for, leaving 8,000 for appropriation.

STATUE OF FLAXMAN.—The marble statue, begun by the late Mr. M. L. Watson, and finished by direction of his executors and to the satisfaction of the committee appointed to manage the fund (370*l.* odd) subscribed towards its purchase and erection in some public building, is to be exhibited at the Great "Chamber of Industry," in Hyde-park, and meantime the committee mean to appeal to the public for the balance necessary to meet their engagement with Mr. Watson's executors.

BOLTON MARKETS COMPETITION.—At the last meeting of the committee, thanks were voted to the competitors generally, the committee concurring in the feeling expressed by Mr. Godwin, that many of the designs "are worked out with great care, and show a devotion of time and thought to the matter which entitles the authors of them to the thanks of the committee." It was resolved, "That as the placing of slaughterhouses underneath the market would probably become a nuisance and be incompatible with good sanitary arrangements, it is the opinion of this committee that it is not desirable to place the slaughterhouses under the new market." It was agreed that Mr. Robinson should be the architect, upon his entering into arrangements, satisfactory to the council, for the erection of the new Market-house, and to receive 720*l.* for his services as architect.

WESTMINSTER BRIDGE AND THE MARBLE ARCH.—In the House of Commons last week, Lord Seymour, in answer to a question from Sir R. Inglis, said that the evidence which had been taken upon the subject of Westminster-bridge had decided the question in favour of the removal of the old bridge, but that a commission was to be appointed to inquire into the best site for a new one. Mr. A. B. Hope (amid applause) begged that the commission would add "another arch" to the subject of their inquiry, and consider what was to be done with the Marble Arch, which certainly could not remain where it was.

ELECTRO-MAGNETIC MOTIVE POWER.—Mr. Hjorth's engine formerly required four powerful magnets to produce a double stroke, but he has succeeded in constructing a model of an engine, which, by one hollow magnet, produces the same results, and which can be extended in diameter according to the required power.—*Mining Journal*.

THE SCOTTISH IRON TRADE.—The prices of pig iron, says a contemporary, are still gradually declining, and will, to all appearance, continue to do so, if the ironmasters keep up their present production. The great majority of the producers of pig iron are desirous that the present make should be reduced, but as yet they have not come to any understanding on the subject. Were they to resolve on blowing out one-half, or even one-third of their furnaces, for six months, I have no doubt prices would materially improve.

AN AMERICAN ORDER OF ARCHITECTURE.—In the lower part of the building, and near the United States Court-hall, my attention was much struck by what I find I have noted as the American School of Architecture: if the invention of an American, it may fairly be so called. The objects alluded to are several columns or pillars, fashioned to represent the bundles of Indian cornstalks, and having capitals representing the grain partially stripped, ripe, and open. The effect is fine, and I should like much to see the design carried out in the erection of a building.—*Baird's West Indies and North America*.

BOXGROVE PRIORY.—A correspondent wishes to draw attention to the fact, that the remaining portion of the monastic building at Boxgrove Priory, Sussex, for many years used as a barn, is now threatened with, if not actually in course of, demolition. He says the edifice in question stands on the north side of the church, or ancient choir, to which, from certain points of view, it forms an imposing accessory, and possesses details of interest and value.

CANVASSING ARCHITECTS.—We have received from several quarters cards and circulars sent out by architects and surveyors soliciting business: in one the party offers to prepare schemes for drainage, &c. without requiring other payment than the expenses out of pocket. However derogatory such practices may be, we do not feel called upon to do more than allude to them.

MILITARY MODEL LODGING-HOUSES.—The attention of military men has been called by the *United Service Gazette* to the adaptability of the model lodging-house system to married soldiers, who might thus be lodged in convenient proximity to their barracks, and derive the utmost possible benefit from their late increase of lodging-money, with profit to the Government itself, in place of being scattered, as now, through distant and unhealthy localities.

THE PLAN ON DEEDS.—The *Sussex Express* says,—At the Maidstone Assizes, during last week, Mr. Sergeant Shee, in arguing a question of law, referred to a case ruled by Lord Chief Justice Wilde, wherein a deed, conveying a certain parcel of land, recited that it was 35 acres in extent, and further mentioned that a plan annexed described the quantity and position of the land. When the plan was consulted, it was found that the parcel of land was only 25 acres in extent, and the court held that the plan must govern the quantity, because it was part of the deed, and must be held to be more correct than the deed. Lord Campbell (who presided), remarking upon this, asked the learned Sergeant if he ever heard of the fighting attorney, who sent a challenge to a gentleman to meet him in the Phoenix Park, Dublin, and in fixing the event locally, said, "the 15 acres, be the same more or less?" Such a description in the deed would have saved all further trouble. Sergeant Shee, amidst a general titter, said he had never heard of the clever attorney who could not forget his law even at such a moment of excitement.

SURVEYORS WITH A DIFFERENCE.—Pray insert the following list of tenders, delivered on the 20th ult., for plans of the Harpur Charity Estate, at Bedford, also plans showing the drains of the same, and let your numerous subscribers see that there are blind surveyors as well as blind builders:—

Austin (Bedford)	£44	2	0
Jackson (ditto)	22	10	0
Horsford (ditto)	11	11	0
Usher (ditto)	4	14	0

A trifling difference!

G. B.

* An Essay explanatory of the Tempest Prognosticator in the Building of the Great Exhibition for the Works of Industry of all Nations, read before the Whitty Philosophical Society, Feb. 27, 1851. By T. MERRYWEATHER (M.D., Whitty, the Designer and Inventor, Churchill's Echo, 1851.

† Plato is not altogether unsupported in his strange ideas, at least mythologically, and hence, figuratively speaking, Prometheus (the Foreteller) had his liver renewed every night.

CLEANSING BOTTOM-TAP FOR CISTERNS.—An idea suggested in a previous volume of the **BUILDER** has lately been provisionally registered, it appears, as "Lowe's Self-cleansing Sanitary Cistern." The invention consists, as our readers may recollect, of a conical bottom ending below in a tap for withdrawing the sediment, &c., which usually collects at the bottom of the water-cistern.

WOLVERHAMPTON MARKETS COMPETITION.—The committee have named Mr. Robinson the successful competitor for the Wolverhampton markets; and awarded the second premium to Mr. Griffin, of Wolverhampton. Mr. Griffin was once under our own charge, and we are right glad to hear that he bids fair to realize the good expectations we always had of him.

ALCOHOLIC ENGINE.—We are informed that a locomotive engine is building in New York, for the Erie Railway, in which nothing but alcohol is to be used for heating the boiler.

GAS RETORTS.—Mr. James Rennie, of Falkirk, has taken out a patent for a revolving gas retort, bringing every part of the contents under the immediate action of the fire, and at the same time equalising the wear of the retorts. They are formed of clay, connected at the end with a short metal shaft, working in a plunger block.

WAY OF PAINTING FARM-BUILDINGS.—Having, some years ago, to superintend the erection of a great number of farm-buildings, and it being the particular wish of the nobleman on whose estate they were built, that they should be rendered as durable as the material employed would admit, viz., timber in all parts, with the exception of the roof and foundation, I had all the body of the buildings done over with a mixture of gas-tar, two parts; pitch, one part; the other part half quick-lime and common rosin, put on quite hot: it requires two coats at least: three is better, the first to be perfectly dry and hard before the second application: while the last coat was still soft I had dashed on it, with a trowel, well washed sharp sand, or more properly minute flint stones, which remained after several washings: this we managed by the assistance of a fine wire sieve, and a stream of water with a good fall: this forms a perfect stone face to the timber; and from the appearance of them when I last saw them, they were likely to last many years longer. The sand should contain no stone more than three lines in diameter, in fact, if all the earth be washed out, the smaller the better. The window frames and doors were done over with the commonest paint I could get in London, a stone-colour, three coats, besides the priming; the paint mixed thick, and dartered over in the same manner as the rest of the building, with a still finer sand: this also appeared to stand well: the sand must be made perfectly dry before it is used. The expense I cannot exactly state, as I cannot lay my hand on the book just now, but I know it was not much, and has given great satisfaction. It is right to state that the wood-work must be perfectly dry and well seasoned before this mixture should be applied: it is better to wait a year to effect this end than put it on green wood.—*E. X., in Gardeners' Chronicle.*

TENDERS

For building new painting room for Messrs. Grieve; Messrs. Hodgson and Evans, architects.

Hicks	.....	£1,263	0	0
Mansfield	.....	1,194	0	0
Trebarne	.....	1,197	0	0
Holland	.....	1,146	0	0

For New Church at Crocken-hill, Eynsford, Kent; Mr. Edwin Nash, architect.

	Faced with brick.	Faced with flint.	Faced with rag-stone.
Sutton and Walter	£1,759	£1,763	£1,902
Higgs	1,747	1,735	1,835
Hemmings and Foster	1,725	1,725	1,835
Holmes	1,700	1,757	1,795
Haynes and Co.	1,595	1,898	1,773
Reeves	1,850	1,670	1,700
Faul	1,554	1,667	1,686
Myers	1,650	1,690	1,670
Winsland and Holland	1,515	1,496	1,649
Kirk and Parry	1,425	1,405	1,510
Young	1,394	1,440	1,496
Constable (accepted for rag)	1,410	...	1,445

TO CORRESPONDENTS.

"J. M." (three months' notice must be given before wall can be condemned. If a sound and proper wall for "J. M." house, and adjoining owner require to rebuild it, it must be at his own expense. If it be an insufficient wall, the liability of "J. M." would depend on the wording of his lease). "E. W. L. C." "P. S." "W. H. W." "H. E. K." "W. H." "R. C. C." "L. C." "G. G. Amateur." "C. L. N." "G. B." "T. N." "J. H. S." "F. O." (our correspondent is right: memory slipped). "Architectural Pupil." "C. H." (if the builder followed orders, he is in the right: unless he contracted to do the work according to the Buildings Act). "J. M." (we were unable to send). "Johnny" "T. L." "X. Y." "J. P." "G. G. L." "J. M." "R. and S." "R. M. P." (thanks). "T. H." "A. B." "A. Third Amateur." "C. L. N." "G. B." "T. N."

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor," all other communications should be addressed to the Editors, and not to the Publisher.

ADVERTISEMENTS.

METROPOLITAN AND PROVINCIAL JOINT-STOCK BREWERY COMPANY.—(Registered Provisionally pursuant to 7 & 8 Victoria, cap. 110.) The Directors of this Company are proceeding with an ALLOTMENT of SHARES. Prospectuses and every information may be obtained at the temporary offices, Eldon Chambers, Devonry-square, Temple. CHARLES HENRY EDWARDS, Secretary.

BRITISH MUTUAL LIFE OFFICE.—The Public are invited to examine for themselves the advantages offered by Assurers for the life of the insured, as granted by this Office. Apply to CHARLES JAMES THORPE, Secretary, 17, New Bridge-street, Blackfriars.

BRITISH ASSURANCE COMPANY, 3, King-street, Chesham. Chairman—SIR JAMES SMITH, Bart., Esq., A.R.A. The rates for both fire and life assurance are as low as can with safety be taken. The premiums for life insurance are made payable to the convenience of the assured. Prospectuses and all particulars may be had at the head office, or of any of the agents. JOSEPH R. DODD, Manager.

PROVIDENT LIFE OFFICE, 50, Regent-street, City Branch.—2, Royal Exchange-buildings. Established 1808. Policy-holders' Capital, 1,180,738. Annual Income, 18,000. Bonuses declared, 73,000. Claims paid since the establishment of the Office, 1,898,000.

PRESIDENT.—The Right Honourable EARL GREY.

Directors.—FREDERICK SQUIRE, Esq., Chairman. WILLIAM HENRY STONE, Esq., Deputy-Chairman. Henry B. Alexander, Esq. Thomas Maitland, Esq. George D. Baker, Esq. William Oller, Esq. Alexander Henderson, M.D. Asperley Pells, Esq. Sir James Smith, Esq. George D. Baker, Esq. Sir Richard D. King, Bart. The Rev. James Sherman. The Hon. Arthur Knapp, Esq. Capt. William John Williams. J. A. Beaumont, Esq., Managing Director. Physicians.—John Maclean, M.D., F.R.S., 29, Upper Montague-street, Montague-square. Nineteen-twentieths of the Profits are divided among the Insured.

EXAMPLES OF THE EXTINCTION OF PREMIUMS BY THE SURRENDER OF BONUSES.

Date of Policy.	Sum Insured.	Original Premium.	Bonuses added subsequently, to be further increased annually.
1806	2,500	79 10 10	1,229 2 6
1811	1,000	31 10 2	114 10 10
1818	2,000	34 10 10	114 10 10

EXAMPLES OF BONUSES ADDED TO OTHER POLICIES.

Policy No.	Date.	Sum Insured.	Bonuses added.	Total with additions to be further increased.
231	1807	500	1,369 19 8	1,869 19 8
1174	1810	1,200	1,160 5 6	2,360 5 6
3292	1820	5,000	3,585 17 8	8,585 17 8

Prospectuses and full particulars may be obtained upon application to the Agents of the Office in all the principal towns of the United Kingdom; at the City Branch, and at the head office, No. 50, Regent-street.

THE LIVERPOOL AND LONDON FIRE AND LIFE INSURANCE COMPANY.—Established in 1805.—Empowered by Acts of Parliament. Office—3 and 10, Water-street, Liverpool; 30 and 31, Poultry, London.

Directors.—Sir Thomas Bernard Birch, Bart., M.P.; Adam Hodgson, Esq.; Samuel Henry Thompson, Esq. CHAIRMAN, WILLIAM NICOL, Esq.

JOSEPH C. EWART, Esq.; JOSEPH HORNBY, Esq. Thomas Brocklebank, Esq. George H. Lawrence, Esq. William Dixon, Esq. Harold Little, Esq. John Marriott, Esq. William Parry, Esq. Edward Mow, Esq. T. Stenard Gladstone, Esq. Lewis Meller, Esq. Joseph Shapley, Esq. Robert Hargreaves, Esq. J. Stoddart, Esq. John Swainson, Esq. George Holt, Esq. John Hore, Esq.

SECRETARY—Swinton Beall, Esq.

DIRECTORS IN LONDON.

CHAIRMAN—WILLIAM EWART, Esq., M.P. DEPUTY-CHAIRMAN—GEORGE FREDERICK, Esq. Sir W. P. De Bathe, Bart. Hon. F. Ponsonby. William Brown, Esq., M.P. John Ransing, Esq. Nathan Pease, Esq., M.P. John Ransing, Esq. Frederick Harrison, Esq. Seymour Teulon, Esq., Secretary. James Hartley, Esq. Swinton Beall, Esq., Secretary. Ross D. Mangles, Esq., M.P.

RESIDENT SECRETARY—Benjamin Henderson, Esq.

CONSTITUTION.

Liability of the entire fund of shareholders unlimited.

FIRE DEPARTMENT.

Agricultural, manufacturing, and mercantile risks freely insured—Firearms and Collieries—Marine—Fidelity—Fidelity in the Settlement of losses liberal and prompt.

LIFE DEPARTMENT.

Premiums as low as safety—Bonuses not dependent on profits, but declared and guaranteed when the policy is effected—Surrenders of policies favourably dealt with—Thirty days allowed for the renewal of policies—Claims paid in three months after proof of death—Policies not disputed, except on the ground of fraud.

Full prospectuses may be had on application at the office of the company as above, or to any of its agents in the country.

HEALTHY AND UNHEALTHY LIVES ASSURED. THE CATHOLIC LAW AND GENERAL LIFE ASSURANCE COMPANY, 8, New Coventry-street, Leicester-square, London; and 18, Rue Tranchée, Paris; incorporated under the French and English Laws. This Company assures Diseases as well as Healthy Lives. Large tables of rates, and full particulars, at all times ready. The Board meets every Thursday at 3 o'clock. Prospectuses, proposals, and all information furnished on application to the Actuary or Secretary.

WILLIAM HENRY ARCHER, Actuary. WILLIAM SURREY, Secretary.

LONDON ASSURANCE CORPORATION.—Established by Royal Charter, in the reign of George I. 1720.

For LIFE, FIRE, and MARINE ASSURANCES. Head Office, No. 7, Royal Exchange.

Branch Office, No. 10, Regent-street.

Acting—PETER HARDY, Esq., F.R.S.

THIS CORPORATION ASSURES ON LIVES FOR A PERIOD OF ONE HUNDRED AND THIRTY YEARS.

FILE INSURANCES effected at moderate rates upon every description of property.

MARINE INSURANCES at the current premiums of the day. JOHN H. GRACE, Secretary.

UNION ASSURANCE OFFICE (Fire, Life, Annuities), Cornhill and Baker-street, London; Colchester, Dublin, and Hamburg, Institutions.

A.B. 1714.

Life—Reduced rates for young and middle ages, with the guarantee of a Company in existence for nearly 140 years.

The last BONUS (1848) gave additions to policies varying from 5s to 70s per cent. on the premium.

Lower rates without profits.

Decreasing and increasing rates of premium, and half-yearly or quarterly.

Accidents granted. Medical fees allowed.

FIRE INSURANCES at the usual rates, and profits returned on policies taken out for seven years, and upwards.

MARCH 7, 1851. THOMAS LEWIS, Secretary.

FAMILY ENDOWMENT LIFE ASSURANCE ANNUITY SOCIETY.

12, Chatham-place, Blackfriars, London, and at Calcutta. CAPITAL, 500,000.

William Butterworth Bayley, Esq., Chairman.

Lewis Burroughs, Esq. Edward Lee, Esq.

Robert Roper Chichester, Esq. Colonel Ousterly.

Major Trenchard. Major Trenchard.

C. H. Latouche, Esq. Joshua Walker, Esq.

Three per cent. Bonus was added to the Society's Policies on the profit scale in 1848. The next valuation will be in January, 1852.

Loans are granted on mortgage and security of Life Policies and Securities.

BRANCH.

The Society has extensive Indian business, and grants Policies in India, Madras, and Bombay, to members of the Civil and Military Services, and others. Having several offices will be furnished with full particulars, to which the attention of Parents and Guardians of Youths proceeding to India is especially invited.

JOHN HENRY ARCHER, Secretary.

PHENIX FIRE ASSURANCE COMPANY, Lombard-street, and Charing-cross, London.

ESTABLISHED IN 1767.

SIR ROBERT HARRY BAKER, M.P. DIRECTOR.

Matthew Aldworth, Esq. James Horne, Esq.

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William Davis, Esq. George Stanley Repton, Esq.

Edward Goodhart, Esq. Benjamin Shaw, Esq.

Henry Grace, Esq. Charles Hampden Turner, Esq.

Joseph Owen Harris, Esq. Matthew Whiting, Esq.

Kirkman, Daniel Hodgson, Esq. Thomas Hodgson, Esq.

ASSISTANT DIRECTOR—Thomas Richter, Esq.

AUDITORS.

John Hodgson, Esq. John Davis, Esq.

WILMOT HARRIS, Esq. SECRETARIES.

George William Lovell, Esq. George William Lovell, Esq.

Insurance—Losses by Fire are effected by the PHENIX COMPANY upon every description of Property, in every part of the world, on the most advantageous terms.

Proceedings with the PHENIX COMPANY are not liable to make good the losses of others, as in the case of some offices.

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The Builder.

No. CCCCXXVI.

SATURDAY, APRIL 5, 1851.

WE find, as others have found before us, that when, seeking to be just and honest, we strive to keep the medium way, we seldom please either party. Those who are not disposed to be

"By the vulgar foolish throng
Both detained and dragged along;
After things just born to die,
Made to join the common cry,"

must look for sympathy and support from within, not without. If A. and B. squabble, the friend who says that neither is wholly right gets no thanks from either, and may have abuse from both. This has been our position on more occasions than one, and is so now in the matter of the great Building in Hyde-park, erroneously and foolishly called the "Crystal Palace."

We have spoken our mind about it on many points, perhaps not without some good effect. We object to and reprobate the fulsome panegyrics that have been lavished upon it, and the almost daily reports of its progress throughout the press, while St. Paul's or Westminster Abbey might have grown up unnoticed,—praise which will cause our foreign neighbours to expect much more than they ought, and will lead hereafter, by reaction, to condemnation where it is undeserved. While we have done this, however, we have refused to admit into our pages the statements of those who can find in it subject only for abuse; and the consequence is that while on one hand we are regarded by some, who are personally interested in the matter, as not having a good feeling towards the Building or its builders, we are scolded on the other hand for not being sufficiently "bold" to speak the truth. During the past fortnight some correspondents of the latter bent have been indignant because we did not at once join in the cry of "a failure," when it was found that the roof was not water-tight; and to these, by the way, we will quote, in parenthesis, a remark of Boyle, who says, "Manage disputes with civility; whence some readers will be assisted to discern a difference betwixt bluntness of speech and strength of reason."

We sincerely hope that the fears entertained as to the admission of water are exaggerated, and that the evil will not be found considerable. Much of the wet which caused alarm was admitted through broken panes of glass, of which there were, when last counted, not less than 2,000. The action of the wind on two or three occasions produced very curious phenomena, and was led to the introduction of additional ties to prevent a recurrence of the damage to the glass which resulted. The cause of leakage in either parts has been traced to wilful stoppage of the drain-pipes.* The contractors express

* Along a row of columns on the south side next the transept there was observed to be a constant leakage when rain fell, from some cause which could not be detected. At last they were induced to examine the line of drain-pipes, which runs from column to column, and there they discovered a nail-bag securely wedged in by some mischievously-disposed workman, and which, by stopping the current of water, of course caused the columns to overflow.

themselves satisfied that they will be able to make the whole water-tight; and there does not seem to be any reason to the contrary for the time during which the Exhibition will be open, especially as the glass is to be covered with linen, which may be made waterproof. Permanently water-tight, unless altered, as it seems to us, it cannot be. All who have had to do with skylights on the smallest scale, know the difficulty with which water is kept from entering through them; but beyond this, which is general, there is here this particular fact that the gutters, about which so much, too much, has been said, are simply hollowed beams of wood, and must in a short time warp and crack. It is quite unnecessary, however, to raise any alarm on the subject,—at all events, until the known causes are removed and the work finished.

When we visited the building a few days ago, the neighbourhood was the scene of great activity, consequent on at least half-a-mile of carts and other conveyances bearing the goods to the building. Within all was bustle, and not without occasion. The Commissioners have announced their determination to open on the 1st of May, and the amount of work yet to be done is enormous. Were it not that every man is directing his own business, and that on Monday there will probably be *ten thousand persons* at work in the building labouring to this end, it might be pronounced impossible: giving this, however, the fullest consideration, it still seems to us very improbable. Mr. Cole, Mr. Dilke, and others are labouring indefatigably, and all that can be done will be. It is to be hoped that no efforts will be wanting on the part of exhibitors.

The painting is now nearly finished, and the colouring resolves itself practically into blue and white: the red does not come into sight at all, except that when looking up, the underside of the girder is brought by its means heavily to the eye. Those who at a distance have read the discussion the original proposal produced,—noted the pother it made, the principles that were evoked, and theories that were proposed,—will smile incredulously at the agreeable, harmless, but mistaken reality.*

The outside of the building is also blue and white; the boarding of the lower story stained and varnished as oak.

The part devoted to machinery is already full of interest: the cotton machinery will be very complete; the enormous hydraulic press used for raising the tubes of the Britannia Bridge is in its place; the permanent railway is being laid; and on all hands hammers are clanging with a will. Down the centre of the nave will be a range of single important works, trophies, so to speak, of various departments; such as a lighthouse, the iron dome mentioned by us last week, a large fountain by Seeley, in artificial stone, a piece of statuary, and other similar striking features. On one side, men

* A correspondent, from whom we inserted some remarks on this subject, says,—"If, Sir, you should go into the Hyde Park Building, and, standing near the large organ, should happen to look down one of the aisle galleries, you will see an extraordinary effect of decorative colour: the effect of the blue in the distance is quite astonishing. If you go into the next gallery, the effect is the same, and so on to the next, all round, and all over the building. But if, instead of this beautiful monotony, each aisle had been a different colour, we should have seen seven astonishing effects instead of one,—red, orange, yellow, green, blue, purple, and violet; and then standing in the nave, and looking into the far distances, we should have seen all these seven wonderful effects blended into one harmonious effect to astonish the world. Mr. Jones has held one palette, I should have held seven.—C. B. A." Our own opinion remains unchanged: it should have been treated as metal, and not painted to look like wood.

are busily employed building a cottage of hollow bricks, and, near it, others are setting up specimens of Lord Lovelace's moulded brickwork, in the shape of chimney-shafts and other prominent features. Outside the building, at the west end, the engine-house is being erected, and will contain power equal to 100 horses. In the space of ground between this and the building will be deposited various specimens of "raw material," for which room cannot be found inside, such as a monster block of coal and the like.

We have received some scores of invitations to inspect works that are about to be forwarded to the Exhibition, but, with some few exceptions, have found it necessary to decline doing so until they are in their places. Amongst those of which we have information may be mentioned a brick machine with double screw press and perpetual cutter, adapted for making Randell and Saunders's patent bricks for sewerage purposes, which give a drain of greater strength than the common pipe or brick sewers, at a less cost; also building bricks, and all descriptions of tile and pipe ware. The machine occupies a space 12 feet by 4, and can be placed under the pug mill, or the clay may be thrown into it in any other way deemed desirable. The clay falls on two screws working into one another, which drive the clay out at the further end of the cylinder, giving it in its transit great compression, so that the bricks are delivered through the dies in a very firm and solid state. On leaving the dies they pass under a perpetual cutter, which works without checking the progress of the clay, severing the bricks or tiles at any required lengths, giving joints either square, angular, circular, or any segment of plain joints or tongues and grooves,—in fact, giving the ends of the bricks or tiles the form required. Two men and one lad, with the machine working at little over one-horse power, produce, it is said, 1,000 bricks per hour. On inquiry we were told that to work the machine ten hours costs—

	s.	d.
Two men, say	6	0
One lad	1	0
Two horses	8	0

Total cost per 10,000 bricks 15 0

The same parties will exhibit a sawing-machine for cutting stone from the bed. The model will be shown in operation in a stone model representing one of the headings in Corsham Down Quarry: it works eight saws, which, in the original machine, are 24 feet long. By a simple arrangement each saw is allowed an action quite independent of the others, and can be worked at any angle which may be required. In case of any impediment, it is arranged for either saw to stop before it is strained, and without interfering with the action of the others. This machine does the work of seventy men. When the stone is cut out into blocks it is removed by a traversing crane, worked by the same ropes which work the saw frame, and both are driven by steam power.

We hear, too, of a machine which is to prove of great importance to the art of printing: its purpose is composing and distributing printing-types quickly and cheaply. It differs, they say, in mechanism from all previous attempts at realizing this improvement in printing. The machine provides for the distribution as well as the composition of the types; and a small compass contains the case and 64,000 letters,

for a compositor's day's work. By an ingenious arrangement the workman can compose four different characters, Roman or Italic, without moving from his place.

Mr. Hammersley, of the Manchester School of Design, has a large picture illustrative of the principles by which the forms of nature are adapted to the purposes of the designer of textile fabrics and other flat surfaces. The work is in oil, and covers a surface of 195 square feet. The details, we are told, comprise a large oval centre, surrounded by a broad border, and occupied by a composition of fruit and flowers, painted in natural hues; a few accessories, harmonising in colour and character, filling in the remainder of the space. Around that centre there are drawn a series of geometrical forms, produced by circles intersecting each other at various points; and each space between two or more lines is occupied by some natural form adapted to the purposes of the designer for textile fabric; in each space a fresh design, and 237 in the aggregate.

Mr. Armytage and Mr. Corbould exhibit pictures as specimens of new mediums. The "Medieval Court" where Messrs. Pugin, Hardman, Crace, Minton, and others, will co-operate to produce a homogeneous whole, is getting into shape. The foreign exhibitors will have an advantage in the arrangement of their stands, inasmuch as the works of each country may be placed so as best to assist each other; while, in the British department, the exhibitors will be unable to control their immediate neighbours. There will be no lack of organs and other musical instruments, some of which, we hope, will be brought into play. It is calculated that the total number of exhibitors will be about 15,000.*

We were sorry to see the Sappers employed in giving the admission tickets, and other matters of arrangement. The absence of the military on such occasions in England is as characteristic as their presence abroad, and it seems to us very undesirable, thus practically to contradict the impression which our continental neighbours correctly hold in this respect. The office with the red-coats and their officers occupying the desks (intelligent and efficient as they seem to be) certainly does not look English. At all events, we trust the executive will let them put on plain clothes, *pro tempore*.

The number of foreigners in London is already very noticeable in the streets. And we may here take the opportunity of replying, in a matter which arises out of this fact, to some of our correspondents, who seem to think that we are bound not merely to know every thing, but to let them know it too. We can satisfy them that *Ici on parle Français* is perfectly correct French, and that the placards in our shop windows need not be altered to "*Ici l'on parle Français*." The authorities say that the words after which *l'on* should be used rather than *on* are *et, si, ou, que, and qui*. It must not be concluded from this that *Ici l'on* may not be written: we may use either mode, according to whether the verb which follows

begins with a vowel or a consonant. It would be properly employed, for example, in the following inscription (for a cemetery), *Ici l'on est égaré*. We repeat, however, that *Ici on parle Français* is perfectly correct.

The formation of the juries by whom the prizes are to be awarded is a matter of considerable importance. The commissioners have determined that there shall be one jury to each of the thirty classes into which the Exhibition is divided. They have given to each class a jury varying in number from six to twelve, and making in the aggregate 270. Half of these are to be foreigners: and the commissioners have called upon the metropolitan committees, and the committees of those towns which exhibit to any considerable extent in any of the classes, to send a limited list of names of persons qualified and willing to act as jurors in the respective departments to which their position and knowledge recommend them. The commissioners say in their letter,—"As the satisfactory discharge of the duty of a juror in an International Exhibition involves the exercise of great practical skill, it is requested that you will represent to your committee the necessity of recommending persons who may obtain the confidence of the public." From these the commissioners will then select.

In the metropolitan section of Fine Arts the persons recommended are,—the chairman, Sir Moses Montefiore; the deputy chairman, Professor Cockerell, R.A.; Lord Ashburton, Mr. Alderman Salomons, Mr. Wyon, R.A., and Mr. Weekes.

In class 27, manufactures in mineral substances, used for building or decoration, Mr. W. Tite, Mr. Bunning, and Mr. George Godwin have been named: and in class 7 the jurors recommended are,—for civil engineering contrivances, Mr. W. Tierney Clark and Mr. Edwin Clark; for architectural and building contrivances, Mr. C. Fowler, and Mr. J. J. Scoles. The duties of the juries will demand much time and attention.

CAUSES AND CURE OF SMOKY CHIMNEYS.*

Deficient Supply of Air.—We have seen that the primary cause of action in chimneys is the rarefaction of air, which brings into operation the principle of gravitation: i. e., the column of air in the chimney being rendered lighter by rarefaction, the column of external air presses it upward at its base. A portion of this external air enters into the chimney at each instant of time with the smoke or gas from the fire, mixes with and becomes rarified by it, and passes off into the atmosphere with it. Now, as fire-grates have been heretofore and are still constructed, it is an indispensable condition, that a certain portion of air must enter the chimney in this way in order to produce a sufficient current to carry off the large quantities of unconsumed carbonaceous matter, or smoke, which is generated. For although this smoke, as we have seen at page 530, vol. viii., is much lighter than atmospheric air and will naturally rise through it, it has also a natural tendency, in common with all gases, to diffuse itself to a certain extent in every direction; and therefore, although the bulk of the evolving gas from a fire in a perfectly close or air-tight room, would ascend the chimney by reason of its superior lightness, a portion of it would diffuse itself through the atmosphere of the room, or, in household parlance, the room would be "filled with smoke." To counteract this tendency a current of atmospheric air is necessary, of sufficient volume and velocity to absorb and carry off the smoke or gas as quickly as the fire can generate it.

The process of combustion also requires a constant supply of atmospheric air, as it is the oxygen contained in it which supports fire. Here then we have two distinct demands for a supply of *unrarefied* atmospheric air.

An ordinary fire-grate with a 9-inch flue, and consuming about 28 lbs. of coal per diem, requires a constant supply of from 30 to 40 cubic feet of air per minute to supply the two demands above named, i. e. the current or "draught" of the chimney and the process of combustion. It matters not what may be the size or cubic contents of the room, whether 1,000 or 10,000 cubic feet, the requirements as regards a fire of the above proportions remain the same; and unless there be apertures or crevices sufficient to admit this quantity of air, the current in the chimney is impaired and the chimney "smokes." It is a most significant indication of the extent to which our present subject is understood amongst practical men, that even in dwelling-houses of the present day, as a general rule, chimneys are left to fortuitous circumstances for this essential supply of the means of proper action; and the air which ought to be admitted from the external atmosphere by proper inlet channels, equal in capacity to the outlet channel (i. e. the chimney), is compelled to make its way to the fire-grate through keyholes and crevices, or round doors and windows, and hence we hear of "draughty rooms," and we are constantly being warned by considerate friends against sitting in the "draught of the window" or the "draught of the door," as the case may be. Should these "draughts" be stopped by such familiar appliances as listing, sandbags, &c., we find that the chimney "smokes," and forthwith the "chimney doctor" is sent for to affix all manner of fantastic caps and cowls, and also to try sundry lengthenings and shortenings of zinc tubes at the top of the chimney; whereas the disorder lies at the bottom, in the want of a proper and sufficient supply of unrarefied air to the fire-grate.

If proof were needed that this supply of atmospheric air is essential to the proper action of chimneys, it would only be necessary to direct attention to the innumerable chimneys that "smoke unless the door or window be set a little open;" or that "always smoke at first lighting," but cease to do so after several hours' firing. In the former case the crevices of the doors and windows before alluded to are altogether too small to admit a sufficient quantity of air at the requisite velocity; and in the latter case these crevices are large enough after the fire has had time to produce a high degree of rarefaction in the chimney, but not before. This will be obvious from the following reasoning, viz., when a fire is first lighted, its power of rarefaction is small, and the current or "draught" which it creates in the chimney is weak and sluggish, and is therefore unable to carry off the smoke with sufficient rapidity; but as the fire increases its power of rarefaction is increased also, and a greater difference is produced between the weight of the column of air in the chimney and that outside, and the velocity of the current is thereby increased. But the difference produced between the internal and the external columns of air by this rarefaction, as regards their relation to each other, amounts to a virtual increase of the pressure of the latter; and as the pressure of a fluid issuing through an orifice is increased, its velocity is increased also in certain proportions; and it therefore follows, that the velocity of the air entering through the crevices before mentioned, is increased as the rarefaction increases, until it arrives at an extent equal to the demand for the proper action of the chimney.

In support of this reasoning we may adduce a fact which is patent to all who have been plagued with "draughty rooms," viz., that when the fire is most powerful, the draughts are strongest. We may here remark that the remedy for this particular cause of "smoky chimneys" would also prove an effectual remedy for "draughty rooms," as all the draughts might be stopped with perfect impunity. Of this remedy we will have to speak in a future paper, and will now pass on to describe the third "cause" on our list.

* One of the exhibitors, Mr. M'Lachlan, decorator, had a specimen of arabesque colours on glass destroyed by the wind driving it off the van.—A proposed exhibitor of parquet panels, for flooring, complains of the refusal of space. As we gather from his letter, however, that the local commissioners were not allowed to see his specimens when they called, he has only himself to blame in the matter.—Mr. Caldecott, of Bloomsbury, exhibits a fine specimen of English oak, in the shape of an elegant side-board.—Mr. Harrison has submitted to us a handsome worked altar-cloth.—As to the advertised auxiliary Exhibition building, there is no satisfactory information to be obtained.

* See p. 68, ante.

The Action of Winds.—This is a fruitful source of annoyance, and one which of all others is the least controllable by man. We find it operating in two distinct ways:—first, by strong winds passing horizontally across the top of the chimney; and, secondly, by winds meeting with some object to interfere with their direction in the immediate vicinity of the faulty chimney.

In the first case the wind acts almost as a valve upon the top of the chimney, and produces a stoppage of the current or "draught" passing out of it. We will endeavour to explain this action with the aid of diagrams as follows:—

Let A, fig. 10, represent the section of a chimney-top with a current of smoke passing upwards through it in the direction of the arrow *a*, and let B represent a strong wind blowing directly across the top of the chimney

in the direction of the arrow *b*. We will take the ascending force of the current in the chimney, which of course varies according to length of chimney, degree of rarefaction, and other circumstances, to be 2-100th parts of 1 lb. per square foot, and the horizontal force of the wind to be 10 lbs. per square foot. The science of dynamics teaches us that where two equal forces are acting at right angles and converging to the same point, they will at that point,

being the point of contact, diverge equally from their original directions as shown at fig. 11, where A and B represent respectively the two forces. We find also that should these two forces be unequal, the greater will overpower the less, and the angles of divergence from their original direction will be least in that of the greater, and most in that of the least force; and hence we find that there are proportions in which the larger force would so far neutralize the less as to render its effect at the point of contact imperceptible. Thus, suppose two balls, A and B, fig. 12, proceeding at right angles in the directions of the dotted lines *a* and *b*, the momentum of B being represented by 500, and that of A by 1, at the point of contact

A would only cause B to diverge from its direction 1-500th part of a right angle. Now the numbers 500 and 1 are the exact proportional of the forces of a strong wind and the ascending force of a column of smoke in a chimney respectively, and therefore the column in a chimney can only exert a force against the wind capable of altering its direction 1-500th part of a right angle; or, in other words, it can only make room for its exit on the leeward side of the chimney by causing the direction of the wind at the plane of the chimney-top to assume an angle of 18-100th parts of a degree with that plane; an angle which is so small as scarcely to be perceptible in a distance equal to the width of an ordinary chimney-top, and such as would scarcely give a square inch area of free outlet for the smoke.

A strong wind blowing horizontally across the top of a chimney acts as a valve in the way described, by virtually reducing the area of the chimney, and thereby causes the smoke to be back into the room to which the chimney

belongs until it gets vent again by the cessation of the blast.

When "smoky chimneys" result from winds coming in contact with some adjacent object, they will invariably be found to "smoke" when some particular wind prevails; the immediate cause being either another chimney, a building, a wall, a tree, or clump of trees, standing higher than the top of the faulty chimney, on either its leeward or windward side. In either case, an eddy is formed which receives a direction opposite to that of the ascending column of smoke, and which possesses sufficient force to overpower it, and check its progress whilst the eddy lasts. In order more clearly to explain this peculiar action of wind, let A, fig. 13, represent a wall;

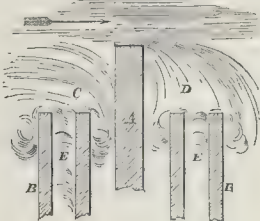


Fig. 13.

B B, sections of the tops of two chimneys; C, an eddy formed on the windward side; D, another on the leeward side of the wall by the wind blowing against it in the direction of the arrow; and E E, the columns of smoke in the chimneys, checked in their ascent. Suppose the arrow to indicate an easterly direction, and it will be obvious that the two chimneys represented would only prove defective from this cause in an east or west wind, or in winds approaching either east or west. T.B.A.

ON THE MECHANICAL PROCESSES OF SCULPTURE.*

THE great patriarch of architectural literature, Vitruvius, has named so many subjects requisite to be understood by the architect, that, according to his statement, it would be difficult to say what branches of learning the latter might leave unstudied, without being considered imperfectly educated for his profession. It is also stated in the address contained in the first part of the first volume of the Transactions of this Institute, that "architecture embraces the whole circle of the sciences." Taking these two passages into account, together with the titles of many papers which have been read at these meetings, and which, to a common observer, might at first appear to be but little connected with the profession, I have been induced to consider, that a short description of the mechanical processes of sculpture might be interesting.

Decorations of various kinds, composed of raffled foliage, festoons of fruit and flowers, Corinthian capitals, together with nearly all ornaments derived from the vegetable kingdom, may generally be very well executed from drawings by clever carvers, without the aid of mechanical instruments and contrivances, such as I propose to explain. But if the ornaments consist of trophies, human figures, or inferior animals, bas-reliefs, or insulated statues, including heraldry of large dimensions, they will probably appear like an incumbrance to the edifice instead of an ornamental feature, notwithstanding they may have been well designed and modelled by a very talented artist, unless they are well copied, and the proportions are correctly preserved; and such accuracy in copying the proportions can only be attained by taking points, measured from certain parts of the surface of the model, and transferring them to the stone, in imitation of what was done to produce, in marble, the sublime conceptions of Flaxman or Canova.

It is quite possible to introduce sculpture into an architectural design without reference to its proper adaptation, and it may be out of

place, or out of proportion to the size of the building, when it will be a disfigurement rather than an embellishment; but if it be judiciously introduced, so as to form an integral part of the entire composition, and to convey to an intelligent beholder the idea, that if it were removed the building would be incomplete, I think you will all agree that it gives to a fabric refinement and finish of no common kind: in the one case, it may appear like the ostentatious display of a wealthy nobody; in the other case, it can scarcely fail to convey to the discriminating mind of a well-informed observer the impression, that the entire edifice, including its sculptural decorations, is the design of a highly educated artist.

In Mediæval art, it is almost impossible to separate the department of sculpture from that of architecture, of which it has always formed the most ornamental feature, more particularly in the style which prevailed during the fourteenth and fifteenth centuries. Few persons, except those who have paid attention to the subject, can imagine while they contemplate a venerable Gothic structure, how much beauty and refinement it has lost by the destruction of its statues and ornamental carvings. The pedestals and acroteria of a Greek or Roman façade may be left without statues: even the pediment may remain unadorned with sculpture, and the greater number of observers would not be struck with its plain or unfinished appearance; but a rich screen, or the lady chapel of a cathedral, with a number of vacant niches and canopies, is somewhat analogous to a splendid apartment, on the walls of which are suspended handsomely carved frames for full-length portraits, without the pictures.

Before I describe the instruments and models, I will endeavour to give a short account of the historical part of my subject.

It is quite uncertain at what period of history the art of hewing blocks of wood or stone into the resemblance of men and other animals was first attempted; but there is unequivocal proof of its having been practised during the most remote antiquity. The sacred writings, and other early records, contain numerous passages alluding to images of living creatures. Human nature, in the first stages of society, is generally guided by the same kind of necessity in all countries, and men have supplied the want of alphabetic characters to communicate their ideas to each other, by emblems or representations of existing objects, which, in the progress of civilization and knowledge, gradually improved into the hieroglyphics of the Egyptians and other primitive nations.

Although sculptured writing was probably the first employment of the statuary, idolatrous worship contributed in a much greater degree to carry the art to that perfection which it attained in some of the nations of antiquity; and as the Chaldeans are recorded to have been the first idolaters, the presumption is that they were also the first people who practised the art of sculpture: their early progress in the manufacture of idols is confirmed by the united testimonies of many ancient writings, both sacred and profane.

Various authentic passages may be found among the Greek poets, as well as in the Scriptures, which incline us to believe that the Phœnicians approached nearer to perfection in the fine arts than any other nation anterior to the Greeks. A confirmation of the advances made in architecture and sculpture by the inhabitants of the coast of Phœnicia, is afforded in many parts of the sacred writings: in the book of Joshua frequent mention is made of "great Sidon," and "the strong city of Tyre," expressions sufficient to prove that these cities had risen to considerable importance as early as 1450 years B.C. Another part of the Scriptures states that Hiram, King of Tyre, sent different artisans to David, King of Israel, to build him a house or palace, about 1050 years B.C. Afterwards, Solomon, preparatory to beginning the temple, engaged with Hiram, King of Tyre, to send him workmen. He also requested Hiram to send him a man capable of working in the different kinds of metal, to make the images and decorative parts of the temple. In compliance with this request,

* The following paper, by Mr. C. H. Smith, was read at the ordinary general meeting of the Royal Institute of British Architects, March 24th.

Hiram sent "a cunning man of Tyre, endued with understanding, skilful to work in gold, silver, brass, iron, stone, and timber; in purple, blue, crimson, and in fine linen; also to grave any manner of graving, and to find out every device which might be put to him." Solomon must have been well acquainted with the state of the arts in Egypt, before he began to build the temple at Jerusalem, his first wife being the King of Egypt's daughter. From his intimate connection with that country, very little doubt can therefore be entertained that he would have sent for Egyptian artists to execute the principal parts of that edifice, in which no expense was spared to make it the most perfect work in the world, had their fame or talents been reputed equal to the Tyrians. We have also the additional testimony of Homer, from whose expressions the wealth and magnificence of the Sidonians and Tyrians are apparent, as he thought it a sufficient recommendation of any work of art that it was Sidonian.

Many great cities of Asia are mentioned by the Hebrew prophets, especially Isaiah and Ezekiel, as flourishing in their time in power, riches, and magnificence, where the art of sculpture was practised on a prodigious scale; but all historical record of most of those brilliant empires which were once the seats of art and science, is almost entirely without corroborative evidence from remaining monuments, except the recent discoveries by Dr. Layard of the Nimroud sculptures, now in the British Museum, which are of the highest interest to the antiquary.

Had the materials employed for the colossal statues at Babylon, Nineveh, and the cities in the land of Shinar, been granite, marble, or good common stone, instead of gold, silver, or bronze, we should still, doubtless, with regard to mass, have had fragments worthy to be compared with those of Upper Egypt; but it must be recollected that the latter part of the period we are now contemplating is distant at least 2,500 years, since which, the dominion of the south-western districts of Asia has been successively under the control of Assyrians, Medes, Persians, Greeks, Romans, Saracens, and Turks, all of whom carried off whatever they found of most intrinsic value.

Of all the countries which have been inhabited by man, Egypt possesses the most colossal, and probably the most ancient, work of sculpture. There the remains of long-departed grandeur display themselves in melancholy state, as if to defy further injuries of time. The first attempts at sculpture in all nations have generally been made in wood, but as that article is known to have been proverbially scarce in Egypt, the soft sand-stone, which they had in abundance, presented itself as the material best suited to their purpose; and it is reasonable to suppose that the tools first used were no other than the sharp edges of broken flints or hard stones. A visit to the British Museum will afford an idea of what may be accomplished in the art of carving with instruments of this description, in the figures of the South Sea idols.

There are some very large statues in Egypt wrought in granite, specimens of which are in the British Museum, but that hard material was not so much used by the Egyptians as is generally believed. Their largest statues were usually executed in sand-stone, and in many instances, without disturbing the rock from its natural situation.

The enormous statues of that country have struck every visitor with astonishment, and if we consider the time that must have been occupied in carving a figure 60 or 70 feet high in so hard and refractory a material as red granite, the boldest heart would be appalled at the incalculable labour and difficulties of the undertaking.

The Egyptian sculptors were never renowned for the excellence of their works of art, but simply for the extraordinary magnitude of them. An attentive examination of the Egyptian antiquities in the British Museum will show, that the form of their hands and feet is gross and ill-shaped, the want of anatomical knowledge remarkable, and that they are excessively deficient in grace and elegance of action. These

observations are applicable only to the original native sculpture of the Egyptians, for after the time of the Ptolemies, their sculpture was enlivened by Grecian animation, and refined by Grecian beauty. Osiris, Isis, and Orus, their chief divinities, put on the Macedonian costume, and new deities arose among them in totally different attitudes and proportions, whose characteristics were compounded of the materials of Eastern and Grecian theology. Adrian caused a number of statues to be made, in imitation of the ancient Egyptian, for the purpose of decorating his magnificent villa at Tivoli, several of which have been found, and placed in the Capitoline Museum, where they are usually considered by the common observer as genuine Egyptian productions; but they may easily be distinguished from the original works of Egypt by their style, which is superior to any of the antiquities found in that country, and by the drawing and character of them, which are decidedly Roman, though they are represented in Egyptian attitudes and dresses.

It is in vain to expect authenticity in treating of a period so remote as three or four thousand years ago, of which no regular historical records remain: we have, therefore, at this time, no means of ascertaining whether the artists who were entrusted with the execution of such gigantic statues, used any contrivances for the purpose of attaining the most perfect imitation of the human form, answering to the present use of models, casts from nature, or machines for transferring correct proportions on an enlarged scale; or, if they did, what those contrivances were; nor can we tell how the excessive labour of carving them was divided between numerous hands, so as to ensure the completion of the work to their satisfaction: neither can we estimate with accuracy the mechanical knowledge possessed by the people engaged in those extraordinary works: it was in all probability very trifling; consequently the human labour employed must have been enormous in quantity, and exceedingly painful to the workmen; yet, with the application of the wealth and power possessed by a numerous and despotic priesthood, almost anything might be accomplished which depended principally on simple manual labour.

From Plutarch and Pausanias we learn, that the material of which the primitive Greeks made their statues was generally wood, and that the lower part of all their idols was not carved before the time of Daedalus, a native of Athens. He lived about 1,300 years B.C., and had a disciple of the name of Endæus: these two are the earliest sculptors in marble on record. From that time an interval of 500 years elapsed without any particular mention of works of art in Greece, except of those which Homer states to have been executed by the Sidonians. During this long period, the Greeks were almost constantly engaged in war; and we find the poets of those early ages, indulging in the reveries of a warm and luxuriant imagination, and singing, with the greatest enthusiasm, the history of the contests and expeditions of their ancestors; and these poetical productions gave to the artists the most exalted and sublime conceptions of divinity, heroism, grace, and beauty.

About 776 years B.C., two Cretan sculptors, Dipænus and Seyllis, were celebrated for their marble statues: some of the earliest specimens of Greek sculpture in the British Museum are supposed to be the productions of these artists, or of their immediate successors.

During the fifth and sixth centuries B.C., the number and comparative excellence of statues in the island of Ægina was very great: many of those artists are recorded as having produced very superior works, and there is scarcely a city described by Pausanias which did not contain some of them. The statues which adorned both the pediments of the Temple of Jupiter Panhellenius, in that island, were discovered in the year 1812, buried in the ruins of the temple; they supply the most complete example of the school of Ægina, a style highly reputed by the authors of antiquity, as being of early celebrity in Greece, and also held in great estimation ever since. These marbles may be considered as fair,

average specimens of the first celebrated efforts of Greek sculptors, and although executed considerably prior to the meridian of art, are, nevertheless, far removed from its dawn.

From that time, arts, sciences, and literature, began to assume a more elevated character in Greece, and to make those rapid advances towards perfection, which not only left every other nation in a comparatively infant state, but appeared to preclude all further improvement. The most beautiful works of sculpture ever produced were executed by Greek artists, who lived about the middle of the fifth century B.C. The ancient historians, especially Pausanias and Pliny, have given us the names of many celebrated Greek statuary, together with the dates of their principal works, and a vast fund of information connected with their buildings and sculptured decorations; but I have never been able to find a passage alluding directly or indirectly to their mode of practice, or their means of obtaining mechanical assistance. It is quite certain, that the talented artist, Phidias, could not have found time to execute with his own hands, all the statues and reliefs which are ascribed to him; he must have put some ingenious mechanical apparatus into the hands of his pupils, or assistants, to have enabled them to perform the greater part of the violent bodily labour required to hew the blocks of marble into nearly their intended form; but in what manner that department of the profession was conducted, is now involved in impenetrable obscurity. Although we have not the direct evidence of history, to teach us the Greek method of carving statues, we are, nevertheless, particularly rich in relics of their abilities and industry in various materials. In the British Museum there are numerous specimens of terra-cotta statues and bas-reliefs, on the backs and undersides of some of which may be seen, not only the finger-marks, but the impression from the granulated skin of the fingers of the modeller; a proof that they were well acquainted with the plasticity and use of clay for such purpose, and that they used their fingers as the best modelling tools, as is the practice of artists of the present day. From Pliny and Theophrastus we learn, that they were also acquainted with the nature and use of the material now called plaster of Paris, and, on attentively examining the backs of some of the Elgin marbles, where the work is left in a rough state, we find evident marks of tools precisely such as are used by carvers and masons at this time. Thus it appears pretty certain, that the plan of producing a model, and of working the marble, as practised by the Greeks, did not materially vary from the mode of procedure adopted by modern sculptors; but their method of transferring the form of the model to the marble, answering the purpose of what is now technically called "getting the points," is now totally unknown.

The best works of the Romans were executed by Greek artists, who settled in the imperial city after Greece had become a Roman colony, and, from that time, art gradually declined, until, in the reign of Constantine, it was impossible to find in the capital of his mighty empire, a sculptor capable of adorning the new buildings.

From a complication of causes and events, arising out of the fanaticism of the age, literature and the fine arts generally, remained in a state of concealment or darkness for the long period of nearly a thousand years. To describe the numerous contests, maintained with unabated rage and various success between the worshippers and the destroyers of images, and the extraordinary changes of feeling with which the Christian world laboured alternately to adorn their magnificent edifices, and then to obliterate every trace of sculpture, would be lamentably curious, but such an investigation is foreign to the subject of this illustration.

In the fourteenth, fifteenth, and sixteenth centuries, there were sculptors in Italy who produced statues in marble superior to any that had been executed since the time of the Greeks. The late Mr. Flaxman considered that "some of the works of that period, both in bronze and marble, might be placed beside the best productions of ancient Greece without discredit."

About the middle of the fifteenth century, the first descriptive account of the process of carving statues from a model appeared in print, in the well-known book of Leon Battista Alberti, besides whom I am not aware that any other author has written on the subject of getting the points in sculpture.

Having read the paper containing the above observations, Mr. Smith proceeded to explain the process of forming a statue in marble, commencing with the first sketch by the artist in the plastic clay. The making of the full-sized model in clay, and forming from it a mould in plaster of Paris, in which a *fac simile* of the original would afterwards be cast in the last-named material, were then described. The hammer and tools used by the sculptor were also described; and attention was called to the excessive labour, and the length of time required, to fashion a large block of marble into the general shape of model, as well as to the extreme accuracy necessary, as any portion improperly removed could not be, by any means, replaced without occasioning a permanent blemish. The line of cleavage in the grain of the marble must consequently be carefully attended to by the workman, who might perform all the labour of roughing out the block by the mere aid of mechanical contrivances, without necessarily possessing any knowledge of the art.

Though sign and ship carvers might produce some strange representation, in stone or wood, without having previously formed a model in plaster, yet all sculptors of merit, worthy to be called artists, make use of a model. The notion, that Michelangelo and other sculptors of his time did not employ models to carve from, as modern artists do, but that they carved the block at once into the intended statue, was investigated, and great doubt expressed as to its correctness.

Alberti was the first to describe the method, still in use in Italy, for "getting the points"—i. e. transferring them from the model in plaster to the copy in marble—by means of the plumb-line and dial system, but he expressly mentioned it as a general and long-established practice. It was formerly used in all countries, and it is even now employed in Italy and France. [The practical application of the method was explained by Mr. Smith.] The elder Bacon was the first sculptor who departed from the old practice, and invented the scale stones, with the ball and socket apparatus, about the year 1764. In this method the graduated scale is fixed beneath the block to be carved, which, together with the model, is fixed firmly on a heavy mass of stone, side by side. An upright staff with cross-arms, on which the probe gauge for fixing the points is set, moves horizontally along the scale stones, and completes the machine. The simpler the instrument the better, as it is subject to rough usage, and is intrusted to the hands of people who are not always careful. Recent improvements in the machine were pointed out: such as making the standard round instead of square; fixing stops against which to push it, instead of a line; and turning the horizontal arm entirely out of the way of the workmen, when required. As transferring the points, or pointing very tall figures, is attended with much inconvenience and loss of time, in consequence of the vibration of the standard, besides occasioning inaccuracy in the head and bust, the most important portions of the figure, Mr. Smith had introduced the new method of using two graduated scales in the height, accurately adjusted to each other, by which means shorter and more stable standards can be used.

The disadvantage likely to arise from the use of models made to a scale considerably less than the carving to be executed from them, having been shown, he observed, in conclusion, that if sculpture be well designed and modelled, little need be done to it in the way of carving, after it has been correctly pointed, in order to ensure its due effect as an architectural feature, when applied at a height above the eye of the spectator.

Mr. Fowler, V.P., alluded to Mr. Smith's observation, that if works of art were intended to be durable, they should not be made of

materials, such as bronze, which could be converted to other purposes, and said he had been informed that the Portuguese were in the habit of carving granite with great nicety and beautiful effect. He fully concurred in Mr. Smith's objection to the use of valuable materials for sculpture; and, besides the intrinsic value of bronze, he considered that material highly objectionable, in this climate especially, on account of the obscurity arising from its very dark colour. He believed Mr. Smith had proposed to execute the capital of the Nelson column in stone? (Mr. Smith assented.) He (Mr. Fowler) very much regretted that it had not been so executed, for the beauty of its form was now almost entirely lost by the absorption of light by the bronze. The same objection applied to the bas-reliefs on the base of that column, though in a less degree, as they were nearer to the eye. No doubt the execution of the capital in bronze had involved a great increase in expense, with a decrease of advantage. It appeared to him that the statue of William the Fourth at London Bridge had a very good effect, as regarded the material employed, and that granite was well calculated to resist the soot and dust of London. Moreover, a reflected light was produced from the quartz and mica in the granite, which gave and added brilliancy to objects in that material. He wished to know if there was any practical difficulty in the more general adoption of granite.

Mr. Smith said there was a difficulty in respect to the expense. He should have been glad to execute the capital of the Nelson Column in granite, for the same sum that it had cost in bronze. The leaves of that capital had been cast by three different persons; the first pair of lower leaves weighed 430 lbs. each, but the others were of only half that weight. The beauty of bronze casting was to have the metal as thin as possible, but the thinner it was, the greater was the cost. The leaves were fixed to the granite bell by a bronze collar, to which they were attached by nuts and screws, which might give way at some distant day, when the leaves of the capital would fall. The extreme hardness of quartz, one of the component parts of granite, rendered the cost of working it very great. Still, it had been carved with the greatest success, and anything could be done in granite, if people chose to pay for it. He thought the cost of granite sculpture would be very nearly that of bronze. The mere cost of bronze was not quite so great as was supposed; but the necessity of providing for the risk of failure in the casting, added much to the expense of that material.

Mr. Scoles, secretary, adverted to the hieroglyphics on Egyptian granite figures in the British Museum, which are polished in the inner surface, and inquired if that polish could not be obtained on granite in the present day.

Mr. Smith had no doubt it could. He referred to granites polished by Macdonald and Leslie, specimens of which were in the Museum of Practical Geology.

Mr. Scoles referred particularly to polished intaglio surfaces.

Mr. Smith said it was only a question of time and money, and it could unquestionably be done. He referred to the tomb of the master-mason to either Queen Anne or George I., in the burial-ground of St. John's, Westminster, as one of the earliest works in granite in England. Its mouldings, though such as would now be considered rude in form and execution, were highly esteemed in his (Mr. Smith's) boyhood.

Mr. Fowler observed that he had seen polished granite chimney-pieces in Devonshire, which had been executed forty years ago. Mr. Smith was doubtless aware that Mr. Cheverton had invented a machine for copying statues in ivory on a small scale. After the explanation just given of the extent to which mechanical aid was carried in sculpture, he was induced to ask if it might not be made entirely so, if the power as well as the process were mechanical?

Mr. Smith had no doubt it might on a scale as small as the ivories produced by Mr. Che-

verton; but where so large a mass of material had in the first place to be got rid of, as in carving a full-size marble statue, he did not think it practicable.

Mr. Fowler mentioned that a mechanical process, analogous to Mr. Cheverton's, had been applied to carving in wood.

Mr. Smith dwelt upon the fact, that wood was a material much more easily worked than stone. He believed even stone had been carved by Jordan's patent machinery, but he doubted whether it had proved profitable.

Mr. Mayhew (fellow) alluded to Signor Conti's machine for stone carving, which he described, and which he had seen working busts and half-length figures, apparently with great facility and rapidity. The inventor appeared to consider there was a prejudice against the machine in the profession.

Mr. Smith had not seen this particular machine, but he had seen several others, all of which, however ingenious, had failed in a very short time. He thought there was no prejudice in England against such machines, if they did the work well and quickly.

LOWESTOFT AND THE DANES.

SATURDAY last was an important day for this rising watering-place, and now mail-packet station, for it saw the first steamer depart for Hjerting, in Denmark, as the shortest route to Copenhagen and Stockholm. One main object in opening this new course is the importation of cattle, which by means of the Norfolk and Eastern Counties line will be brought direct to London or the provinces. The Danish king and government are much interested, it is said, in the success of the undertaking, as it will open to them a direct communication with England independent of Germany. The shore arrangements have devolved principally on Mr. Roney, the excellent secretary of the Eastern Counties line. A merry party occupied the vessel (the *Prince* by name) on her first trip, intending to visit Copenhagen and penetrate the country for some distance. Copenhagen, with its Thorwaldsen Museum, Museum of National Antiquities, Opera House, and Royal Library, is not so well known as it deserves to be, and we regard the new route with the greater interest because of the fresh district it will open to the antiquary and architect.

And where is *Lowestoft*? some of our readers will ask. It is about twenty-three miles from Norwich, and nine from Yarmouth; and, through the spirit and taste of Mr. Peto and others, offers strong attractions to the city-worn, who may want quiet, a fine sea, and good bathing. A fine hotel, elegant esplanade, extensive pier, and numerous well-placed modern houses have sprung up in a singularly short time. We were wandering on its beach last Sunday, and were well pleased with Lowestoft and all we found there.

Tradition ascribes the first invasion of England by the Danes to the murder of Lodbrog, a Danish prince on this coast: the invasion of Denmark by England to-day from this point, may be regarded as an interesting return of good for evil, at a long distance of time.

THE NATIONAL GALLERY.—A proposal, it may be recollected, to transfer the national paintings from the Trafalgar-square Gallery to Kensington Palace, was discussed in *THE BUILDER* some time since. It is now reported that this suggestion is to be carried out by the Government, who are said to have at last become convinced of the necessity of removing them from their present position. If such really be the case, the change will doubtless be carried out forthwith, as Kensington Palace, from the first of next month onwards at least throughout the present year, will be one of the most central positions possible for a popular exhibition to strangers of our national pictures, notwithstanding its suburban locality. The Vernon collection, we presume, would also be removed from Marlborough-house and reunited with the older section at Kensington Palace, otherwise it would scarcely be worth while carrying out such a project.

THE PROPOSED LAW COURT FOR
METROPOLITAN BUILDINGS.

BUILDERS' ACTIONS.

At Leicester, on the 20th, an action was tried, —Holland v. the Earl of Harborough. It was an action for builders' work done at the defendant's seat in this county. It was a special jury cause. The principal matter in dispute was the value of the plaintiff's work, and several ineffectual attempts had been made to settle the matter by arbitration. After the case had proceeded for some time the judge expressed his opinion that it was impossible to try the question satisfactorily before a jury, and then the cause and all matters in difference were referred.

This little narrative is unfortunately the history of nine-tenths of the actions brought by builders against their employers. After all the array of the usual artillery of our law courts when the plaintiff's counsel has made his opening oration, and scarcely begun the examination of his witnesses, the learned judge stops the affair, saying, "*it is impossible to try this action satisfactorily in this court: it must be referred.*" Counsel well understand this idea, they are not unwilling to attend to the suggestion of my Lord: the bright prospect of further briefs and fees is opened out to view—a job for one of their own craft most likely,—the affair is soon hushed, a reference is agreed on, another cause is called on, and thus ends all the ostentatious display of a trial by jury on a matter of builders' account. The same result inevitably happens in attempting to try any question involving technical detail and minute knowledge of building matters. The secret of all this is manifest: our courts of law are not adapted for fairly considering such questions—judges, and barristers, and solicitors soon grow weary of a matter they only half understand, and the poor plaintiff has the mortification of hearing that he has to begin de novo.

These facts, illustrated by the above case, form a fair subject for discussion at the present crisis, when we are threatened (by the New Buildings Bill) with a regularly established court of law, consisting of judge and jury, barristers and solicitors, &c., specially to handle building questions.

There are deep points involved in this matter affecting the community at large: every one is concerned more or less in building matters,—it may be, perhaps, only in trifling affairs and to small amounts, but the same principle is involved.

All who have had to give evidence in the witness box, and to attend before barristers as arbitrators in matters of reference on building questions, must have found the greatest difficulty in making themselves understood by simple answers, and the secret of this difficulty was the want of information on the part of the judge or counsel to know how to shape the question: the most absurd confusion of terms is often made even by those who take highest rank at the bar.

These reflections are strong arguments for a determined effort against the projected court set out in the New Buildings Bill.

It will be found pretty generally the opinion of the building craft, that practical architects and surveyors would be much the most competent persons to judge accurately of matters appertaining to building, and there are very many in the profession thoroughly well skilled for such duties, who have for a period of years had continual matters of very great importance relative to building works referred to them. In daily practice as men of business we are anxious to adopt the shortest, safest, cheapest, speediest mechanism to fulfil a certain desired work. Why should we adopt a different maxim in reference to the perplexing questions that continually arise in building works?

TO RELIEVE SHIPS AT SEA.—It occurs to me that the syphon might be made available in relieving ships at sea from water shipped in storms. It frequently happens that the pumps get choked and will not work, and often the men are too exhausted to work them: would not the syphon obviate this difficulty? It was used a short time ago with complete success at a quarry, and at a considerable saving of labour, time, and expense.—PUPIL.

PLEDGE DEPOTS FOR THE POOR.

THERE is an old saying, as old as our language,

"*Eine halbe of the worlde lens not how the over libth.*"

Familiar use has smoothed off its keen asperities: we utter it from childhood, and the acceptance of the terms is, that the modes of sustenance to which one part of mankind are addicted are unknown to the other. The march of language requires, like other concerns, reform and explication: the real meaning is, *one half of the world knows not how the other STARVES.*

It is not in the streets and highways that real indigence is met—that sort of indigence which is forced to suffer; it is in the model and often neat lodging chamber, where decaying misfortune endures in silence the long combat and slow progress of starvation, unnoticed because uncomplaining, unobserved because unknown.

For the ordinary class of paupers there is the workhouse; for the extraordinary, the resort of the streets; but for the reduced and yet respectable occupant of small houses, decent apartments, or single rooms, whose sensibilities would revolt from even the expedient of an alms-seeking letter, there is no resource—none but to endure and hope against desperation.

Had we a *mont de piété* in every parish, such an establishment would, in countless instances, relieve the necessities of reduced respectable and self-respecting persons in many predicaments.

How often does it happen that for a quarter's rent the whole movable stock of an old lodger is cleared off and sold by the broker? Were such a pledge offered to a pawnbroker, worth suppose 15*l.*, if he took them in at all, he would advance on them 3*l.* 10*s.*! but he would not receive them. A *mont de piété* would, on one-third of the inventory, lend 5*l.*: this would clear the quarter's arrear, whereas the landlord has sold them off for 5*l.* 11*s.* 6*d.*, and, after deducting the fees of levy, has returned to the lorn, unhoused, and shuddering wanderer just 2*s.* 8*d.*!

It is needless to follow the course of the outcast in this instance, for in this case "these are (not) the beginning of sorrows."

But manifold are the conditions of men and women to whom the establishment of an *Equitable Pawn and Loan Association* would bring healing and salvation.

Honour to the French nation, which has anticipated us in the walk of charity,—of that true charity that gives succour to the meritorious poor. The next best thing to originating a merciful institution is to copy it. There is no reason wherefore, in this city of wealth and benevolence, such foundations should not exist; and the nobleman who first comes forward with his advocacy and a five-pound note will have the lasting credit of having laid the first stone in the fabric.

It should be a pawn store allied to a loan society on the deposit and registration of INVENTORIES—a society that should lend a reasonable amount on the poor man's bed, and yet leave that bed (in mortgage certainly) for the comfort of (as in too many instances we find it used) his wife, children, and self.

Perhaps it is impossible to make the whole human race happy: it is not impossible to endeavour to do so: the tendency of the British heart and of the British constitution is to secure the greatest possible amount of good for the greatest number, and in no country is there such disparity in the conditions of men, nor consequently so much necessity for the alleviation by fiscal means of that want which our social state renders inevitable. A building is in the first place required for the storage of pledges lent, as by the proposed plan the greatest portion of the advances should be made on attested and examined inventories: that building needs to be but comparatively small. Any old house would suffice: if not, there are correspondents enough with THE BUILDER who will furnish plans. After all, the most beneficent feature of the recommended association is the *gratuity fund*, which, being a portion of the capital made up of subscriptions

by the humane, would be applicable to the redemption of deposits or inventories in the last instance.

A committee of inquiry into extreme cases, employing visitors, should have the adjudication of these cases and claims. No simple eleemosynary gifts can be of so much importance as aids afforded to the needy in such instances. None but those struggling against adversity, and relying upon industry or periodical income, would apply for relief to the "*Mont de Piété*." Before that alternative is taken, all other sources of succour must have been exhausted; for in such cases the pawnshop is a hopeless refuge.

That buildings for the purpose of conserving pledges should be fire-proof, is a matter of crying necessity. In case of combustion, the property not of one (as when a mansion-house is burned), but of thousands, is wholly destroyed; and although not more than one-half of the deposits made under the emblem of the three golden balls is ordinarily redeemed, still the value to the other half of possibly all their disposable worldly goods could hardly be requited by a money compensation, were any compensation given.

In cases of pawnbrokers' fires, there is, however, no compensation to the bereaved owner. The proprietor of the establishment may be well covered; the amount of his loan, of his *assure* at 25 per cent., and of his profit on the anticipated forfeit, are all fully protected; but the poor depositor, whose watch, or bed, or tools, or ancestral relique has been pledged for the tenth part of its value, gets no recompense. No; he has not insured: a holocaust is made of the property of multitudes.

The destruction of an immense repository some few years back in South Audley-street, is a notorious evidence of the calamities which such an accident may heap upon the indigent but remediless crowd of poverty.

From the nature of the stores (mostly soft goods) these depositories are much exposed to danger, and being always traversed after dusk with candles, it is only wonderful that fires so seldom occur in such places.

For this reason, if there were none other, it is desirable that all erections for storage of pledges should be fire-proof; and for the prompt succour of necessity in the hour of need, it is most of all to be wished that national credit should be allied to the administration of establishments founded on equitable principles, so as to supersede the present iniquitous, extortionate, and but too seductive resorts for misery in the last extreme.

It is clear that no kind of charity can be so efficacious as that which affords on the moment of requirement the means of relief,—which supplies it not as a gift, but as a loan on security,—which yields unquestioning aid to the speculative, the sickly, or the starving,—which yields it not as an alms doth to the clamourer, but as a help to self dependance, in the shape of an advance (the most that the deposit will warrant) at a rate of interest which may requite the lender, and perhaps save the borrower from perdition.

Such establishments would be worthy the age and the country we live in, and the only wonder is that the example shown by the Parisians has not as yet been followed in London.

QUONDAM.

A WRITER signing himself "*Quondam*" proposes in your Journal to establish in London a *Mont de Piété* upon the principle of that at Paris. He assures your readers that such an institution could afford to advance money at 5 per cent. per annum, 4 per cent. being devoted to the payment of interest on borrowed capital, and the remaining 1 per cent. he pronounces quite sufficient to defray the working expenses of the establishment.

Least, however, any of your readers should be induced thereby to seek such an investment for their capital, a brief notice of the failure of the *Mont de Piété* system, as introduced in Ireland under most favourable circumstances, may prove beneficial. A record of the progress of this disastrous experiment may be found in the Annual Reports of the Loan Fund

Board of Ireland, which show in 1841 there were in existence eight of these establishments, employing a collective capital of 26,883*l*. The rate of interest charged by them was, I believe, in no case under 20 per cent. per annum—a rate rather higher than that of the English pawnbroker, but considerably under that of the Irish trade. Yet in spite of this speculation proved most unfortunate: one by one they retired from the field, borne down by heavy losses, until in 1849 one only remained, and that, I believe, has since wound up its affairs. The following is a summary of their expenditure during nine years:—

Expenses and interest on capital	£.	s.	d.
Gross profits on operations	17,144	1	4
	10,137	12	0

Net loss £7,006 9 4

And yet with such facts as these staring him in the face "Quondam" asserts that 1 per cent. is sufficient to pay the working expenses!

That official extravagance may be the cause of this catastrophe may be gathered from the evidence of Sir Matthew Barrington, given before a select committee of the House of Commons in 1838. Sir Matthew was the founder of the Limerick Mont de Piété, the most distinguished of these institutions. He states that the salary of the manager was 300*l*. per annum, that of the "valuators" 40*l*. a year each, while sundry clerks and messengers received but 20*l*. each.

The Mont de Piété of Paris is a government monopoly, and business is performed therein with about the same degree of rapidity and convenience that distinguishes some of the offices in our own Somerset-house. It lends very little upon the goods offered; in some cases less than half of what a London pawnbroker would advance upon the same articles. Its rate of interest is nominally 9 per cent. per annum, and its net profits, according to M. Blaize,* are under 1 per cent. But such are the inconveniences of having only one or two central establishments in a large city like Paris, that in 1840 nine-tenths of its business was transacted by its licensed local agents (about twenty-five in number), who have subordinate offices in different parts of the town, and with whom the public preferred to deal in the proportion above-mentioned. The Mont de Piété being unable to pay the additional expense of these subordinate establishments, the agent (or commissionaire) is allowed by law to charge 3 per cent. upon all money advanced, which, supposing the average of each contract of pledge to be six months, would raise the actual rate of interest upon the great bulk of such transactions to 15 per cent. BARDI.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN.

THE anniversary festival of this institution was held on Thursday, the 27th ult., at the London Tavern, the chair being filled by Mr. H. Lee, who was supported by Mr. Thomas Piper, as vice-chairman, and by the presence of Messrs. Baker, Grimdsell, Myers, Patrick, W. Piper, and other leading builders, together with a body of members and friends of the institution, to the number of nearly 200.

In the printed report, which was circulated in the room, the committee expressed their obligations to the architects and builders of the metropolis, and other patrons and donors, for their support of the institution during the past year, and specially acknowledged the forcible appeal of the chairman of the last annual meeting (Mr. W. Cubitt, M.P.), which had been the means of placing the true objects of the institution properly before all parties connected with the building trades. The report further stated that 32*l*. 11*s*. had been granted from the funds for relieving the immediate necessities of afflicted members during the year, and sums amounting to 26*l*. 14*s*. to the widows of two foremen, who had been left in situations of great distress; the latter grants including an allowance to each individual at the rate of 15*l*. a year. The committee offered their warmest acknowledgments

to the members of the late Society of Clerks of Works, for their valuable present of a library and furniture for the use of the members of this institution. The statement of accounts attached to the report showed that the receipts of the year, in contributions and donations from honorary and ordinary members amounted to 390*l*.—the balance in hand, and invested, being 544*l*.

The customary loyal toasts were drunk with enthusiasm, and in mentioning the name of Prince Albert, the Chairman observed, that it was not necessary for him to enlarge upon his Royal Highness's exertions to promote the success of the approaching Great Exhibition, and that, whatever might be the result of that vast undertaking, every person must give him credit for the magnanimity and zeal which he had displayed in the matter.

The Chairman, in proposing the toast of the evening, reminded the company that the institution possessed a two-fold character. Formed, in the first instance, to provide its members with mutual assistance during any temporary affliction that might befall them, its exertions had since been so extended as to embrace the relief of such of the widows and orphans of members as were placed in situations of hardship or difficulty. Whilst almost every trade possessed its benevolent society, the Builders' Foremen had but laid the foundation of an edifice which they very properly looked to their masters to assist in raising to its proper height. The institution might be said to be in its infancy, but in the past year the committee had been enabled to extend valuable aid to afflicted members, and an allowance to the widows of two foremen, which, in their unfortunate position, could not be other than a great boon to them. The objects of these benevolent efforts would not be paraded before them to-night, but if they looked around the gallery, they would behold those for whom it was their first duty to provide, and who might unhappily some day require that assistance which this institution was intended to afford. He hoped he should not plead in vain in behalf of the institution, and that his friend Mr. Piper would kindly aid him, by doing that which his own feeble powers might leave undone. He had much pleasure in proposing "Prosperity to the Institution of Builders' Foremen."

Mr. Baker, in acknowledging his health, as governor of the institution, said, that when the office of governor was offered to him, he regarded it as so high a mark of distinction from a body for whom he entertained the greatest respect, that he could not hesitate to accept it. He felt that the institution had many friends better qualified than himself for the office he held, but he should always exert himself to discharge its duties to their satisfaction. The clerks of works and builders' foremen were a most important branch of the community, and the architects and builders of the metropolis would, he was sure, not only do violence to their own feelings, but be guilty of a dereliction of duty if they did not support them on all occasions; and especially in promoting the success of this institution.

The next toast, "the Engineers and Architects," was acknowledged by Mr. Smith, who, on the part of the architects and engineers, expressed the strongest interest in the welfare of the institution.

"The Master Builders of London, and the Visitors on this occasion," was the next toast, in connection with the name of Mr. Linton, who briefly replied.

Mr. Baker, in proposing the health of the chairman, characterised his conduct, both in public and private life, as that of a man of honour and a gentleman, and one who was ever ready to promote the cause of charity and the interests of the working man.—The Chairman, after replying, proposed the health of Mr. T. Piper, the vice-chairman, who, notwithstanding infirmities, was seldom absent on an occasion like the present.

Mr. T. Piper congratulated them on the character, the tone, and the number of their assembly; on the success which had crowned their exertions in the past year; and especially on the acquisition of Mr. Baker, as

governor of the institution; for, by the selection of that gentleman, they had given a pledge to the world of the honourable, upright, and excellent character and purpose of their association. Mr. Baker had spoken of the institution as an ornament to the metropolis: it was in the honest industry of the working classes that the best ornaments of the metropolis really consisted; and brought, as they all were, into daily intercourse with each other, the ties which best united them together were the kindly feelings of charity, which they had that evening met to foster and encourage. He sincerely hoped the society would flourish, and that the claimants on its funds would for a long time be but few. If, however, their number unhappily increased, he trusted their funds would enable them to meet them, and above all, that the provident desire to guard against the consequences of emergencies to which they all were liable, would be the chief characteristic of the members of this institution throughout their lives. In reference to other projects that might be rising up around them, he would observe, that while to the individual the duration of his life was most uncertain, it was equally true that the average of human life was a positive and ascertainable fact; and, as had well been said, *the man who insured his life was not a gambler, whilst he who did not do so was*. In conclusion, he expressed a hope that the feelings which animated them all at that moment might be taken as a fair type of their intercourse throughout the ensuing year.

The Chairman stated that Mr. Piper had consented to take the chair, at the next anniversary meeting.

"The Secretary and the Acting Stewards" was responded to by the former (Mr. Allard), and with the toast of "The Ladies" the proceedings terminated.

In the course of the evening the Secretary read a very satisfactory list of subscriptions, including the names of Mr. Peto, M.P.; Mr. Hardwick, R.A.; Mr. Grissell; Messrs. Dunnage, Alchin, &c., &c., amounting in the whole to upwards of 44*l*. in annual subscriptions, and 27*l*. in donations.

NEW WORKHOUSE, SALFORD.

COMPETITION.

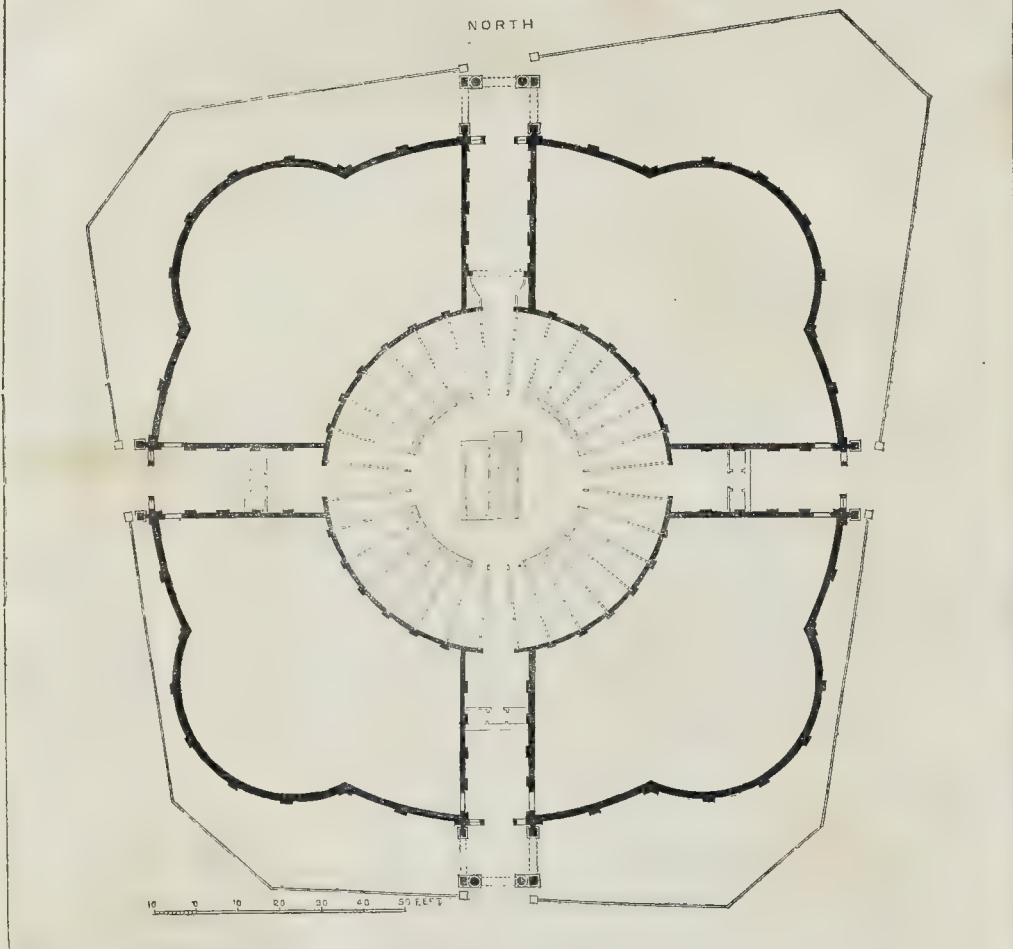
THE guardians have selected the plans of Messrs. Pennington and Jervis, for a new workhouse. For the plans of Messrs. Starkey and Cuffley, a prize of 30*l*. was awarded, and for those of Messrs. Clegg and Knowles, a prize of 20*l*. The building will have a frontage of about 110 feet. On the ground-floor will be the clerk's and other offices, a committee-room, &c., and over these will be the board-room, lighted by an oriel window above the entrance. Immediately in the rear, but detached from the offices, will be the vagrant and probationary wards and yards, those for males to the right, and for females to the left. The workhouse building, in the rear of these, but at some distance from them, will have a frontage of 341 feet, with two wings 60 feet long: the building and wings will be each about 38 feet deep, and, in addition to the necessary offices for clerks, &c. the centre of the building will contain accommodation for the master and matron: from the main room of each of these there will be a projecting window, commanding the exercise-yards of the men and women respectively. Over the centre will be a bell and clock tower, with Louvre boards. The front of the offices and the centre of the workhouse are described as, "somewhat in the Elizabethan style." The ventilation will be accomplished by means of 2-inch cavity-walls, with perforated glass in the upper compartments of the windows. The building is calculated to contain 700 inmates, and the cost is estimated at about 8,000*l*.

LORD ROSSE'S CONVERSAZIONE.—The President of the Royal Society has issued cards for May 3, May 17, May 31, and June 14.

THE ROYAL ACADEMY.—Mr. Landseer, R.A., has been elected keeper, in the room of Mr. George Jones, R.A., resigned.

* Des Monts de Piété, &c., par A. Blaize. Paris, 1845.

PLAN OF THE GREAT GLOBE-HOUSE, LEICESTER-SQUARE.



THE GREAT GLOBE-HOUSE, LEICESTER-SQUARE.

We give to-day a correct plan, not before published, and a perspective view of the building now in course of erection, in the centre of Leicester-square, for Mr. Wyld's great model of the world, to which we have before referred. The Globe will be figured on the inside instead of the outside of a sphere, and will be viewed from galleries at various heights. The frame of the Globe is formed of thirty-two large trusses, the position of which is marked on the plan. The enclosure is of brickwork, rendered externally with Portland cement. The Globe will be lighted by day from the centre of the dome (as at the Pantheon in Rome), and by gas at night.

The sills on the sleeper walls, to support the trusses, are 12 inches by 6 inches; and the main timbers of the trusses are also 12 inches by 6 inches; the collars being 8 inches by 6 inches and 6 inches by 6 inches respectively. The outer struts are 7 inches by 6 inches. The floor of the corridor consists of sills, 8 inches by 6 inches, resting on 32 intermediate piers. The joists are 7 inches by 2½ inches, and 14 inches from centre to centre. Supported by the 32 trusses is a circular curb, 12 inches wide by 6 inches thick, from which the semi-domed roof springs. The gallery uprights, 12 inches square, in two pieces, bolted together,

are 42 feet 6 inches in height, and rest in cast-iron shoes, bedded on the sleeper walls. The frame of the Globe, which is nearly completed, is further formed of horizontal ribs, averaging in scantling 2½ inches by 3½ inches, and 2 feet from centre to centre, which are battened ready to receive the plaster modelling. The external diameter of the Globe, from batten to batten, is 60 feet 4 inches.

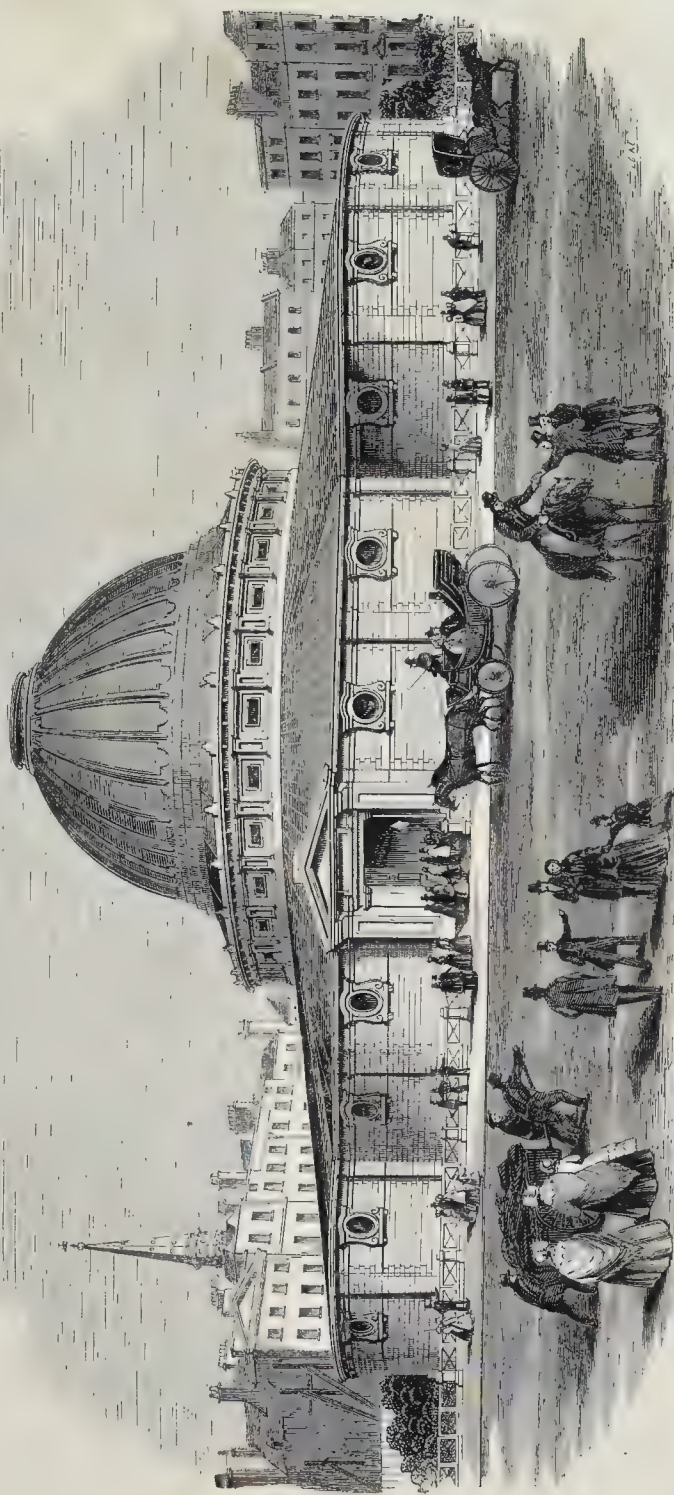
The covering of the dome is of lead. Skylights at the foot of the dome will light the corridor which is formed around the globe between the framing and the enclosing wall. The four outlying apartments will probably be appropriated for other exhibitions. Mr. Abrahams is the architect engaged upon the work,* and Mr. Myers the builder. Mr. Wyld has a lease of the site for ten years.

DIORAMAS.—The diorama mania, a pleasant and, we hope, profitable one, is spreading. Whitechapel has now its illustration of the Route for Emigrants "from Waterloo-bridge Road to the Harbour at Sydney, in Australia;" and Southwark its "Tour from England to Paris." The former is painted by Mr. Frederick Fenton, and embraces views of Lisbon, Gibraltar, Cairo, Calcutta, &c.

* In our first notice of the building we gave the name of Mr. Welch as the architect. This was at that time perfectly correct, but the work afterwards changed hands.

LONDON GAS COMPANIES.—When the City companies failed in their strenuous endeavours to strangle the "Great Central Gas Consumers' Company" in its birth, we expressed an earnest hope that they might not succeed in smothering it next with amalgamative kindness. It scarcely surprises us now to find not only that "the City of London Gaslight and Coke Company" is acting the part of the too kind foster mother who is likely to do so, but that the "dear little infant" itself is rushing into the arms so lovingly extended towards it. A petition, it appears, is about to be presented to the City Sewers Commission by the Great Central Gas Consumers' Company, praying the approval of the commission to an arrangement for amalgamation with the City of London Gaslight and Coke Company! Mr. Deputy Harrison has already given notice that he will present such a petition. All we have now to do with this question is to record the fact.—A reduction of the price of gas to 4s. a thousand cubic feet has recently been announced by another of the metropolitan gas companies.

NEW PATENT V. BURGLARS.—H. S. Ridley, of Vincent-square, Westminster, surveyor, and J. Edser, of St. James's-terrace, in the said city, builder, for a safety hinge and certain apparatus for the detection of burglars and prevention of burglaries.



VIEW OF THE GREAT GLOBE-HOUSE, LEICESTER-SQUARE.—MR. H. R. ABRAHAM, ARCHITECT.

BOILER EXPLOSIONS.

In one week three frightful steam-boiler explosions have recently occurred,—one at Stockport, where twenty lives were lost and valuable property destroyed,—one near Paisley, where six or eight lives were sacrificed,—and one in Manchester, which has involved the loss of seven or eight lives more. We begin to hope that an explosion in the vaults below the House of Commons or the House of Lords may not now be needed in order to insure the effectual co-operation of the Legislature and the Government towards the diminution at least, if not the extinction, of this ever-recurring waste of life and property. We have long alone urged that something ought to be done, such as the institution of a formal system of inspection, independently altogether of the discussion of any question as to special preventives, or of any inquiry as to general causes; and we are glad to find that now we are not alone in this good cause. Some of our provincial contemporaries, locally interested in the subject, have of late been also calling attention to it. The *Manchester Courier* "hardly likes to arm another department of the Board of Trade with power over steam boilers; but if some other safeguard against such losses of human life as have recently taken place cannot be found, can really see nothing else for it." At all events, "every boiler should be tested under competent inspection. There are proof-houses for guns and musket barrels; why should there not also be proof-houses for boilers?" The *Manchester Spectator* is of opinion that "to prevent the running of engines at such a pressure as to be utterly unsafe, and to fix the responsibility, the aid of Government must be called in, and, at all events, that a repetition of such calamities will soon make it a question not only between the owners of boilers and their workpeople, but between the former and the public at large." The metropolitan *Spectator* labours under the very mistaken idea, that the actual visitations of such dangers are not in general very frequent. Nevertheless, it is of opinion that "danger to workpeople should take the form of expense to employers, and we should then have one of the best stimulants to investigation and the practical application of progressive discoveries." We earnestly trust that something will be done at once, and the lives of our industrious population be protected henceforth at the instance of the Legislature, at whose mercy, though no criminals, they may in this case be truly said to lie.

NOTES IN THE PROVINCES.

The erection of a covered market-place at Reading is being urged by the local press.—The price of gas at Loughborough is to be reduced in June next to 7s. a thousand cubic feet, with 20 per cent. discount for cash.—A site for a new church at Hove, Brighton, has been offered by Baron Goldsmid, who has already refused 1,000l. for the same piece of ground. Subscriptions amounting to 1,500l. have also been promised and mostly realized. About 4,500l. is the sum wanted. Of this another 1,000l. is to be borrowed on the parish rates. The building is to seat 900.—It is proposed by a correspondent of the *Hampshire Independent* to erect a statue to Dr. Isaac Watts, a native of Southampton, at the end of the town and avenue, where some alterations are going on at present.—It is said that Lord Ward intends applying the income to accrue from the lease of the Dudley Castle grounds to the South Staffordshire Railway Company for fete occasions, to the erection of almshouses for aged and incapacitated miners.—The gross rental of the Bristol Waterworks in March, 1850, was 5,646l. 16s.: it is now increased to 7,727l. The rental for "domestic use" in March, 1850, was for 3,315 houses; that for March, 1851, for 4,686 houses. There are at present upwards of 24,000 houses within the limits of the Act, a large number now in course of erection, and sites laid out for others in a variety of places. The length of mains to be laid was estimated by the engineer at 355 miles: 62 are already laid, and owing to the erection of houses in new districts, the mains

will be increased to at least 75 miles.—There are at present engaged on the Breakwater Works at Portland about 120 men, exclusive of some hundreds of convicts. Mr. Leather, the contractor, has yet to construct upwards of 1,000 feet of this undertaking. The works at present are progressing steadily.—The foundation-stone of a Temperance-hall was to be laid at Stonehouse on Monday last.—At Gloucester a new monument in commemoration of Bishop Hooper is proposed, in the place of the one now standing in St. Mary's-square.—The Gloucester Gas Company intend to reduce the price of gas to 6s.: the consumers demand a further reduction to 5s.—A plumber and glazier at Darlington was lately fined 5l. for helping himself (for how long is unknown) to the gas of the Darlington Gas Company without leave asked or payment made. He had supplied his legitimate burners by a subsidiary pipe, which he could fix and remove at pleasure, according to the local *Times*, without its passing through his meter.—The erection of the new Roman Catholic cathedral at Buckie, says the *Elgin Courier*, has been entrusted to Mr. John Lamb, builder, Bishopmill: Messrs. A. and W. Reid are the architects.—A mill-dam, covering 80 to 100 acres, at Eaglesham, according to a Glasgow paper, gave way on Monday in last week, and destroyed a good deal of property.—The Clothworkers' Company of London has offered to give 15 acres of building land, near Coleraine, as a site for the erection of the proposed "Magee College," and also a donation of 3,000l. in aid of the fund for building and endowment.

A HOME FOR THE ARTS AND SCIENCES IN THE METROPOLIS.

It is a disgrace to this country that the Government do not provide a national palace of ample size for the residence of Art. Private subscription has raised in a few months a Palace of Industry of great cost, for its temporary accommodation, and the Government might safely rely on the public support for the erection of a building adapted for the purpose. Why, then, should it any longer turn a deaf ear to the matter? Let it at once set about it, and make amends for placing the munificent donation to the country of a private individual in a cellar, then transferring it to a place wholly unsuitable for the purpose as a temporary abode. To its further discredit it leaves our scientific societies to shift for themselves. The Royal Society has no place that it can call by right its own, which it most decidedly ought to have, dedicated to it by the nation. The Society of Arts is in a similar position, and many other societies, such as the Antiquarian, the Archaeological, the British Architects', and the Engineers';—all such have a most equitable claim on the country for house room.

We have a Prince, the consort of our beloved Queen, who is doing much for us, and I sincerely hope that his present exertions may be appreciated by all. I am sure his intentions are good, whatever the result may be, and that they may lead to a better state of things must be the wish of all. To him, therefore, Mr. Editor, let us all appeal—let us with one voice declare that such a disgrace to our country ought at once to be removed.

Let us be able to point with the finger of pride to our national buildings for the reception of art. Our British Museum is (although it may not please all our architectural critics) still the only building we have worthy the name of a national building, as applied for the reception of art. The National Gallery might do very well for the Society of Arts, in conjunction with the Institutes of British Architects and Engineers, or for any of the other societies which are considered entitled to any national accommodation, and for which it might be best suited. For the National Gallery of Painting and Sculpture, combined with the Royal Academy and the Annual Exhibition of Modern Art (for they ought all to be in the same abode), I would find better accommodation, and in the very heart of the metropolis, where the National Gallery ought to be, and

as easily accessible to the people of the east as of the west, or of the north, or of the south, of this great city.

I am not one of those to propose impossibilities, and merely waste your time, Mr. Editor. I have given the matter much consideration, and I do not see the difficulty of obtaining a palace (or palaces, if necessary) for the appropriate residence of the arts and sciences in one of the most civilised countries of the world. No time like the present; and surely, with an overflowing exchequer, it would be a very proper time to set apart a few thousands, which none would grudge, for the commencement of a fund to be applied to such a noble purpose: it would tend to the instruction and delight of the million, and would not only raise us in their estimation, but in opinion of our continental neighbours, who most justly sneer at our most degrading position.

Pray, urge this matter on the consideration of the Government, and call on the public to support you in so laudable an undertaking, and invoke our Prince to take the matter into his serious consideration.

I have heard from good authority that the noble proprietors of BURLINGTON-HOUSE, PICCADILLY, would dispose of their property, in which, by-the-bye, I am in no way interested; but I do not know a more eligible spot in the metropolis than that for a National Gallery, and the Government ought to be ashamed of itself, if it let the opportunity of purchasing it slip: it has a frontage of 287 feet by a depth of 600 feet, and the present mansion might be applied for the accommodation of the Royal Academy, or any other purpose which the Government might choose to dedicate to art.

I am sure the noble Earl, the amateur architect and its founder, would right gladly bring this matter to bear if he could only rise from his grave and see how appropriate it would be for such a purpose, and how little appropriate it is now for a private residence, owing to the great alteration which has taken place in the surrounding property.

I trust you will concur with me in my ideas, or at any rate that you will allow them to occupy a space in your journal, that they may rouse the British Lion to plead for art.

CHARLES MAYHEW, Architect.

IRISH ENGINEERING AND BUILDING WORKS.

THAT part of the Dublin and Belfast Junction Railway, between Gorah Wood and Portadown, is steadily progressing towards completion, and is to be delivered up ready for traffic on the 1st of June next. Sir John McNeill is the engineer in chief.

The contract for the portion of the Londonderry and Enniskillen Railway, between Strabane and Newtownstewart, has been disposed of to Mr. Mc Cormick, and the works are at present in progress.

The Board of Superintendence of the Cork Bridewell have commenced to add considerably to the accommodation in their prison: they have also determined to introduce gas.

The unfinished works on the new road at Scarawalshe, leading from Enniscorthy to Bagnalstown, including the building of a bridge, and which contain 1,477 perches, are to be completed, and the cost is not to exceed 2,200l. Also the unfinished works on the road leading from Gorey to Tirmahely, containing about 631 perches, and the probable cost of construction will be 946l.

Sundry works are to be executed at the Church of Derryvullen, county Mayo, according to plans prepared by the architect to the Ecclesiastical Commissioners.

The Poor-Law Commissioners have advertised for the erection of sundry buildings to the workhouse of the Ardee Union, according to the plans prepared by Mr. Wilkinson.

The Drainage Commissioners find that the bridges, culverts, &c. within the districts of Turloughmore, Lavally, and Lough Corrib were insufficient, have caused some to be reconstructed, and have declared that the expenses of executing the works shall be as follows:—Lackagh bridge, to cost 207l.; Carro-

fin ditto, 257l; Claretuam ditto, 310l; Claren ditto, 10l, 10s.; Toberbracken ditto, 200l; Mailcoach-road ditto, from Galway to Dublin, 132l; Barrack ditto, 13l; Bridge-street ditto, 22l; Moycullen ditto, 80l; Claregalway ditto, 424l; all in the county of Galway.

The plan of the proposed "glass palace" at Belfast will be rectangular, its total dimensions being 110 feet by 57 ft.: a dome is to surmount the edifice, the height to its summit being 40 feet. The building will be constructed principally of glass, wood, and cast-iron, and the roof is to be formed on the ridge and furrow principle. The water will be conveyed down the pillars at sides, and from their bases into sewers. There are to be no metal girders, whatever, and the pillars are to be cast in one length. The cost of erection is estimated at 780l. Mr. John Boyd, architect, of Belfast, has been instructed to prepare the necessary drawings.

The railway to Waterford is to be proceeded with: it is to join the Waterford and Kilkenny line close to Waterford, both companies having a common terminus. The line will be finished to the junction, near Waterford, in little more than two years: the remaining portion (52 miles) is confidently expected to cost only 8,000l. per mile; and the average cost of the whole line (77 miles) will not exceed 12,000l. per mile. Mr. G. W. Hemans is the engineer-in-chief.

A new Temperance Hall has just been completed at Dungannon.

The addition to the old Infirmary, county Sligo, is now in progress of erection, according to plans by Mr. Wm. Deane Butler, architect, of Dublin. Attention, it is said, has been paid to provision for heating, ventilation, and light; day-rooms for convalescent patients; and the speedy removal of all nuisances by soil-pipes attached to each ward. A system of lifts is observed throughout, by which much time and labour are saved.

RAILWAY JOTTINGS.

A LARGE force of excavators has been put on the works of the large tunnel on the South Wales Railway, west of Swansea. It is reported that the contracts and working plans of the Great North of Scotland Railway between Aberdeen and Keith, or Huntly, have been signed by contractors, and that the works will be commenced forthwith.—The South-Western Railway Company, says the *Hampshire Advertiser*, "are attempting to charge, for the conveyance of working men to the International Exhibition more than double the amount for which they brought the Londoners down to Southampton by the excursion trains last year, and which turned out to be so profitable a speculation." We have heard of extravagant spendthrifts first ruining themselves by profuse expenditure in their youth, and then ending themselves in their maturity by miserly and unreasonable greed of gain, frustrating its own aim by an extreme as great as the first, though in the opposite direction. It really appears as if the railway interest, having gone through the former process, were now bent on pursuing the latter. The idea entertained by some of the companies, that by charging the Exhibition excursionists double the amount charged with so much profit to other excursionists, they will double that profit, is puerile: they not only will not double it, but they will not equal it. The cheapness of the fare was the *sine quâ non* of that profit: surely the most fatuous miser might now be able to comprehend that fact. As for all the difference between the special attractions of the Exhibition itself, and those of previous or other excursions, the companies will find that neither Cocker nor Stocker will bear them out in their calculations on that score. The personal expenses are a heavy drawback, which it would be well for the railway companies not to cast the scale against altogether. Their cue is rather to smooth the way—to tempt towards the incurrence of that expense—by *excursion fares more than usually low*, in place of more than double the usual amount,—a gross error in self-interest. Our advice the companies ought to respect; for they have had THE

BUILDER to thank for the excursion profits of the past year, and of many a year yet to come.

—The Great Northern now supply coals to the metropolis at rates so low that they are delivered free of all expenses, in London and within five miles of it, at 17s. a ton for the best, and 14s. for the lowest: sixpence a mile extra beyond five miles. Attempts have been made to prevent the sale of this coal in the metropolis, by false representations as to its quality for household purposes. We have purchased and used some of the best quality ourselves, and find it not only excellent but preferable to what had been previously in use at a considerably higher price. The public benefit, moreover, thus derivable from railway transit, will not cease here; for doubtless the prices of all other coals in the metropolis must, in consequence, be very speedily reduced.

A statue of the late Mr. G. Stephenson, by Gibson (lately dispatched from Italy), is to be placed in St. George's Hall, Liverpool. It was sculptured at the cost of the Liverpool and Manchester company, and will be exhibited at the Royal Academy before its inauguration. The *Gateshead Observer* asks, "where is the Newcastle statue," and complains that "the prophet has no honour in his own country."

ANCIENT CHURCH ARRANGEMENTS.

THIS little (and as I am beginning to fear) serio-comic controversy about ancient church arrangements, in which Cardinal Wiseman (*sub-silentio*), Mr. Elliott, and my nameless self, appear as champions, reminds one of the story of the three brothers, under which the witty Dean of St. Patrick's describes the three classes of religionists which we perhaps severally represent. Mr. Elliott and I take the places of the two younger brothers, who, on discovering the sophistries by which their elder brother had induced them to overlay their simple coats with the trappings of successive modern fashions, set to work, each in his own way, to rid their garments of these spurious overlappings. The second brother, "Martin," sets to work quietly to unpick the stitchings by which the offending patches have been attached, his chiefest care being to avoid injuring the coat; while the third, who is disrespectfully named "Jack," in his fury at finding to what deceptions he had been subjected, is less cautious in his operations, and with every patch he gets rid of, he tears off a shred from the original garment. Poor Martin, through taking the middle course, becomes the butt of both his brothers: Peter declares him to be only a spurious edition of Jack, while the latter thinks him worse than Peter, inasmuch as his simpler dress gives him an aspect of feigned purity; so that between the two, he leads a very disquieted and thankless existence.

Now I find myself exactly in this unhappy position. I hold myself to be a very good Protestant, and have even been accused of fanaticism on that side on some questions bearing upon architecture; but to my infinite dismay, I now find myself placed on the same side of the lists with Cardinal Wiseman and Pugin, and all because I cannot bring myself to take up with this little monomania of Mr. Elliott's! Being, however, conscious of no wish but to distinguish the coat from the patches—the original from the spurious—I willingly bear with this reproach; nor will I again try to shake Mr. Elliott in an opinion he holds so dear.

My object in now writing is merely to heg any of your readers who may feel interest, and desire more information on the subject, to refer quietly to the various authorities to which I have before alluded, and to collate Mr. Elliott's quotations with the original. I will not again risk the charge of "begging the question," but I think I am pretty safe in anticipating their conclusion, that he has, in his zeal for his own view, deduced from Justin Martyr conclusions for which he gives no ground; that he has diametrically reversed the meaning of Eusebius; and that he has quoted, as from St. Paul, a statement not to be found either in his or any other of the sacred writings. His quotations and deductions from my own

letter are almost equally open to dispute, but they may be easily examined. He claims a great victory over me from the admission supplied from my quotation from Siegel as to persons not having been, in the earlier ages, absolutely excluded from approaching the altar; while it will be clear to any reader of church antiquities, that it is a point on which no one ever dreams of doubting. He accuses me of saying that Canterbury Cathedral was like the basilica of St. Peter, and jokes a great deal himself, and suggests that I was joking in making such an assertion.

What I said, however, referred, not to the existing, but to the "early cathedrals," and that only to some portions of the arrangement, and my "jokes" were derived from Professor Willis's admirable treatise, to which I beg to refer. He further accuses me of attributing the increase of the length of chancels to "the increase in the number of the clergy," carefully omitting the words "or choir," which make all the difference. I am not anxious about this last question, as I hold neither with transubstantiation nor with very extended chancels; but I would ask, if one were the sole cause of the other, how we are to account for the great varieties in their length, and the accompanying increase or diminution of the stalls they contain? If, for instance, at Boston, one of the largest simply parochial churches, we find a chancel of some 80 feet in length, containing no less than sixty-four stalls, besides other seats for about a dozen people, while in modern Roman Catholic chapels (and in some few ancient churches), we often find no chancel at all, excepting merely the altar space, and no stalls whatever, is it most reasonable to attribute this to a difference of *staff* or a difference of *doctrine*?

This, however, is not the question between us: on the real question I will only again urge that those who seek such information should apply to the best authorities and *judge for themselves*; but as Mr. Elliott has boldly claimed the first seven centuries as his own, and existing churches as his evidence, he must not be allowed to retreat behind the cloud of the three first centuries, on whose church arrangements we have so little direct information. S.

GUIDANCE OF BALLOONS.

A CORRESPONDENT, "Sub Dio," has been trying his hand at the solution of this knotty problem, and the result, though not so novel as he probably supposes, is well worth recording, in as much as the ideas which force themselves on the notice of a number of minds independently meditating on the same subject, are likely to prove, ultimately, in one shape or other, to be the most feasible and practicable. "Sub Dio" is of opinion that it is in vain to attempt to imitate the bird or the fish in the general principle of balloons, yet he suggests that the form should be that of a ship, or at least the bow or breast of such a vessel, not adverting to the circumstance that in all probability this very form is itself an imitation of that of swimming birds. However, that is an oversight of secondary moment, and moreover it is more particularly the form and movement of the wings to which "Sub Dio" refers, and which he thinks it will be in vain to attempt to imitate: yet mechanics have successfully imitated far more unlikely and more complicated movements than this. The main principle of our correspondent's suggestion is that progressive motion in any desired direction might be obtained by means of a screw propeller, of canvas, affixed to the stern of a light bamboo-framed, sloop-shaped, gas-filled, and buoyant balloon, with a keel spreading out below into a gig for conveyance—all of a piece, or fixed, not suspended, to the machine, so as to enable the canvas fan-screw to act simultaneously on the whole. He thinks

* I believe that the fair proportions of the building had also a due influence on the length of chancels; but, as a general rule, that they varied with the collegiate or other choral staff, whether permanent or occasional. I could point out an instance of a chancel being in the reign of Edward IV. reduced to one-fourth of its length, still retaining the usual choral arrangement, with new screen and stall seats, simply from an accompanying change in its ecclesiastical staff.

that "if a screw steamer and cargo, together weighing 800 or 1,000 tons, can be impelled against wind and tide, through a dense body like water, by a screw propeller, at stern, of three comparatively small fans, an elastic balloon and gig, such as that described, might be propelled at an inconceivable velocity, and in a straight course through thin air, by a screw and fans of canvas, with a helm, if necessary, added, or the screw itself acting as such on a pivot or groove." It must be recollected, however, that the thin air which presents so little resistance to progression, also presents as little purchase to the means of progression.

Another correspondent, "E. E. M. Civil Engineer," writes to us that he has rendered aid of his for traversing the air without the aid of gas at all, so complete that "it only awaits practical adoption to test its real merits," but he complains that Government will not grant him £4,000 for that purpose. We fear that "E. E. M." knows very little of such worldly affairs as those of Government grants, if he ever expected as many pence as the pounds he requires, without both strong interest and equally strong evidence of that very practicability which he requires Government to test. "E. E. M.'s" invention, he tells us, is expected to travel upwards of 100 miles an hour, either close to the ground or at any elevation; can be raised or lowered at pleasure, or directed in a straight line, and made to descend at any precise spot with the most unerring certainty; will carry 30 or 40 persons, with provisions, luggage, &c., and will have sleeping berths, and other conveniences, like those of a first-class steam-vessel: compelled to descend in the ocean, it will float with perfect safety: finally, it is expected to accomplish the aerial voyage from London to New York in two or three days.

FOREIGN INTELLIGENCE.

French Health of Town Commissions.—The great example started by England in this most important new social measure, begins to be extensively imitated on the Continent, whose less formal laws allow a still more decided way of procedure for the public good. On the 1st of March last the commission *des logements insalubres* at Lille has pronounced its judgment on 340 cellars (*caves*), and 469 lodgings, submitted to its arbitration. Of these 212 cellars have been condemned as unfit for habitation. The 128 cellars not condemned will, however, not be allowed to be inhabited, till after having undergone reparation and salubrication (*assainissement*), according to the instructions of the commission. Of the 469 lodgings examined, 86 have been condemned as incapable of being salubricated. 383 lodgings will also not be inhabited till after having undergone the above process. Independent of these decisions, the commission of Lille has ordered 135 items of sanitary improvements in the shape of cleansing of sewers, paving of courts and corridors, draining of water, ventilation of staircases, &c. Most of the proprietors have (he said to their credit) cheerfully submitted to these enactments: in other cases, the commission has ample power given to it to compel parties, who will live and luxuriate on the sufferings and death of others.

Alimentary Statistics of Working Men.—According to some recent observations of M. Gasparin, in Paris, the complete nourishment of the human organism requires the presence of certain primary principles,—azote, carbon, hydrogen and oxygen, chlorine, sulphur, lime, magnesia, soda, potash, iron, &c. The quantity of azote sufficient to keep a person in *statu quo*, without doing any work, is 20 grammes for every 100 kilogrammes (pounds) of his weight; of carbon, 422 grammes for every 100 kilogrammes; hydrogen and oxygen, sulphur, magnesia, phosphorus, &c., will be found in sufficient quantity in any sort of food (with drink) generally taken. One substance however, *chloride of sodium* (common salt) must be superadded to any sort of human food, in the ratio of 17 grammes of salt for every 100 kilogrammes of weight. The azote is yielded by meat, milk, the different sorts of grain, and

the legumens (peas, beans, &c.); the carbon, by the fats, the alcohol, &c. But the case stands quite different with working people. A hard-working man will require of azote 25 grammes, carbon 309 grammes. The fats seem to become the more necessary, the farther we go North. Such are inclined to take fermented liquor, should, according to the authority of M. Gasparin, take never more than a quantity which contains 1-15th of a litre (pint) of alcohol: to avoid overcharging the stomach, no one meal should be of more weight than 175 kilogrammes. M. G. thinks also, that the potato disease will lead the people to the use of maize, whose nourishing and strengthening properties are of a high order.

A new Species of European Antiquities.—Professor J. Kollao, of Vienna, is about to publish an extensive work on the *Slavian antiquities of Italy*—as well as a description of the Pagan divinities and Slavian mythological monuments found by him in Mecklenburg. The Duke of Mecklenburg pays the expense of this costly work.

Projects about the Berlin Academy of Arts.—[Academie der Künste.]—A most strange, novel, yet not quite objectionable plan for remodelling the Berlin Academy of Arts, is said to have been entertained by the secretary of Public Instruction, M. Ladenberg. The plan comprises a general fusion of all art branches into one teaching and executing body. M. de L. proposes, that the committee of the academy should comprise painters, sculptors, architects;—and that also poetry (1) and the dramatic arts should be there represented. Besides this, associations of artists (*Künstler-Genossenschaften*) were to be established, which ought to receive—like in the middle ages—regularly affiliated members, and who should be also represented in the councils of the academy. The committee to be connected with, and superintend three different colleges or schools,—one for the arts, properly so called,—one for music and theatres.

Professor Begas is commissioned by the King of Prussia to paint for the Royal Gallery the portrait of the late Meyerbeer. From the manner in which that artist had seized and rendered that of *Alexander Humboldt*, great expectations may be raised at this new performance.

ATTEMPT FOR A NEW STYLE OF ARCHITECTURE.

PRIZE PROGRAMME OF THE MUNICH ACADEMY OF ARTS.

CONSIDERING the great buildings erected of late years in the Bavarian capital, in their great ensemble, we shall find, that although no new style of architecture has resulted therefrom, yet its whole history is displayed, as it were, in most faithful and gorgeous delineations. Thus the Greek or Architrave style of straight lines is exhibited in the Glyptotheka, and the hall opposite to it, as well as in the throne-hall of the palace, turned towards the royal gardens, the latter the master work of M. de Klenze. The Roman style of the arch, vault, and pilasters is figured in the interior of the Glyptotheka and the triumphal arch. The Roman-Christian style, with its simple columns of Byzantine proportions and capitals, we find in the peristyle of the church of St. Bonifacius. The Florentine palace-style is exemplified in the royal residence towards the Marxplatz, and in the library, whose front resembles the Palazzo Riccardi. The hall of warriors (*Feldherrenhalle*) is a fair re-modelling after the graceful and almost lofty Loggia dei Lanzi, in Florence, and makes the ultimate transition to the new Roman style of palace architecture.

To crown, therefore, endeavours so honourably begun and continued, the Royal Academy of Fine Arts have put forth a programme for the sake of further progress. It bears the title "Prize Competition for the Plan of a Building destined for a higher culture and instruction establishment (*Bildung und Unterrichts-Anstalt*)." It is accompanied by a lithographed plan of the proposed site of the building, and a memoir explaining the spirit and intention of the proposed undertaking. It

embodies, first, the idea "that in no branch of art the searching after a new, rational, and time-appropriate development has been so strong and determinate as in architecture." Some, it is true, have only endeavoured to re-pristinate old building styles, and thus to gain, by a combination of the elements and peculiarities of these, a new principle. Still, it seems, that the authors of the programme are themselves not quite sure on that point, as they appeal to the experience of after times to know, whether a new style be really possible. They start the question, "whether that tendency of our times to organise every relation and force of national life will be available to architecture."—To co-operate in this tendency, the above prize offers an appropriate occasion, as it affords artists an opportunity of making an experiment in a practical execution of corresponding worth and magnitude." Although it cannot be doubted, that "an expressive and beautiful work of art" will result, yet, whether "the desire after a new style of architecture will be at once achieved" is to be seen. The competitors will have "full liberty to use the existing building styles and their ornamentations." Interesting is further the remark—that we live in a time of thought (?) and investigation, and that "also in the province of architecture, we have to leave the path of unconsciousness and naturality (*Natur-Wüchsigkeit*),—the fundamental idea of our epoch being the tendency after freedom, and an unshackled use of physical and moral powers and their development."

The programme has elicited some weighty and interesting commentaries, the writers of which express the same doubt, whether a new style of architecture be possible, and hint at the many doleful errors present mankind has already got itself into, by wishing to bring forth things quite new and unheard-of. The three prizes offered by the Munich Academy of Fine Arts consist of 4,000, 2,000, and 1,500 florins respectively, which on the Continent are considerable. The period fixed, however, being very proximate (31st July next), is not considered adequate to such an enterprise. It will, probably, be prolonged hereafter.

THE SEA-WALL OF PENMAEN MAWR.

At a recent meeting of the Institute of Civil Engineers, Mr. H. Swinburne read a paper descriptive of the "Sea-walls of the Chester and Holyhead Railway at Penmaen Mawr."—These walls were described as extending over a length of one mile and a quarter, sustaining a terrace beneath the steep slope of Penmaen Mawr, through the rocky headland of which the railway was carried by means of a tunnel, about one-eighth of a mile in length. This terrace was partly cut out of the cliff on the east side of the headland, and on the west side, for a distance of 550 yards, it was wholly formed of embankment, beyond which there was a cutting about 110 yards in length, followed by 220 yards of terrace; then another cutting about 350 yards in length, succeeded by an embankment retained on the seaward side by a wall, about 260 yards of which was within the reach of high tides. The original design of these walls consisted of a plan retaining wall, nearly triangular in section, 3 feet thick at the formation level, with a straight face battering 3 inches per foot, the back being vertical. The parapet was to have been formed of a small breast wall 3 feet higher than the level of the rails, and 2 feet thick. The masonry was specified to be "coursed walling," squared with the pick; and the face to consist of one header and two stretchers alternately. The works were commenced in the autumn of 1845, but, after two months' experience on the coast, it was thought advisable to deviate from the original design of a straight face to the wall, and to substitute an arc of a circle of 60 feet radius, with a slightly overhanging parapet, and, to prevent the great increase of masonry which would have resulted from this alteration, the back of the wall was also curved. This was afterwards found to be impracticable, and the section was, therefore, materially altered. The nature of the mate-

rials not admitting of the "coursed walling" being executed with facility, it was determined to introduce an ashlar facing of limestone, procured from the north coast of Anglesea, and set in cement for a depth of 18 inches from the face. The main seawall, immediately to the westward of the headland, was now commenced, and, as the embankment behind it was dependent on the completion of the tunnel, and the wall was unavoidably built in many detached lengths, it was necessary to increase the width of the base, by reducing the batter of the back of the wall. This wall had advanced very briskly during the summer of 1846, and was within 9 feet of the levels of the rails, with all the lengths joined, excepting the two openings through which the materials were carried from the beach, when, on the 22nd October the coast was visited by a severe gale, with a 17 feet tide, which completely destroyed the central portion of the wall between the two openings, besides damaging the other portions, and sweeping away the beach in front of the centre of the wall. In consequence of this lowering of the beach, it was decided to substitute for the central portion of the wall an open viaduct, consisting of thirteen openings, each 35 feet in clear width, and spanned by ten cast-iron girders, two for each rail, resting on solid ashlar piers, 32 feet in length, 6 feet thick under the impost, and 6 feet 8 inches thick at the footings, with semicircular ends next the sea. The remaining portions of the wall were completed with the limestone ashlar facing, taken from the destroyed length of wall, set in cement, and in many cases backed with brickwork, also set in cement: they were also built more upright, and nearly straight on the face. In order to preserve the foundations of those parts of the wall which remain uninjured by the storm, it was resolved to form a breakwater and terrace in front, by driving a zigzag row of piles, in bays at right angles to each other, and to back these piles with planks, behind which an artificial beach was formed. The parapet of the first length of wall, immediately to the eastward of the headland, was built for a length of 130 yards, from 8 to 11 feet higher than the level of the rails, for carrying one end of a slanting roof, or "lean-to," formed of whole timbers set close together, as a protection against stones and debris falling from the face of the cliff. In spite of the great difficulties encountered during the progress of these walls, arising from the peculiar locality and from the violent action of the sea, the viaduct last constructed proved perfectly satisfactory: it was, however, shown that, in point of expense, it would probably have been as cheap to have pierced a longer tunnel, and had a less extent of seawall, as the contingent expenses incurred in contending with the waves were very great, and were of a nature scarcely to be foreseen and provided for by engineers.

ST. HELEN'S GLASS WORKS.

In the course of a paper on glass read by Mr. Deacon, at the Liverpool Architectural Society, the reader said that the building of the St. Helen's Crown, Sheet, and Plate-glass Works was commenced in April, 1826, and glass was first made there in February, 1827. The firm consisted of six partners, among whom the shares were proportionately divided. The works now belong entirely to Messrs. Pilkington. At the commencement there were about forty or forty-five hands; but they have now in different departments, exclusive of the colliery, between 800 and 900 men in their employment. The exact number is by no means easy to ascertain: there are daily changes, and many join as partners in certain work by the piece, only one name appearing in the wages-book for the whole gang. As nearly as could be ascertained, the actual number is between 870 and 880. They are distributed in various ways: about 560 are such as may be truly called glass-makers, and are sub-divided amongst crown, sheet, and plate-glass, ornamental glass and shades. The rest are employed in the warehouses as assorters, cutters, and packers, as makers of pots, bricks, and other articles of clay; and then

comes a long string of trades, carpenters, wheelwrights, sawyers, bricklayers, masons, smiths, mechanics, engine-drivers, carters, and plumbers, all being waited upon by a large number of labourers and assistants of various kinds. In addition, there is the staff, which, without reckoning the proprietors, who take an active part in the business, consists of two general managers, and one who resides on the works, and whose duties are more limited, fifteen clerks, thirteen managers of departments, and twenty-seven working foremen. Then there is a functionary of quite another class—the schoolmaster. Many boys are employed, and working at uncertain hours, often all night, no regular day or night school would receive them as scholars. A school was, therefore, established at the works for the use only of such as are actually employed. Under sixteen years of age the attendance is compulsory, at times arranged each day by the schoolmaster and the several managers and foremen. The number on the school-books, both above and below that age, is 117. The weekly product of the work is about 100 tons of glass, in working which 650 tons of coal are consumed.

Books.

The Principles of Colour applied to Decorative Art. By G. B. MOORE, Teacher of Drawing in University College, London. London: Taylor, Walton, & Co. 1851.

THE want of established principles for the application of colour, apparent during the late discussion on painting the building for the Great Exhibition, has led to the production of this volume (74 pages), which the author terms "an attempt to investigate the principles on which the works of the middle ages were accomplished." This is the view he takes of early decorations:—

"In the most successful decorated interiors of France, Belgium, and Italy, the application of colour appears to have been on the same principles that guided the great painters of the Venetian and Flemish Schools in their pictorial combinations. In their works, the primary colours, yellow, red, and blue, are seldom employed in large quantities: they are often concentrated, and almost invariably graduated, broken, or varied, by the mixture of the complementary colours: the secondary colours, orange, violet, and green, formed by the mixture of two of the primary colours, were applied in similar graduated quantities, and the greater proportions in their compositions were generally composed of the tertiary hues, formed by the mixture of three primary colours, with one predominating; or the quaternary hues, formed of the three primaries, with two or a secondary colour predominating. These hues are often mis-termed neutrals, a term that properly belongs to the various shades between white and black, in which the three primary colours are blended in proportions that balance or neutralise each individual colour."

He regards the various colours under the following classes and terms:—

Primary positive colours.	White.	Comprehending — Crimson, when the red is in great excess.
	Yellow.—There are no distinct general terms for the delicate tints, those in use being borrowed from objects containing them: lemon-yellow, straw-colour, and primrose.	
	Red.—The delicate tints, pink, carnation, rosy.	
Secondary positive colours, composed of two primaries.	Blue.	Violet, lilac, where the red and blue are balanced. Blue-purple where the blue is in excess.
	Orange, composed of yellow and red.	
	Purple, composed of red and blue.	
Tertiary hues, composed of the three primaries, with one primary predominating.	Green, composed of yellow and blue.	Buff, in the lighter hues. Tawny, or dun, in the deeper. Marone. Chocolate.
	Citrine, where yellow predominates.	
	Russet, where red predominates. Grey, where blue predominates.	

Quaternary hues, composed of the primaries, with two primaries or a secondary colour predominating.	Anburn, where orange predominates	Brown in the deeper hues. Lavender for the lighter hues, where violet predominates, or the red and blue are balanced.
	Puce, where purple predominates.	
	Olive, where green predominates.	
Neutrals tinted.	Where the three primaries are in proportions to balance or neutralise each other, of which the deepest shade is black.	

He maintains that in Nature the use of the positive colours is confined to small parts; and this is his deduction:—

"It appears, that if the principles found in nature, and adopted in the works of the greatest colourists are correct, we should use the tertiary, quaternary, and neutral hues, for the greater quantities, and reserve the primary and secondary positive colours to heighten the effect, or attract attention to the points of interest. As far as I can recall to memory the effect of various edifices, the most successful appear to have been decorated on the above principles; but the decorations of buildings, like pictures, often improve, as well as suffer by the hand of time, and it is difficult to say how far the harmonious mellow effects of the older buildings may not have arisen from the crude positive colours being softened and subdued by age, though we can generally judge if portions have been decorated in brighter tints than the rest. In the Gothic churches in Belgium and France, the greater quantity of the walls were generally left uncoloured, the subdued broken hues of the stone and rich carved woodwork forming a relief to the more positive colour of the glass windows, pictures, and marbles; and where marbles were much used, as at St. Mark's, Venice, the greater proportions were generally of rich deep harmonious hues, and the brighter marbles reserved for the altars, shrines, &c. At St. Peter's and the other basilicas of Rome, the marbles form intermediate hues between the more positive colour of the pictures, mosaics, &c., and the subdued hues of the walls."

Miscellaneous.

SOCIETY OF ANTIQUARIES.—The report on the treasurer's accounts for the last year shows a balance in hand, after payment of the current expenses, of 1,250*l*. The capital stock 7,000*l*. A paper was recently read by Mr. J. H. Parker, on the mediæval architecture of the western part of France, including Angers, Saumur, Fontevault, &c. The representations were executed by an artist Mr. Parker took with him on a recent expedition. Mr. Rickman shows the intimate connection between our sacred edifices of the Anglo-Norman period and those of the north of France. Mr. Parker thinks the resemblance was not less striking as regards the cathedrals and churches in the whole of the western provinces of France.—The anniversary meeting on the 23rd will be regarded with more than usual interest, as it will celebrate the hundredth year of the charter. Amongst others, twelve members of the British Archaeological Association (not fellows of the society), and twelve members of the Archaeological Institute, will be invited to the dinner.—The Duke of Northumberland is moving these two bodies and the society into joint action.

THE SAPPERS OF THE SURVEYORS.—Your correspondent "J. T. S." in *THE BUILDER* of the 15th March, has alluded to the true cause of this mischief: it is indeed centralisation which has sapped the occupation of the land surveyors, and we have only to look to the New Metropolitan Buildings Bill for the last effort of centralisation has made, in seeking to deprive the magistracy of the power of appointing the district surveyors, and vesting such power entirely in a Government Board. If the profession do not take care not only to repress this but similar attempts to interfere with their occupation, the care of the metropolitan buildings will soon pass from them, as the metropolitan survey has already done, into the hands of the military.—C. E.

REPEWING ST. BOTOLPH'S, BOSTON.—At a recent meeting of the leading inhabitants of Boston, an unanimous resolution was voted to have the parish church repaired, and as an earnest of the force of the resolution came to, the meeting at once subscribed 2,333*l.* towards the object in view. The vicar, the mayor, and other gentlemen, addressed the meeting, and Mr. F. T. White, in course of his speech, remarked, that such works as that in which they were about to engage were deeply interesting, as links of by-gone times. The first record they had of the foundation of their magnificent structure, he found in an interesting statement on the subject of "Boston steeple and church," bearing date 1715, and which was as follows—"The foundation whereof on the Monday after Palm Sunday, Anno 1309, 3rd Edw. II., was begun by many miners, and continued till Midsummer following,—when they were deeper than the Haven by 5 foot, where they found a bed of stone upon a spring of sand, and that upon a bed of clay whose thickness could not be known. On the Monday next after the feast of St. John the Baptist, was laid the first stone by Dame Margery Tilney, upon which she laid 5*l.* sterling. Sir John Truesdale, then parson of Boston, gave 5*l.* more, and Richard Stevenson, a merchant of Boston gave also 5*l.* which was all the gifts given at that time." He (Mr. White) would for a moment recal their minds to the date of that foundation—1309! Let them reflect upon the vast lapse of time which had since intervened! 500 years—more than half a decade of centuries, had rolled away since that stately pile arose on the banks of the Witham—and they could not look without honour and respect upon the names of those recorded as participating in so glorious a work for the interests of posterity.

BRADFORD MUSIC HALL COMPETITION.—According to the local *Observer*, the whole interior of the selected plan will form an area 153 feet in length by 76 feet in width, the height from the floor to the ceiling being 56 feet. It is computed that the floor of the Hall will seat 1,100 persons, the stalls 600, and the gallery 1,500, making a grand total of 3,200, exclusively of standing room. It is proposed to light the whole interior by a continuation of gas jets, about 2,000 in number, running round the bottom of the massive roof-cornice, after the model of the Philharmonic Hall at Liverpool. The exterior of the Hall is in the Palladian style of architecture. The basement is rusticated with masks on the keystones, and having candelabra in recesses on the principal front. The basement supports colonnades of a Corinthian order, surmounted by entablature and balustrade. The height of the building from the ground to the top of the cornice will be 66 feet. The fronts of the galleries inside, and the columns which support them, will be of iron castings. The whole interior is designed for the introduction of polychrome decoration on a large scale. The second premium (20*l.*) was awarded to Mr. Dobson. We are sorry to hear that the committee have declined exhibiting the plans.

FURNACE FIRE-BARS.—RAILWAY SLEEPERS.—A patent has been secured by Messrs. Cochrane and Francis for a new furnace-bar. They are formed of a V or U shape, the hollow being filled in with fire-clay, mixed with sand or ground fire-brick, to prevent shrinking; or fire-bricks of the exact size are cast to fit the opening. Also for a railway sleeper, formed with a basement-plate, with longitudinal ribs and recesses, to admit the feet of the chairs, which are kept in position by a block of wood: the rail is secured to this block by wedges and keys.

STATUE OF CALIFORNIA.—In the New York *Literary World* we find a letter from Mr. Hiram Powers, the sculptor, wherein he says,—"I am now making a statue of 'La Dorado,' or California—an Indian figure crowned with pearls and precious stones. A kirtle surrounds her waist, and falls with a feather fringe down to just above the knees. The kirtle is ornamented with Indian embroidery, with tracings of gold, and her sandals are tied with golden strings. At her side stands an inverted cornucopia, from which is issuing at her feet rumps and grains of native gold, to which she

points with her left hand, which holds the divining rod. With her right hand she conceals behind her a cluster of thorns. She stands in an undecided posture—making it doubtful whether she intends to advance or retire—while her expression is mystical. The gold about the figure must be represented, of course, by colour as well as form. She is to be the genius of California. I could execute this statue on a colossal scale in bronze or marble, and it might be placed upon a pedestal out or in-doors. Is she wanted in your city? . . . It will be eighteen months yet before it is done. The block designated for it is spotless, and that is a matter of great importance to the effect of the work.

DRAINAGE OF KINGSTON, JAMAICA.—The fearful prevalence of cholera which has been scouring various districts in the island of Jamaica, Kingston inclusive, seems to have induced a determination to have this town properly sewered and drained. Mr. William Dredge, who is at present in Kingston, and Mr. Blayne W. Walsh, have been called upon to report to the local Board of Health on the subject, which they have accordingly done. In their report they propose to drain into main sewers with glazed earthenware pipes. The cost of sewerage and drainage they estimate at 9,180*l.* for the former, and 2,754*l.* for the latter. We perfectly agree with the reporters "that experience proves that the direct cost of keeping a town clean is not so great as the amount indirectly paid for allowing it to remain filthy;"—an axiom all the more vitally important in its application to Kingston, that while "in European climates, when epidemics prevail, dirt is dangerous,—in tropical ones it is death."

RAILWAY COMPENSATION.—On the 26th inst. a special jury assembled at Red Lion-square, before Mr. Undersheriff Burchell, to assess the compensation, upon a notice given by Mr. John Glenn, a builder at Islington, to the East and West India Docks and Birmingham Junction Railway Company, under the 68th section of the Lands Clauses Consolidation Act, claiming 1,500*l.* for alleged consequential damage to houses and property adjoining the railway in Cambridge-terrace and Roman-road, Islington. It appeared from the evidence offered by the claimant that the injury complained of consisted of cracks and settlements in his buildings, stated to have been caused by the railway cutting: it also appeared that a sum had previously been paid to Glenn for the purchase of property in the neighbourhood. Upon the examination of the second witness for the company, the jury stopped the case, and, after hearing a reply from Mr. Lush, the claimant's counsel, and the summing up of the learned undersheriff, immediately returned a verdict of "no damage." The result of this is, that the claimant has obtained nothing from the company, and has to pay heavy costs.

THE ECCLESIOLOGICAL SOCIETY.—At meetings of the committee of this society held on February 12 and March 17, the committee examined designs for the Middle School at Hurstpierpoint, for a church school and parsonage in Herefordshire; for a new church at Woodlands, Berks; for a church in Somersetshire; for a church at Bournemouth; and for the proposed church of St. John Baptist, Hobart Town. Mr. Keith exhibited the plate he has in preparation for the cathedral of St. John's, Newfoundland. At the request of the Rev. H. V. Shortland, it was agreed to devote the sum of 10*l.* promised by the society to the restoration of Little Mapstead, to the purpose of providing a screen. A letter was read from Mr. Ralston Cox, informing the committee of the progress of his wooden church, St. John Chrysostom, Delaware; and of the abandonment or alteration of most of the signs of an improved ecclesiastical taste in church architecture in the North-western States mentioned in the last annual report of this society.

IRON SMELTING.—Mr. A. Barclay, of Kilmarnock, C.E., has taken out a patent for a peculiar arrangement of blast furnace, stated to effect a saving in fuel, time, labour, and expense. The furnace is provided with three tuyères communicating with the main cold air

pipe by vertical branches. Each tuyère has a triple branch, furnished with stop-cocks, one of which opens into a small end of a bell-shaped chamber, forming part of the furnace; while the other two communicate with it at the sides near its junction with the body of the furnace. Each chamber has a charging-place, closed by a double door, for the introduction of fuel while the blast is on. It is recommended, when erecting furnaces on this construction, to have the floor of the blast higher than the charging door of the puddling furnace, to facilitate the operation. There is also a claim to a steam cylindrical blower, which keeps up a regular blast by alternately filling with steam and condensing it, effected by any proper mechanical arrangement of stop-cocks and valves.

THE IRON TRADE.—At the preliminary meeting of South Staffordshire masters, it was found to be impossible to carry out a previous desire to raise prices in the spring, and fears were confessed that even further reductions might have to be submitted to. They still complain of the "immense over production" by the Welsh and Scottish furnaces, and especially dread the incursion of the Scots, although, as yet, the "prices obtained, considering quality and carriage, are not sufficiently reduced to allow of the substitution of Scotch for Staffordshire among our manufacturers." Orders for manufactured goods are said to be extensive in the district,—iron culverts for the metropolitan sewers inclusive. American orders for the raw material are exceedingly limited since the American merchants have ceased to dread an increased tariff on importation.

MEXICAN HOUSES.—Mexican houses are mostly all alike, and I will describe one, once for all. You enter by a large doorway, wide enough to admit a carriage, and find yourself in a large courtyard, or "patio," with the house built round it. Generally, except in large towns, there is only one story; when two, or more, the family commonly live in the first floor, and the ground story is occupied by warehouses, counting-houses, &c. Most houses have, in addition, a court-yard behind, which contains the kitchens and other offices; sometimes there is another yard, or "corral," behind all, which contains the stabling, and is large enough to accommodate a great many animals. All houses are flat-roofed, and paved with a species of plaster over the bricks. This plaster, in a short time, becomes very hard, and being polished with rough stones, until it is as smooth as marble, forms an impervious roof against the rain. Every house is furnished with immense long horizontal pipes or gutters, projecting over the street, and through which all the rain collected on the roof is carried off. During the rainy season, or in a good heavy storm, these pipes are so many cataracts, and it is impossible to walk through the streets without being half-drowned.—From "A Trip to Mexico."

SECRETS OF COMPETITION.—Many years ago, a competition was invited for a frieze for one of our public buildings. The committee, which, on this occasion, was composed of gentlemen of more than ordinary taste, found little difficulty in selecting three from the great number of designs submitted to their inspection. The gentleman to whom the third prize was awarded was much disconcerted, for he knew right well that his design was of first-rate quality, it having been a careful transcript of a drawing which the late Mr. Stothard had made him for the occasion. On mentioning his disappointment that he had not succeeded in carrying off the first, or, at least, the second prize, to the painter, the latter inquired the names of his more successful rivals, when it turned out that, like the three kings of Brentford, they had all been smelling at the same nosegay! The foundation for all the designs had been supplied by Mr. Stothard; but that which had secured the first prize was the first of the three he had executed. "He ought to have been the first," added the old man, "for he came first, and paid the best price."—*Art-Journal.*

ATHENS BY RAIL.—A French engineer has just set out for Athens to construct a railway from the city to Pireus.

The Builder.

No. CCCCXXVII.

SATURDAY, APRIL 12, 1851.

WHEN we illustrated Mr. Hope's new town mansion, we gave some particulars of Piccadilly,* and alluded to the great improvements which had been made in that important thoroughfare.† There is still the same tendency; and all that has been done there since the notice in question has had the same end in view. Most of our London readers have noticed a very elegant, though *bizarre* shop front, of stone, which was put up some months ago, close to the mansion we have named. This, with its sculptured decorations, female heads within wreaths, scagliola panels in the pilasters, lamps, and plate glass, will, we have no doubt, lead to considerable improvements in our shop fronts generally, and, as one of the first of a class, is noticeable and praiseworthy.‡ Annexed we give an engraving of half of this front, for the use of which we are indebted to the editor of *The Journal of Design*.

The most important recent work in Piccadilly, however, is the reconstruction of Hertford House, which overlooks the Green Park, and forms one side of a narrow turning known as Engine-street. This mansion was formerly the Pulteney Hotel. The Emperor of Russia put up here during the visit of the allied sovereigns in 1814; and here the Duchess of Oldenburg (the Emperor Alexander's sister) introduced Prince Leopold to the Princess Charlotte.§ After various mutations it was purchased by the late Marquess of Hertford, and is now being rebuilt as a town residence for the present Marquess.

The original building was designed, we believe, by M. Novosielski, the architect of the Opera House in the Haymarket; and Sir Robert Smirke afterwards added a Grecian Doric porch. The old structure was pulled down to the underside of the windows in the ground story, and the interior, which was originally very inconvenient, has been wholly re-arranged. In our present number we give a plan of the principal floor, and a perspective view of the exterior.||

The chief drawing-room is 57 feet long by 27 feet wide, exclusive of the bow: the other drawing-rooms are respectively 38 feet by 22 feet, 22 feet by 22 feet, and 27 feet by 22 feet, and all are 20 feet high. This suite have doors opposite to each other, and give a vista of 114 feet. Opposite to the entrance to the principal drawing-room from the grand staircase is the entrance to the Picture Gallery,—a fine apartment, 50 feet long, 25 feet wide, and 34 feet high to the crown of the vault which roofs it. The ceiling is panelled, and the light is admitted by the intermediate range of panels marked *c c*, which are of glass. The roof is formed by means of cast-iron elliptical ribs, spanning from side to side. The ceiling

* Evelyn, in 1662, mentions that he was a commissioner to pave the road from St. James's, north, "then a quagmire," and the wars about "Figudello."

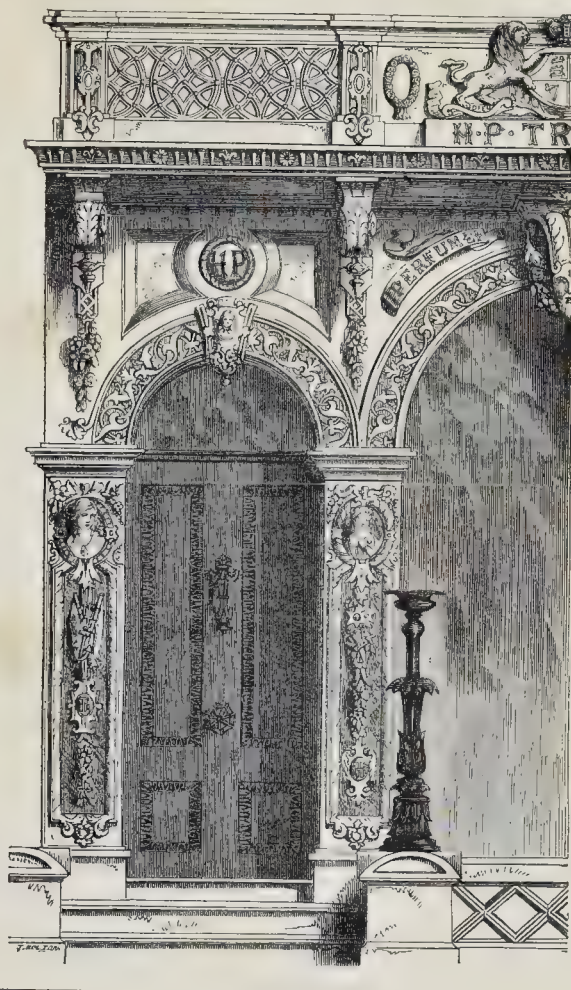
† Vol. VII., p. 493.

‡ Its precursor is in Regent-street.

§ Hand Book of London.

|| See pp. 234 and 235.

SHOP-FRONT IN PICCADILLY.



of the gallery is intended to receive a considerable amount of plaster decoration, but at present, like all the interior, it is unfinished.

This gallery is destined to contain a collection of pictures of inestimable value, and should be made fire-proof as far as practicable. It will be remembered that at the late sale at the Hague, the Marquess of Hertford purchased many of the most important and costly works. The pictures are now scattered about, so that we cannot give a list of them, but the following are some of the most important:—"Holy Family," by Rubens, bought at the sale of Mr. Higginson, in 1846, for 2,478*l.*; portrait of Vandyck, by himself; "The Alchemist," by Teniers; "An Interior," by Metz; "Oxen in a Meadow," by Paul Potter; Several pictures by Cuyp; "City of Cologne," by Vanderheyden; "A Grand Waterfall," by Jacob Ruysdael; "A Landscape," by Hobima, from the King of Holland's collection; "A Grand Sea View," by W. V. Velde; "Landscape, with a Herdsman," by Claude; "The Annunciation," by Murillo, from the Aquado collection; "A Lady reading," by Terburg;

"Downs of Holland," by Wouvermans; "Canal, Venice," by Canaletti; "Interior," by P. de Hoogh; "Dutch Kitchen," by Metz; "His own Portrait," by Rembrandt; two pictures by Watteau; "Repose of the Holy Family," by Murillo; "Christ giving the Keys to St. Peter," by Rubens, from the King of Holland's; portraits of Philip le Roi and his Wife, by Vandyck, also from the King of Holland's; portraits of John Pellicorn and his son, and of his wife and daughter, by Rembrandt, also from the King of Holland's; "The Sybil," by Domenichino, from Stowe; and "The Unmerciful Servant," by Rembrandt, also from Stowe, and which cost 2,300*l.* The Marquess has further a matchless collection of china and objects of art, so that we may expect Hertford-house will become one of the leading sights of London.

The dining-room is beneath the picture-gallery.

Externally, the majority of passers-by will consider that no alteration has been made in the elevation of the house, so vaguely do forms usually impress themselves. In reality,

however, very considerable improvements have been made, although the character and leading features have been retained—perhaps unwisely. The front has been raised, to its great advantage: its height, which before was 57 feet, is now 71 feet: the arrangement of the pilasters is different, and pedestals have been added to them. It is throughout executed in Portland stone. The flank, which before was but a collection of brick gables, is now also of stone, and has had character given to it.

The whole of the works have been executed by Messrs. William Cubitt, Plucknett, and Company.

A short time ago we conveyed a cynical foreigner over part of London, apparently with very little satisfaction to him, and certainly none to us, for he seemed to think, like many foolish people of our own country, that it would be admitting ignorance to appear surprised or pleased. The only exclamation of delight that escaped him was when, returning westwardly at night, we turned round and looked back on Piccadilly, with its broad causeway, tree shadowed, and the double range of bright lights taking a snake-like form, and stretching far away, farther than the eye could reach. And this certainly is a beautiful sight.

There is a curious letter extant, from the Board of Green Cloth to Sir Christopher Wren, telling him how that the King (William III.) had bought a number of lamps to light the road from Whitehall to Kensington, and that he was forthwith to erect a shed at Kensington, that they might be taken down and put away during the summer, ready for their Majesties' use in the next winter. The contrast is interesting.

ON THE BALANCE OF NATURAL FORCES CONSIDERED AS A SOURCE OF BEAUTY.

UNREMITTING study is necessary for the improvement of taste, and much depends on the education of the eye. The instinctive knowledge of objects derived from sight by the new-born lamb is beneficently bestowed as necessary to the safety of an animal designed to be comparatively independent from its birth; but the infant is destined to pass through a long period of helplessness, and is born without any power of instinctive perception of the nature of objects from vision. Whatever it learns from the use of its eyes is the result of comparison and experience, or, in other words, of reason; and this slow process is one of the means ordained by Providence to force upon man the continued exercise of his intellectual faculties from the earliest period of his existence. The difference between instinct and acquired knowledge is, that the first is received as complete as necessary and is incapable of extension: the other is the result of reason, and has no limit to its acquisition by education. The perception of beauty is the result of intellectual comparison; it cannot therefore be instinctive, and consequently it is peculiar to man. It is true that, in the humblest meaning of the word, brilliant colour is in the eyes of the infant or the savage beautiful, but that being an agreeable sensation produced on the mind through the medium of a mere sense, it does not express the meaning attached to beauty by a student of art. Much of what is deemed beautiful in form depends on the preservation of just balance between the sustaining forces and those which would cause the object to fall. To the perception of this we are first awakened by the mother's warning, "take care lest that fall;" our safety ever afterwards requires that we should be constantly alive to such indications of stability: it thus becomes a condition essential, in all

objects we could continue to contemplate with satisfaction, that they should be steadily balanced, and it is one which constitutes an essential element of what the artist terms *repose*.

We have only to regard the casts of those magnificent monuments of Grecian sculpture, the Gladiator, the Discobolos, and the Apollo, all of which indicate a high state of action, to perceive the meaning of this assertion. In all of them the figure is represented at that instant of action where the balance of the body is perfect. Were it otherwise it would be impossible to gaze upon them with the satisfaction that every one feels in doing so. The artist's skill is displayed in the indications of motion conveyed by other means than overbalance; by the straining of muscles, and the intent expression of the features, attitude, &c.

The caricaturist, on the other hand, who seeks only to excite the imagination, indifferent to beauty, can express even more violent action with a few lines. It is only necessary for him to incline a figure greatly forward, and indicate something like the position of the limbs in running, to convey the idea of motion to any one. Perfect balance, then, or *repose*, in its technical sense, as regards form, will always distinguish *high art*, whereas overbalance is characteristic of low art or caricature.

But this power of estimating the balance of forces, or measuring sense, which we have attributed to the eye, and is capable of high cultivation, does not reside in the organ of sight, but in the muscular apparatus external to it, by which the eye is moved: it is truly a sixth sense, which conveys to our minds a perfect perception of the effort required to make the organ take any direction under the influence of the will. The eye must not only see, but it must move, and we must be as well acquainted with the distinct indications presented to the mind by vision and direction (or motion), in order to comprehend their meaning, as we must be with the alphabet and orthography to understand the meaning of the printed page. In both cases the knowledge is acquired by education and practice, through mental effort.

The sense of motion, or the measuring sense, is as capable as the other senses of sight, hearing, taste, smell, and feeling, of conveying peculiar agreeable sensations to the mind. As a musical note is to the ear, colour to the eye, cold or warmth to the touch, or sweetness to the taste, so are the regular succession or proportionate arrangement of visible objects—of musical notes or rhythmical repetitions, the sweep of flowing curves, softness and smoothness of surface, swinging, rocking, or dandling,—all sources of gratification to the sense of motion, combined or uncombined with agreeable impressions on one of the other senses. An infant is delighted with the sight of a watch, but is in ecstasies when you move the bright object: a toy that does not move soon palls, and the most beautiful thing in a child's estimation is a firewheel. Motion, then, in addition to colour and brilliancy, may be deemed the full complement of elementary or instructive gratification to the human eye, considered as an organ possessed of two kinds of sense. But it is the same thing in respect of this sense whether the object moves or the eye, in tracing the outline of its form, and as the sense gradually becomes more cultivated a new kind of gratification begins to arise from the exercise of the measuring faculty connected with the sense of motion. This is expressed by the word proportion, and we often perceive very young children intently occupied in meeting out with their eyes the regular succession or proportionate repetitions of the pattern of a carpet or wall paper.

If, then, motion be such a source of gratification as it thus appears in connection with vision, it is an important element of beauty. It is, therefore, necessary to inquire whether nature presents any constant and unmistakable signs that can convey to our minds the idea that the object is or has been in motion. Does any line or curve exist so universally described by moving bodies that its very sight will be associated in our minds with the cause

of that motion; for we know by experience, if we analyze our sentiments, that causality and intention are the chief sources of interest in all that we behold and admire as intellectual beings, for which reason the indications of causality must constitute no mean element of beauty in art as well as nature.

To investigate this subject we must first ascertain the causes of motion with which nature makes us acquainted as mere inhabitants of the earth. These we find to be very few, for if we except the heavenly bodies and the effects of earthquakes and volcanoes and such causes as are too minute, rare, or exceptional, to be taken into general account, only the vital forces of muscular action in animals and growth in vegetables, and those of wind and water, in addition to the power of gravity to which the others are subservient, ever produce motion in terrestrial objects.

Why, we ask, has perpetual motion never yet been discovered? Simply because gravitation is a force incessant in its operation, whereas every other power opposed to it, however great in its commencement, is finite: all other forces upon earth, therefore, ultimately yield to gravity sooner or later, and all motion communicated by them at length ceases under its influence.

It follows, therefore, that nearly all motion with which the inhabitants of earth are practically acquainted (unless we take into account other combinations of force only maintainable for a limited period, and the result of human contrivance), must be a compound effect of a power exceeding that of gravity at first, but gradually controlled by its influence. The exact perpendicular to the earth's surface is the only line in which this combination of forces will not produce a curve, and the slightest divergence from this line, every mathematician knows, will cause the object in motion to follow a certain well-ascertained and demonstrable deviation from that line, termed a parabola. This is one of those sections of the cone which are supposed to represent almost every form of regular curve we are acquainted with, including the circle, the ellipse, the hyperbola, catenary curve, volute, &c. Yet it would be easy to show that though all of these represent lines of motion or rest produced by the contention of two or more forces, they are of a nature seldom to be witnessed in the greater operations of nature, if we except the circle, which is generally an indication of rest or balanced force, as seen in terminal flowers or fruits. Therefore none of these curves, save the parabola, could possibly represent the obligatory contention of gravity with any single force, by whatever cause produced, whether relatively weak or powerful, rapid or slow. A stone thrown, rises and falls in a parabola: water falls in the same curve: it is seen in the waving herbage as in the tall tree stooping to the storm. We distinguish it in the graceful bend of every flower-stalk, and recognise it in each angle of the knotted arms of the oak. The body of the fish, and the limbs of man and animals, all present sections of this incurvation in their rounded outline. Almost intuitively, therefore, the appearance of the parabola in any position is naturally associated in our minds with life or motion; consequently we do not wonder to find sections of it reversed and resembling an italic *S* designed on the palette of a celebrated painter, or recorded as the line of beauty of Appelles. The anatomical investigation of the moving powers acting on the eyeball, too, will show that the eye itself ever tends to move in segments of the same curve; for the same Almighty Omniscience that created nature, having formed the human eye for its enjoyment, has bestowed this character upon its motions.

The line of reasoning pursued, the aim has been to prove that the education forced upon us by nature has rendered us highly sensitive as regards the stability of structures.

We have learned to estimate the influence of disturbing forces calculated to overthrow perfect balance, and traced their effect in producing curved lines, temporary or permanent, that indicate the direction taken by a moving body, under the combined compulsion of an impelling force and the counteraction of

gravity. We also have found that throughout nature such a combination of forces results universally in one particular curve, the parabola; and we have regarded that curve as especially expressive of the contention of natural forces, and as the line most easily and agreeably traversed by the eye, also as that which both nature and education teach us to look for as natural to most moving bodies, whether in their rise or fall, growth or decay, vigour or exhaustion; and we have found it so directly associated with the idea of vital power, vegetable growth, or destructive force, that it is scarcely possible to dissociate its appearance from an intellectual perception of causation. We considered, therefore, that it is justly esteemed a line of beauty, peculiarly suggestive of thought. If the acknowledged beauty of this curve be traceable to such elements, other combinations of the same elements may result in beauty also; and, with respect to structures, such as temples and public buildings, it will be perceived that the forces in operation are very similar to those which produce the parabola.

CHARLES W. BELL, Kt. L.S.

ON THE EVILS OF CONTRACTING.

My chief object in writing these "few words" is to collect some arguments against the present common system of public and private competition in building; and to be able to refer people, and to enable others to refer people, to something they can read and think upon at their leisure, without having verbally to enumerate to them all the evils connected with it.

The system of which I speak is one that has been increasing for some years, both in extent and rapidity; for it seems as if men now adopt the plan of advertising for tenders as naturally and with as little compunction as they would do for any lost article: so much so, that any attempt to destroy it might at first sight appear almost hopeless; but the moral evils inseparable from it are so serious, that I feel it my duty to disregard all difficulties, and I beg the kind attention of others whilst I endeavour to show,—

I.

The effects of the system: its influence for evil upon every class which either directly or indirectly has anything to do with building.

In considering the evils of the present system of competition, very little need be said upon those attached to the system of public tenders; except that they are so much worse than those obtained from builders selected and privately invited to make an estimate, in that this system contains all the evils of the other and its own besides; admitting, as it does, all sorts of men to an equal chance with the fair and honest, and moreover giving the worst man the best chance.

Now the evils of the whole system cannot be better set forth than by producing the painful results of it, for nothing is so convincing as example. Men say theories look very well; that we can prove upon paper that such a plan is sure to succeed, but in point of fact it does not; that this or that scheme must necessarily fail, yet we see it prosper. But results or examples are not liable to these objections: they test the proof of theories and establish rules of practical wisdom. First, then, I will instance a town in the county of C—, from which I have collected the following interesting but distressing facts. The last generation of builders in this town, or, as they were then chiefly, master-masons and master-carpenters, lived quiet, honest, and respectable lives, bringing up their families well, and placing them in a decent way of business. Now, I have been at the pains of enquiring into the histories of these men, and can testify to the respectability and prosperity of the whole body, which consisted of nineteen or twenty. But when I turn to the modern set, about whom I have made enquiries equally particular, I find that out of seventeen builders, master-masons, and master-carpenters, seven have been ruined only and entirely from taking contracts too low, and trying to cut each other out by competition. Of the remaining ten, six have very

nearly shared the same fate from the same cause, and are now very much lower both in position and character than they ought to have been, and the others are only in a small way of business.

Nor are the evils complained of confined to the individuals themselves. Unhappily they are not the only sufferers. Their families and relatives, their merchants and workmen, as well as their creditors, all suffer more or less; and occasionally others who out of friendship have lent money, or become security to assist them. And we all know that when once a respectable man has been bankrupt, he is never the same man again. A total change seems to have come over his mind and character. He is either broken in spirit, dejected and careworn, or else he becomes hardened and reckless, not caring how he gets on, nor what becomes of his creditors on a second or third occasion.

II.

That men may get their "money's-worth" in a general way without having recourse to competition, and indeed would be positive gainers by escaping the anxiety, loss, and litigation so inseparable from the present practice.

I come now to consider the means of getting work done in a fair way, and at a reasonable cost, without competition; and I need say but little of the plan of having a clerk of the works, at a certain fixed salary, to pay the workmen and examine the bills for materials; or of employing a regular builder to do the work, and be paid either according to his own bill, or a bill made out by measure and value. For I know that these cannot be called cheap methods of building; and I must confess that there are not now many builders that I could trust to work without restriction, and make out their own bills in the end. And yet these plans have each their advantages, especially when the work must be done in a very superior manner, or when it is wished to make any indefinite alterations as it proceeds; or when the amount of outlay is not limited, and the employer is desirous of paying to the full for his work. They have therefore both advantages and disadvantages. But no system can be entirely free from imperfection and disadvantages.

Now when a contract is required, why not obtain a tender from one man? There are many ways of preventing him from making his estimate unfairly high. He can be brought to take work as low as he ought to do in justice to himself. Whenever I have known this plan tried, and this has not been seldom, I have found it successful.

Let the builder make an estimate of the work proposed, and, if you are satisfied with it, give him the contract; or else let him furnish a list of prices of work, per square, per perch, per yard, and per foot, for the several descriptions of work, and have the whole measured at these prices when completed. This latter plan is the fairest, because quantities of work can be measured more accurately from the building itself than from drawings; but the former would perhaps be preferred, because it is generally most satisfactory to know the amount beforehand. However, in either case, there must be some check upon the estimate and prices, and this may be obtained by letting the architect examine them; or it may be worth while in some cases, to have an estimate from a local surveyor, who knows all the local prices, or from some disinterested builder; or it might be from both. But in a small, straightforward piece of work, it would not be difficult for any one himself to cast up the quantities, and make out something of the prices common in the neighbourhood; quite enough to see whether the estimate (at any rate a detailed one) be far out of the way. Besides, if the builder knows that another will be called in for a tender, should his own tender be unreasonable, he will probably send in at once a satisfactory estimate, or one which can easily be made so by a little explanation of the differences. This alone would often be enough, but experience tells me it will fail at times. It is moreover satisfactory to be able to choose one's own man, and give him the first chance.

The probability is that he will not, for any fault of his own, let you go to another.

III.

I hope to make some remarks on contracting in general, and to answer some of the objections of those who support the system of competition.

It will be seen from what I have already said, that it is not "Building by Contract" that is so objectionable; but "Building by Competition." Indeed, a contract is the only way of ensuring that any work will be completed for a given sum, and moreover it will tend to prevent useless and extravagant expenditure in doing the work; for a contractor is sure to be careful and vigilant, knowing that any inattention or negligence in the men will entail a loss upon himself, and it gives him a greater personal interest in the work.

The chief object now in view is to show the evil consequences of competition; how it contributes to the breaking up of the comforts and even the ties of social life in a large and respectable class of people; how its very nature is to deprave the character and harden the conscience; and those who thus suffer by the world's cupidity, are by that same world called dishonest and fraudulent.

We have seen already that this method is as needless as mischievous. But some recognised system certainly is necessary to screen the employer from imposition, and the employed from oppression. Yet neither of these are affected at all by competition,—nay, the very opposite. It is true, indeed, that some few have used "competition" with advantage to themselves, and have escaped with impunity. Many more, however, have suffered from its effects; but I fear they have regarded their loss as the result rather of misfortune than of fault; rather as the consequence of happening accidentally to fall in with an unfit man, than as the natural result of complying with a vicious custom.

There ought, I say, to be some recognised system by which as much work shall be had for the money as may be reasonably expected; and that in such a way as shall not only promote honesty, diligence, and contentment in the employed, but also give comfort, satisfaction, and even pleasure to the employer. And such a method I think is that which I have been seeking to recommend.

Now, we should not forget that men are more apt to err upon the side of anxiety for their own interest, and of suspecting those with whom they have to deal, than of forbearance and confidence. I do not say that they have absolutely no reason on their side, but still I cannot help thinking that when a man finds himself met upon open, fair, and reasonable grounds, he is likely to be equally open, fair, and reasonable in his own dealings; whilst, on the other hand, if he thinks himself hardly and suspiciously dealt with, he also will be hard and suspicious on his part, and eager to secure the advantage. But here some may object, they have given their builder his own way, and have left themselves in his hands without suspicion, but they found themselves sadly mistaken. But surely such persons have no right to lay all the blame on others, for if they had not time and inclination, or knowledge and ability to keep their builders within proper bounds, it was their duty to have some one that could and would do so. For a builder should not be left to himself; he should not have his own way; or his employer will soon repent it. It is true that builders should have their fair and reasonable profits; should gain a competency for old age, and the maintenance of their families; but it is our bounden duty to use such caution and prudence as shall screen us from imposition and loss. Although they ought not to "make haste to be rich," any more than their employers, they ought not to be deprived of their rights, or be underpaid for their work.

Now some men endeavour to satisfy their consciences by arguing that one man can work more cheaply than another, and that competition is the only way of discovering such persons. It is, indeed, true that one man can work more cheaply than another can afford to do; but how much? Surely not enough to make it discernible whether he can really

afford it or not. Besides, even supposing he can do so, by being more active, more industrious, or more intelligent, by knowing where to get materials best, and how to make the most of them, yet it cannot be right to deprive him entirely of the advantages which his superior knowledge and abilities should give him, and only to turn them into a means of injuring himself.

Others, again, remove their scruples by saying "we avoid many of the evils of which you complain, by not pledging ourselves to accept the lowest tender." "Is this your practice?" A reply, "then you act unfairly, and make deceitful offers;" for all alike spend their time, and some their money, in preparing estimates, when only one out of the whole number has any chance of remuneration; but, in common equity, their chance should be equal, if the toil and loss are equal. And yet in the face of this, persons who ought to know better, have no scruples about inducing hard-working tradesmen to spend time and money on that which ends in disappointment. Nor let people even attempt to take refuge under such a "saving clause," for it never was intended to give a liberty of choice out of respectable tenders, but only as a security against bankrupts, and men otherwise notoriously unqualified; and if a man offers to enter into the specified conditions, it is dishonourable to refuse the lowest merely because you like to employ another: the builder comes as to a gentleman, expecting to be treated fairly and openly, and if he is not, he goes away justly discontented and dissatisfied; the more so if to this unfairness has been added the injustice of acting thus in the case of a private personal invitation to submit a tender. * * * * *

IV.

I will offer a slight sketch of the rise and popularity of this system, adding a few remarks on the ancient mode of building as compared with our own.

Several causes have combined to make public competition popular. The two chief are: 1—That it is such a very easy way of getting at what is considered a fair estimate; and 2—It is a means of finding out the "cheapest man" to do the work. These, perhaps, are the main reasons why those who build, adopt and perpetuate this system. But there are many persons, not so directly concerned, who give it a helping hand. For instance, it may often be the interest of the architect to recommend this plan, and that it is so may be the fault of those who employ him. The motive of the architect in this, is to prevent the contract from exceeding his estimate, and he is sometimes influenced by causes over which he has no control; such, for example, as the following: Mr. E. says to Mr. A., "I want a house, but my means are limited: what accommodations can I have for this sum? This is something of the plan I should like, with the size of the rooms and a few other memoranda for your guidance. Can it be done for this sum?" "Yes, Mr. E.," replies the architect, "I dare say it can, I will make out a sketch and see." The sketch comes, and the estimate (so far as Mr. A. can tell, without having made out the detail drawings) comes fully up to the amount specified. One or two improvements are then suggested. "This room should be a trifle higher,—that passage a trifle wider,—this dimension is not quite so large as I proposed," &c. "But, Mr. E.," suggests the poor embarrassed architect, "you must remember that your sum is limited, and will barely cover the expense as it is." "Well then, Mr. A.," is the rejoinder, "I should like two or three of these little things done: you must see what you can do for me." And so the drawings and specifications are made out, and in order to get it at all down to the amount required, recourse must be had to competition. But without these incitements, the architect may make his estimate too low: so, whichever way it is, competition must be sought.

Now men are very fond of telling us we must not plod in the ways of our forefathers; that they were easy-going, and slow, and plodding, and the like, but that this will not suit our case. We have seen the contrast

between this and the last generation of builders. Let us now see how matters were managed two or three centuries back. In those days, we find, that if men had not money enough to complete their buildings, they used to leave a wing or a portion unfinished till they had; or else they were satisfied with what their funds would allow them. I suppose they made their plans, and determined exactly what accommodation they wanted, used up their money as far as it would go, and then waited till they could get more. They did not stint themselves in scantling of timber, in thickness of wall, or pitch of roof. Their care was to have substantial and durable buildings, and they had them, and this is the cause why so many of their works have come down to posterity. It is true that though we have abundant specimens of public buildings of different kinds, we have not so many remains of mediæval houses. The reason of this seems to be, that most of the ordinary houses were built of timber, and they have been destroyed by fire; for, before the Great Fire of London, more than half the city was composed of ancient timber houses: and still through the country, and in some old towns, as Chester, York, Bristol, &c., there are abundant proofs of it. But many houses of our day, built within this very half-century, are already almost in need of renovation.

Now in the modes of building used from the very earliest ages, one existed without intermission, so far as we can learn, up to the rise of this generation of builders: I mean the confinement of one branch of mechanical art to one man. There were no such beings in old times as "builders," in our sense of the word. They were master-masons, master-carpenters, master-glaziers, and the like. One man did not undertake every kind of work: he devoted himself to his own department: all his energies were concentrated in it: it absorbed all his interests, and he was perfect master of it. But now one man takes everything, no matter what. He says he cannot keep to the trade he was brought up to: it is not enough to support him: and this leads him to this general, and superficial, and really untradesmanlike system.

And in considering the past, another great difference, and not less striking, encounters us,—the total absence of competition. Our forefathers had it not. They lived and prospered, and there seems to be no reason why we should not do the same. They entered into contracts. But they did not enter into them in the blind way in which men of our day have done of late years. Their contracts were quite as binding as ours, and they had to find large securities for their fulfilment. In the indentures for building King's College Chapel, Cambridge, we find that the contractors took each item separately, and did not run the whole into one lumping sum; the money to be advanced on each item being also accurately specified: thus, for instance, we read "and for the good and sure performing of all these premisses, as is afore specified, the said Provost and Scolers covenanted and granted to pay unto the said John Wastell" (the King's master-mason) "for the performing of every buttresse 61L. 13s. 4d., which amounteth for all the said buttresses 140L., and for the performing of the said towre 100L. to be paid in forme following; That is to say, from tyme to tyme as moche money as shall suffice to pay the masons and other laborers ratley after the nombre of workmen; and also for stone at suche tymes," &c.: "provided always that the said John Wastell shall keepe continually 60 fre-masons working upon the said works; and in case any mason or other labourer shall be found unprofftable, or of any such ylle demeanor whereby the work shall be hyndred, or the company mysordered, not doing their duties accordingly as they ought to doo, then the said surveyor to indever himself to perform them by such wayes as hath byn there used before this tyme." Then he was to find iron work for the pinnacles to the value of 5s. each, and any more that was required to be used, he was "to bere hytt at his own cost and charge."

Then it seems they had more than a mere drawing from which to estimate the several items, for the "fynalls to be well and workmanly wrought, made, and sett up after the best handelynge and form of good workmanship, according to the fynalle of oon buttresse which is wrought and sett up," &c. And in the glazier's work, "Richard Bonnde," and others, are to find "stand glass with imagery" at 16d. per foot, and lead at 2d. per foot, equal to a specimen referred to, then put up. By this means they were able to tell exactly what the work was to be, and could therefore estimate so much the more accurately. In the present day the estimate is often actually guessed by several of those who tender. Nor is this to be wondered at, when we take into consideration the useless labour they might incur; and this is one reason why we see such an immense difference between the several tenders for the same work. In fact it then becomes a kind of lottery. Alas, I fear me that though this age calls itself an "enlightened" one, and calls all its predecessors "dark," yet we have both to learn and unlearn, before we stand even on a level with our forefathers in many kinds of prudence and wisdom.

I fear by this time I have wearied my readers, but my deep sense of the magnitude of the evil which I have described, will, I trust, with the earnest at least, plead my excuse: and I would only ask this further favour of them, that if at any time they should be called upon to build, especially if that building be sacred, they will make it a matter of conscience to inquire what mode of effecting this object will be least injurious to the temporal and eternal interests of others; for surely it must be a sort of sacrifice to build upon the loss, or spiritual hurt, of our fellow Christians.*

MEMS. OF NEW YORK AND BOSTON.

In New York it appears that there are hundreds of streets of unoccupied third and fourth stories—levels which, in France or England, would be populously inhabited. There are long blocks of houses, in every part of up-town, through which run uninterrupted lines of floors unoccupied. And yet the crying want of New York is for elegant private lodgings. Mr. N. P. Willis says, as to this, in *The Home Journal*, "The pride of the dwellers in tall houses requires that they should have the front door to themselves—also the door plate and bell-handle—also freedom from other people's asharrel on the sidewalk edge—also the right of entry and staircase, privacy of basement, and exclusive control of gas, Croton, and night-key. These (with fashionable neighbourhood) constitute the actual and tangible advantages of a 'house up-town.' And we propose to continue these, one and all, to the present enjoyers of them—proposing only a better use of their superfluous upper stories thus:—Of every five houses in a block, let the central one be taken by a landlady of lodgings. The main floor and basement might be occupied as a restaurant and cook-shop. The other rooms she would let to those who should agree with her for an annual rent, paying also for regular service, and for the meals she should furnish. Of her neighbours on either side she should hire the upper stories, opening an access to them from the central house, and sealing up the staircases, so as to cut off all communication with the families below. In this way, an entry, run through the entire block, would be like the long wing of a hotel; and this appropriation of it, known only to the occupants, would be no manner of inconvenience to the private residences whose doors and staircases were left undisturbed."

The same writer says, touching intended visitors to London:—"Letters of introduction are in great demand, and, in fact, some substitute for these fancy-claims upon attention and hospitality is very much needed. Now that European travellers are coming over in considerable numbers, could not a bureau of exchange, in such matters, be opened in New York—giving checks for dinners

* In Contracting with Builders and Others, Beware! of a Few Words to any who are about to Build." London: Longman.

abroad, for promises to pay dinners here on demand? At present the interchange is very unequal."

The New York Evening Post, says, "The operations in the building line have, at this early period of the year, advanced with great rapidity. Several old hotels are in course of being pulled down, to give place to more elegant structures, while the great increase in the rents of dwelling-houses has given rise to plans for the erection of a large number in the upper part of the city. In some localities, the demands of landlords are so exorbitant, that more removals will probably take place in May next than have been known for any previous year. Already there are hundreds of houses to be let. Dwellings that were formerly rented for the yearly sum of 400 dollars, cannot now be obtained for less than 450 or 500, while the rent of larger dwellings has been increased in proportion to their size."

—Mr. W. B. Astor has entered into contracts for the erection of about two hundred houses, from three to five stories high, in the vicinity of Forty-fifth-street, on the north side of the city, the outlay on which will not fall much short of 1,000,000 dollars. —In Wall-street, the Atlantic and Sun Mutual Insurance Company intend building a large and elegant structure. The ground for this building, situated on the south-west corner of Wall and William-streets, extending on the latter street a distance of 98 feet, and running west 58 feet, has been purchased for about 294,000 dollars: this includes the price paid the present occupants for their leases. —Another large building will soon be commenced on Fourteenth-street, near Irving-place, by the Board of the Medical University, who have disposed of the edifice on Broadway, opposite to Bond-street, which is known as the Stuyvesant Institute. The new structure, which is to be built entirely of granite, in the massive Egyptian style, will form one of the most imposing public buildings in the city. The Tombs, we believe, is the only edifice of this description in the city.

—The aspect of Broadway will undergo a great change during the present year, if we may judge from the number of new buildings proposed to be erected. On the corner of this street and Liberty, a new brown stone edifice, the plans of which have been designed by Messrs. Thomas and Sons, architects, will be constructed on a scale of magnificence exceeded by few buildings in that part of the city. It will have a front on Broadway of 23 feet, and a depth of 115. Thompson's well-known confectionery establishment, near Park-place, will shortly be replaced by a large brown stone store, for Tracy, Irwins, and Co., dry goods merchants. On the south-east corner of Broadway and Wall-street, a handsome structure will soon be put under way. When completed, it is to be occupied by the Bank of the Republic. Two other banking houses are also to be built in the same street—one for the Mercantile Bank, to be situated on the corner of Broadway and John-street; and the other for the Broadway Bank, on the corner of Broadway and White-street. The directors of the Chatham Bank have purchased a lot on the corner of Duane-street, near Chambers, for about 28,000 dollars, on which they will erect a new building for the transaction of their business.

A writer in *Hunt's Magazine* says, "Boston, with less scope than New York, has, like New Orleans, Philadelphia, and London, over-stepped her sea-girt isles. She has attached herself to the main by one wide natural avenue, the neck, paved and planted with trees, by one granite structure, the Western Avenue, a mile and a half in length; by six bridges, seven railways, and three ferries, one terminating in a railway. Seven railways branch into sixteen, and ten avenues divide into thirty within the first nine miles from her exchange. These diverge like a fan, and on the streets thus made is found a large population under separate municipalities. As land rises in value, hotels, offices, and blocks of stores usurp the place of dwellings. The old residents, leaving the low and reclaimed land to foreign labourers, plant themselves in the suburbs. There they build

tasteful houses, with flower-plats and gardens; availing of the frequent omnibuses, or of special trains run almost hourly, and commuting for passage at 20 dollars to 40 dollars a year: they reach their stores and offices in the morning, and at night sleep with their wives and children in the suburbs. No time is lost, for they read the morning and evening journals as they go and return. If we would seek for a solution of the growth of Boston in commerce, wealth, and population, we may trace it not only to her central position and admirable harbour, but to the enterprise, intelligence, and frugality of her people. Her enterprise descends lineally from those bold ancestors who planted an empire in the wilderness. She has inherited alike their spirit and their love for letters. These have guided her enterprise. But it is one thing to acquire, and another to retain. The frugality which characterises the old Bay State is the great secret of accumulation. *Here every artisan aspires to own his house, and to leave a patrimony to his children.* Having secured his dwelling, he buys a single share in a bank, railway, or factory, and gradually becomes a capitalist."

"Our new institution," writes the Secretary of the Boston Art-Union, "is rapidly rising into favour, and we hope it will be the means of doing much good for art and artists in our country. The plan is considered the best that could be devised for the objects which we have in view. The Boston Art-Union provides that each drawer of a prize shall be at liberty to choose both his subject and the artist he may desire to paint it." Good scope for jobbing here!

WATER.

THE subject of gathering grounds for a water-supply to the metropolis having been recently very much considered, it is not maintained as an original idea that this necessary element can be obtained from a variety of springs or streamlets, or collected from waste lands, in a sufficient quantity for all the uses that a large town may require for it. The Romans have left us several examples, which have been steadily practised by the modern Italians, of tapping hills abounding with springs, and conducting them into a conduit or aqueduct, for the purposes of irrigation, as well as for the embellishment and uses of a city.

Alberti has a full account of the methods formerly adopted, and several recommendations of the best means to accomplish such an object, where water is required; but probably the most practical description is contained in the "Principi di Architettura Civile di Francesco Milizia," cap. ix. tomo secondo, published about seventy or eighty years since. Geology at that period was in its infancy, and could hardly be called a science; but to practical men the strata which were pervious and impervious were known, as well as the faults and fissures on the earth's crust, and experience had taught the qualities of water most approved, if it had not defined its chemical properties or degrees of hardness. The following is a literal translation of the chapter alluded to:—

MANAGEMENT OF WATER.

To collect several streams together, little wells are dug at the distance of from 25 to 30 feet from each other: they are united by trenches or canals, which receive the water and conduct it to its destination.

Before commencing the work, a level should be established, taking advantage of the natural slope of the earth, or one should be made to the bottom of the canal. The architect ought to be an adept in levelling. In cutting these trenches, care should be taken not to pierce the beds of gravel or clay which retain the water, otherwise it would be lost. Practice teaches many other precautions, which all the theories in the world cannot suggest. Dig the trenches to a convenient depth: give to the ground a slope according to its qualities: regulate the inclination of the bottom; and carry the branches at any distance and on either side in the form of a goose's foot: to unite as great a quantity of water as possible, another

trench will be required to conduct the water from each well, in order that another may be made round its circumference with a stratum of earth 2 feet in thickness.

A wall must be built within in such a manner as to enable the water pumped from the wells to pass out through a cistern on a level with the other wells. Each well requires a discharge or a ditch to lead off the water when required: otherwise it would not be possible to work to the cistern. These wells require cleansing twice a year, to prevent cisterns and tubes being silted up by the deposit of the water or other matter. The cistern consists of two little walls of stone built upon a foundation of well-beaten clay: these walls ought to be 1 foot thick, and 1 foot 6 inches high, carrying it along the brink which forms a canal 8 feet 9 inches wide towards the commencement and the ditch. This canal ought to increase in width as the conduit lengthens and the water becomes more abundant. It must be covered with flat square stones, above which turf must be laid, reversed to impede the earth collecting and to prevent anything falling in. Thus the water which filters through the brink, not finding any obstacle passing through the joints of the cisterns, will flow into the conduit. Every fifty perches it will be necessary to build small wells or cesspools, of 3 feet in diameter and 5 or 6 feet deep, measuring from the foundation of the conduit. These cesspools serve to receive the sand and the deposits of the water: they should be lined with good brickwork laid in clay, so that the water do not escape. This being always full, the water easily flows into the next cistern. They must be covered with a large stone loaded with earth. These cesspools require cleaning twice a year. Marks should be placed on the top corresponding with those on the plan, which ought to be taken exactly, in case of any defects occurring in the works. No pits should be dug near the conduits, or the water will be drained away.

For the same reason no plantations should be allowed near, for fear the roots should penetrate into the conduit, and, destroying the brink, let the water escape. Tubes must be laid from the supplies to conduct the water to its final destination. These tubes must be made of wood or stone when depths or heights are inconsiderable, otherwise, from the velocity of the water, these tubes would be in danger of breaking. Where these obstructions occur tubes of iron must be substituted for wood and stone. The wood used for tubes must be oak, elm, or alder, as thick and long as possible: the diameter of bore must be according to the quantity of water which is to flow through them. The pipe should be at least an inch thick with out the bark or pith. The end of each tube should be inserted into the next, and every joint should be united by an iron ring, and cemented by mastic composed of mutton fat beaten in a mortar with brick dust to the consistency of soft wax. When holes and fissures occur they should be filled up with wooden wedges wrapped in tow and plastered over with mastic. The wooden tubes are generally 2 feet long and from 2 to 6 inches thick. When they are 7 lines thick they can resist the weight of a column of water 25 feet high. They should be inserted one within the other with a mastic made of pulverised cement, fine sand, or iron filings, mixed with an equal quantity of pitch, fat, and nut oil. For the thick tubes another mastic is used, composed of lime and powdered cement. Earthenware pipes may be used, glazed inside and outside, not less than two fingers in diameter; and one end should be narrower than the other, to enable them to fit into the next pipe: the joint is stuccoed with lime tempered with oil. All the tubes should be laid in ground that is well levelled, that the smallest obstacle to the free passage of the water may be removed. They ought to be laid in a trench sufficiently deep to prevent the frost and the sun penetrating. Before being covered they should be well tested. To this effect we must wall up the lower mass of stone of the conduit, and make it sustain the weight of a column of water somewhat higher than that which is to flow into it. The iron tubes, of

which Fancini was the inventor in 1672, are generally 3 feet long; they are made with edges which unite with precision, and are cemented with mortar and pieces of leather, and fastened with strong iron screws. If the diameter be 4 inches the thickness should be 4 lines, and as the diameter increases 2 inches the thickness should increase 1 line; thus a tube 10 inches in diameter should be 7 lines thick. The iron should be well fused without boiling, and of equal thickness. In the country aqueducts leaden pipes should not be employed too lavishly, as they are liable to be stolen. But when pipes of wood, stone, or iron require elbows, these must be made of lead, and united to the others by means of edges and pieces of leather.

In Vienna glass pipes have been tried, as being cheaper, and as offering less obstruction to the flow of the water; but whether successful or not I am unable to say. Whatever may be the kind of aqueduct, there should be at various distances man-holes, little wells, or chambers, by which the defects in the pipes may be seen: at the bottom of these man-holes a deep well should be made, to receive the water whenever a part of the aqueduct is required to be made dry: whether the tubes lie on a declivity or acclivity, these wells should always be lower. At various distances air pipes are necessary: these are small upright pipes introduced into the main pipe, and supported by a tree, a post, or a wall, and raised some feet above the level of the water. These air-holes are for purposes of ventilation, without which the air, being pent up in the pipes, would impede the flow of the water, and in consequence would burst them. These pipes, or ventilators, should be always left open, with the exception of some slight covering, to prevent any dirt or rubbish falling in. Instead of these ventilators, vertical tubes of from 4 to 5 inches high may be soldered in the man-holes and closed by a valve loaded with lead of an equal weight with the column of water: by this means the valve only opens by the pressure of the air within.

The pipes are continually subject to obstructions, from the growth of vegetable matter and the deposits of lime and sand, which form a crust on the sides of the pipes, and thus prevent the easy exit of the water. Petrifications occur most frequently in the bends of the pipes, as the water, flowing with less rapidity along these bends, has more time to make its deposits.

To compensate in some measure for these obstructions the elbows should be as little bent as possible, and the diameter of the pipes should be increased.

To prevent the accumulation of foreign matter attach a rope to a broom or brush proportioned to the size of the tube, leaving it to float along the water, observing if it make its exit at the first man-hole where the other end of the cord must be drawn, and then some proper instrument can be attached for the removal of all obstacles. But if the petrifications be so great as to stop the progress of the broom, this may be easily remedied, as the exact site of the impediment is indicated by the length of the cord. When the pipe encounters an eminence higher than the source of the water, a trench must be dug sufficiently deep to build an arched conduit, and within which the pipes must be laid according to the inclination of the water. In this arch man-holes must be made, that any defects arising may be easily observed. The pipes which pass under the principal streets should be covered by these arched conduits, to prevent breakage from the jolting of the carriages, which we know even the best iron pipes cannot resist. Water may be conducted to its destination by a subterranean passage without using pipes, where the earth will permit. In this case a canal must be made, well cemented at the bottom, and flanked by two small banks, to facilitate the cleansing and repairing. These were and are the aqueducts of Rome. The aqueducts, if of stone, should be lined with bituminous earth (*torba*), which will cut, when moist, into little squares 1 foot long and 5 inches thick. Two courses of these squares, still moist, must be used, the joints of the

upper covering those of the lower: powdered sand must be used with it, which is to make the *torba* bind better. These aqueducts will endure for ages, and are impervious to frost. When the water can be conducted in streams, and through deep valleys, it is customary always to sustain the water by an aqueduct of brick raised upon arches, as has been already said: if possible, these constructions, so expensive and so exposed to injury, should be avoided, and it is possible to lead the water through the valleys by means of conduits or pipes, and it may be forced over the eminences it encounters.

This entirely depends on the property that water possesses of always finding its own level, and of rising to the same height as the communicating pipes. This property is the basis of all the theories on the management of water. This general law of nature, so well known and so easy to understand at the present time, appears to have been unknown to the ancients; for had it been otherwise they would have certainly made use of ascending and descending tubes or conduits to conduct water any great distance, as it would have saved the expense of arched aqueducts, instead of which they only employed descending subterranean canals to conduct the water from an elevated place to a lower: at any rate there is nothing left to prove to us that ascending canals were ever used by them. If the aqueduct be too large it can be divided into several branches which may be reunited after the height has been surmounted. It is true that water only rises to the same height as it descends, and that the bends are a great impediment to the velocity of the water: this inconvenience may be compensated by avoiding the construction of arches, and the work can be easily united when the height to which it is raised is less than that to which it descends. It is difficult to determine the exact slope which should be given to rivers or aqueducts, according to the quantity of water which runs through them. Vitruvius gives six inches slope to every 100 feet of length. Experience shows that this is too much, and that two feet slope is sufficient for 1,200 perches when the bends in the river are only so slight as to offer no sensible opposition to the velocity of the water. The general rule is to give two inches slope to every 600 feet, when the foundation through which the water passes is not rough. It would be no objection to make the slope more rapid, which would increase the velocity of the water. This is very well if there is no other end in view, but if the water has to be conducted to a limited height, or if the possibility or impossibility of a plan depends on the slope which can be given to a river or canal, as, for example, if water has to be carried far to a city to form a foundation, it would be necessary that the castellum where the water is collected should be as elevated as possible, in order that it may arrive at the cisterns of supply in the highest quarters. If the object be to conduct the water to a reservoir to make a jet in a garden, the height of the jet depending on the height of the reservoir, it would not be possible to increase the slope of the pipes without lowering the reservoir; consequently in such a case the slope must be confined to certain limits. It is much easier to conduct water on a level than on a slope. Thus, for example, when a canal is to be made with 2 inches of slope to 600 feet, the first 300 feet can be made on a level, and then a fall of an inch, and then another 300 feet and a fall of another inch. Thus the aqueduct will decline gradually. We must not confound the water which runs from the river into the aqueduct with that which is closed in the tubes, because the velocity of the latter being retarded by friction, it is necessary to have regard to the slopes and counterslopes from the source of the water to its destination, in proportion to its weight or quantity. Thus theory has no fixed rule, but we must be guided by practice.

As a general rule, the larger the tubes the greater the supply of water, because the friction of water is greater in proportion as the tubes are narrower. When the conduit carrying the water from one cistern to another is not longer than 600 feet, the custom is to lead

it to the amount of 18 inches to make it rise 20 feet; 24 inches to make it rise from 20 to 30 feet; and increasing it for every 10 feet of elevation, which may go on to that of 60 feet; but beyond this point, the number of inches may be reduced to 4 for every 10 feet. With respect to the distance between the two termini, when it is beyond 600 feet, 3 inches of height must be added to the elevation of every 600 feet."

The above extract from a favourite author, I have presumed might be considered interesting to those readers of your extensively circulated journal who might be unable to translate it from the Italian. It will give me much pleasure if it induce further observations upon so important a matter: the steam-engine gives now powerful aid to carry out more gigantic projects, as by its aid water may be raised from a lower to a higher level.

EDWARD CRESY.

NOTES IN THE PROVINCES.

AN extensive breach (nearly 200 feet) was lately made in the esplanade wall at Weymouth. The council applied for tenders, and that of Mr. D. Stone was accepted. The difference between the highest and the lowest tender was upwards of 200l. The repairs are to be commenced forthwith.—A fire broke out in Silverstone church, on Sunday week, during service. The stove-pipe, passing through the roof, was, as usual, the means of firing the timber, which, in this case was that supporting the lead casing. The damage was inconsiderable, assistance being promptly got.

At a recent vestry meeting in St. Peter's, Bedford, as to proposed alterations in the church, Mr. T. Small made some remarks upon the manner in which the contracts had been disposed of, and stated that complaint had been made that sufficient care had not been taken to secure the contract being faithfully carried out. Amongst other things, it was not binding to take the lowest tender. The rector said that so soon as the contributions were sufficiently large, and a plan of extending the building was drawn up and approved of, notices were issued for tenders, and the following were sent in:—Masters, 684l.; Joy, 668l. 15s.; Miller, 665l.; French, 620l. The churchwardens unanimously agreed, provided good security were given, to accept the lowest tender; although he was convinced the alterations could be made for 600l., and to which sum he induced French to alter his contract.—At Newmarket, the old weighing-house, in the Beacon course, has been taken down, and the rails removed as far as the Duke's stand. The course is thus set back at the end of it for about 17 yards. A new weighing-house and jockeys' retiring-room are in course of erection at about 16 yards from the new boundary line of the course, so as to leave an enclosed area in front of the new stand. In the Round course, the rotten old wooden structure has disappeared, and a new weighing-house has been erected about 5 yards past the winning-post.—A local paper proposes that the Reading market-house lately projected be made of glass chiefly, for cheapness. It complains that a town such as Reading should be without protection from the weather to its best customers, while the minor towns of Abingdon, Wantage, Wallingford, Henley, and Basingstoke, all can point to their superiority in this respect.—A case has arrived from France containing a bronze cast about 8 feet in height, and intended for the monument of the Duke of Rutland to be erected at Leicester.—The Oxford Gas Company have resolved to reduce the price of gas further to 6s. 8d. per thousand feet; but, considering the price elsewhere, the *Oxford Chronicle* thinks this will not be deemed a sufficient reduction.—The Lutterworthians, after meditating for fifteen years on a project then started for the lighting of their town with gas, are at last "rejoicing in the light," having just had their streets "brilliantly illuminated." Their gas-work was planned by Mr. Thomas Sharp, of Northampton, and erected by Messrs. R. and J. Law, of Lutterworth. The fixed apparatus, mains, and services were supplied

by Messrs. G. and T. Cutler, of London, and the lamps by Mr. T. F. Saron, of Leicester. The gas is said to be "of the most exquisite purity," and everything else connected with it yields the most extatic satisfaction, as it is meet "the light" should do, indeed, to all on whom it shines.—Lord Ward has abandoned, for the present, the idea of leasing the Dudley Castle grounds to the South Stafford Railway Company, as the local feeling is very strong against it. The company, it seems, not only did not mean to infringe on the general privilege of the people as to access, except on fête days; but were prepared to restore and fit up the least dilapidated apartments of the castle in harmony with its general character and aspect, as well as to form a bowling-green and also archery and cricket-grounds on the castle hill, and to secure metropolitan exhibitions of the first order during the season.—The contract for the new reservoir and works of the Wolverhampton Water Works Extension at Goldthorn Hill, has been taken by Messrs. Jones and Treasure, of Liverpool and Newport, contractors. There are to be two reservoirs, to hold each 750,000 gallons; and it is intended to cover them over with brick arches, so that the water shall at all times and seasons remain perfectly bright and pure, as when first pumped out of the natural rock. There are also to be two shafts, 300 feet deep each; and 1,100,000 gallons per diem are to be raised from them before the sinking is declared complete. The contract for the engine, which is to be about 70-horse power, has been taken by the Messrs. Hawthorn, of Newcastle-upon-Tyne, locomotive manufacturers. The whole of the works are to be completed in six months.—The tower of St. Mary's church, Lichfield, is about to be rebuilt, in memory of the late vicar, at a cost of about 1,500l., nearly all of which have been realised.—The rector of the ancient parish church of Birmingham (St. Martin's) has announced that 1,000l. will be given by anonymous benefactors on condition that the 6,000l. remaining to be raised, in order to complete Mr. Hardwick's design for the restoration of the church, should be previously obtained. The committee have accordingly advertised the inhabitants to this effect, but they state that unless the proposed condition be complied with before the 1st day of June next, or the subscribers should be willing to undertake at first only a part of the design, the committee will relinquish their undertaking, in duty to those who have already subscribed.—Water was let into the great float at Birkenhead, for the first time on Monday last week. The greater portion of the masonry work on the Birkenhead side of the float is now completed; and also as much as will be required, for some time to come, on the Wallasey side. The portion of the float now finished comprises a space of about 60 acres. Water to the depth of nearly 20 feet has been admitted. The portion of the great dock now opened extends a little above the Wallasey copper works, where a temporary dam has been built. Beyond this dam, no fewer, we believe, than 1,600 men are now busily employed in forming and excavating the remaining 90 acres of this great undertaking.—According to the *Liverpool Albion* a proposal has been made to amalgamate the Birkenhead with the Liverpool docks. The proposition of the Liverpool Dock Trust is said to comprise the purchase, not only of the docks at Birkenhead, but also of all warehouses, lands, &c. in their vicinity. The amount of valuation and rate of interest on capital are said to be the only questions remaining for negotiation.—The Oldham subscription list for the Peel Testamentary Baths now amounts to upwards of 1,100l., and is favourably progressing. The subscribers are about to be consulted as to the site selected by the committee.—The Blackburn Market-house has been fitted up with a clock, with translucent dial-plate for evening illumination.—At a recent meeting of the Rotherham Gas Company "the usual dividend of 10 per cent. was declared, and a sum carried to the surplus fund in addition;" the price is to be further reduced.—Christ Church Southport (Ormskirk), has been enlarged by subscription to accommodate 500

more hearers. One-half of the sittings will be free. The architect is Mr. Thomas Withnell, of Southport, who has planned the greater number of the edifices in this thriving watering place. The additions are north and south transepts, with galleries over. The present nave is lengthened, making room for porches outside to gain access to the galleries. The church, with the present additions, is cruciform. The transepts are about 5 feet higher than the ceiling of the nave. The communion windows are of stained glass.—The contract for building a new Congregational Chapel, in Fawcett-street, Bishop Wearmouth, from a design by Mr. Thomas Oliver, jun., architect, has been let to Messrs. Wilkinson, Heaton, and Foster, builders, at the estimated cost of upwards of 2,000l. and the foundation-stone will shortly be laid.—Another prison is being built in Glasgow. It is intended as a penitentiary, and is to be four stories in height. There will be 160 cells.—The contract for building the National Gallery on the Mound, at Edinburgh, has been taken by Mr. David Lind, the builder of the Scott Monument, the Assembly Hall, the British Linen Company's Bank, &c.—The number of students who attended the Glasgow School of Design last year was 870, being ninety-eight more than that of the previous year. The manufacturers are making increased application for designers; nevertheless, it is to be regretted that the local subscriptions have declined, and Government have hence refused to increase their grant: indeed, they could not have been blamed for diminishing it in such circumstances. The receipts last year were 1,330l. 10s.; expenditure, 1,157l. 2s. 5½d. Mr. Robert Harvey has been appointed to the charge of the class for engineering drawing, in room of Mr. Bell, resigned.—There appears to be a good prospect of the proposed new public park at the west end of Glasgow being carried out. The sum of 11,500l. will be required for this purpose. A committee has been formed, and a subscription list opened.—"Last week," says a Glasgow paper, "a very large cast-iron bell was cast at Dundee by iron works, weighing between two and three tons, and intended for Dent's clock at the Great Exhibition. On trial it was found to possess a magnificent tone, maintaining its sonorous vibration for about three minutes after being struck with a wooden mallet. A small proportion of molten tin was mixed with the fluid iron immediately before casting, which, whilst increasing its musical tone, added to its brittleness; for, on being gently lowered on to a truck whilst in a state of sonorous vibration, it cracked, and is, of course, now useless. The experiment is a curious one, as, we believe, no effort was ever made to found a large bell of cast-iron even with a small admixture of any other metal.—The directors of the Dublin Consumers' Gas Company report that "the board have increased by 2½ per cent. the allowance or deduction usually set apart to cover wear and tear; and they have also deemed it expedient to commence a fund for the gradual reduction of the meter investment; but it is gratifying to the board to state, that after payment of the usual dividend of 3s. 6d. per share or 7 per cent. per annum, there will still remain a sum of 862l. 11s. to be added to the surplus fund."

DRAINS FOR LUNATIC ASYLUMS.—Relative to recent remarks on the material and size of drains, I feel prompted to offer a suggestion that all drains from water-closets in lunatic asylums should (from the soil-pipe to some convenient place for easy inspection) be of a diameter of not less than six or nine inches.—I should say nine. My reason is this, that in all such institutions you will invariably have inmates in the habit of cramming down the closets everything they can lay their hands upon. In several I have had opened lately here (Oulton House Retreat Asylum) were found shoes, pieces of coal, parts of dresses, &c. These, of course, go down the soil-pipes safely enough, but, upon passing into a small drain, immediately become the nucleus for an accumulation.—F. B.

THE LATE EXHIBITION OF MODERN ART, PALL-MALL EAST.

The Exhibition which was organised in the gallery of the old Society of Painters in Water Colours, by three or four lovers of art, with the praiseworthy view of providing for the public an exhibition of art during the winter, and giving artists another opportunity to dispose of their works, has just now closed.

The gallery was open exactly twenty weeks, and during that time the number of visitors was 5,617, or an average of 47 per day, independent of the free visitors (546). About 2,000 catalogues were sold and given away. Upwards of eighty works were sold, without any cost whatever to the artists.

The cost to the promoters, above the receipts, and independently of the expenditure for frames, a large item, has been very considerable. Several of the artists, hearing this, manifested a warm desire to bear their share of it (we mention it to their credit), but this was of course refused; and we are glad to hear, beyond this, that the promoters, believing that the Exhibition has proved useful, and having received assurances from the artists that they will be better prepared next year, are determined, and have indeed made arrangements, to open again early in August.

INSTITUTION OF CIVIL ENGINEERS.

On the 1st inst. a paper was read "On the Lockwood Viaduct, on the Huddersfield and Sheffield Railway," by Mr. J. Hawkshaw. This viaduct was described as consisting of 32 semi-circular arches, each 30 feet span, one oblique arch of 40 feet span, and another oblique arch 70 feet span, the latter having a versed sine of only 7 feet. The piers were 4 feet 6 inches thick at the springing, and had a batter of one-sixth of an inch to the foot. The total length was 1,428 feet, and the height from the foundations to the top of the parapet was 136 feet.

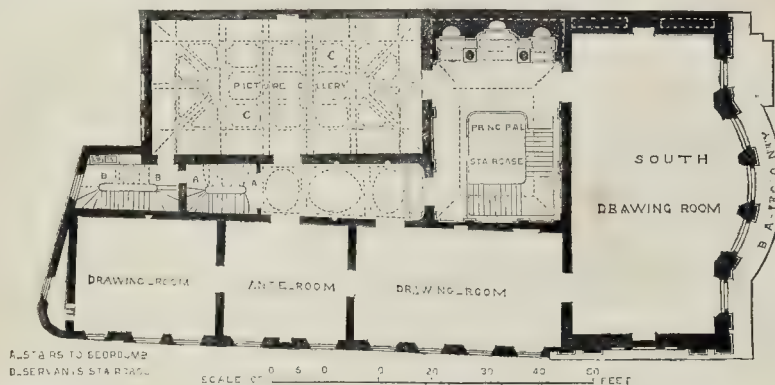
With the exception of the stone ribs of the flat oblique arch, the string course and the coping, which were of ashlar, the whole structure, piers, arches, and parapet, was built of "snecked rubble masonry" composed of stones of all sizes, both as to length, thickness, and width of bed, laid in a thick bed of stiff mortar; but the beds and joints were roughly scabbled, so as to remove any projections, which might cause the stones to rock, or to act like a wedge on the course beneath, and the beds were laid as nearly horizontal, and the joints as nearly vertical as the nature of the stone would permit. The largest stones were so placed as to form a perfect bond for those of smaller dimensions, a sufficient quantity of "throughs" being also used, and the whole work so built that the workmanship of the inside and outside of the walls was of uniform quality, both as to labour and material. This description of masonry was only about one-half the price of ashlar, and though not, of course, capable of bearing the same incumbent weight as could be supported by solid ashlar, it was considered superior, when carefully executed, to a thin facing of ashlar, with a hearting of rubble, a mode of construction very frequently adopted.

The total cost of this viaduct, including the excavation for the foundations, the scaffolding, the centering, and every other expense connected with its erection was 33,000l., being at the rate of 18s. 7d. per cubic yard of masonry.

The Hall Bottom Viaduct, on the West Riding Union Railway, was another instance of a similar kind of construction, the only difference being that the piers had a greater taper, and to reduce the increased quantity of masonry which this plan involved, flues or hollow spaces were left in the piers, the sides of which followed the line of the face of the pier, so that a uniform thickness of masonry was preserved throughout.

Two other viaducts, likewise designed by the author, but built of a different description of masonry, were also alluded to. The first, the Peniston Viaduct, on the Huddersfield and Sheffield Railway, was constructed of what was termed "block in course" work, which was

PLAN OF HERTFORD HOUSE, PICCADILLY.



a kind of rough-faced ashlar, the stones averaging about 12 inches in thickness, and from 15 to 18 inches on the bed, backed with a hearing of rubble masonry. The average cost of this kind of masonry, which required great care in the execution, was about 21s. per cubic yard. The other viaduct was over the river Medlock, near Manchester, and differed from either of the others, inasmuch as the piers were composed entirely of ashlar, laid header and stretcher alternately, without any rubble filling, or hearing. The spaces between the external walls were left vacant; but, as each header extended completely across the breadth of the pier, and the courses of masonry were alternated, the spaces were not continuous, as in the Hall Bottom Viaduct. The cubic contents of masonry in this work were proportionally much less than in either of the others, but the cost was greater, being at the rate of 21. 5s. 6d. per cubic yard.

ENCOURAGEMENT TO ARCHITECTS IN COMPETITIONS.

THE last number of THE BUILDER but one contained two very magnanimous offers to competing architects. Fifteen guineas (for a complete design, &c.) for a chapel and school rooms, and five pounds (for do.) for a union workhouse. These are certainly very modest specimens of provincial generosity. When these stupendous offers were determined upon, who can portray the various emotions which agitated the bosoms of the art-encouraging individuals concerned, at the thought of having won for themselves a niche in the temple of fame,—of the probability of their being handed down to posterity as benefactors of the age in which they lived, especially in the department of the fine arts, and that of architecture in particular. How extended and enlarged must be their ideas of our duties and responsibilities. What comprehensive views these benighted men must entertain of the value of an architect's time, and the compensation he deserves for the wear and tear of his brain by intense thought and study. I verily believe this class of individuals think that it is (or it ought to be) as easy for architects to produce original designs as it is for them to supply their customers with bacon, boots, or breeches. They do not appear to possess one rational idea upon the subject. I am at a loss to conceive on what principle they estimate their so-called "remuneration." For my part I should as soon think of competing for a fifteen or five shilling premium as for that which they offer. And yet, sir, these are the men that chatter loudest about the degeneracy of modern design, and the want of skill in modern workmen. Ask these Wintonians if they imagine the designs for their cathedral to have been evolved by

such art-producing premiums. Tell them there is at least one young architect that sooner than put a pencil to paper on such soul and body destroying terms, would take the tools of a carpenter, mason, or bricklayer, and work for a guinea a week, rather than degrade the profession to which he belongs by competing on such terms. It is time the profession knew the amount of respect due to themselves, if others do not; and I do hope that all such offers as these will universally meet with the contempt they deserve. W. B.

I SEE advertised in your paper that the Bostonians are determined to do what has so long been required, to re-seat, in fact to re-arrange, the whole interior of their church. Now, I happen to be very well acquainted with what is going on, business frequently requiring my attendance in that neighbourhood. I am desirous of being a competitor notwithstanding their pauper-like premium, but must first be assured that fair play is meant, and should only be assured of this under existing circumstances by some competent and disinterested architect unacquainted with either motto or name, being appointed to decide.

I should like to see competitors themselves set about reclaiming the almost lost respectability of our profession, placing it far beyond the range of possibility to be insulted by the wretched inducements your advertisements frequently set forth. Is it not a reflection upon us that we do not combine to put down this growing evil, and erect a standard where intelligence, industry, and honesty can meet with its just reward, without any regard to personal influence? ONE IN THE FIELD.

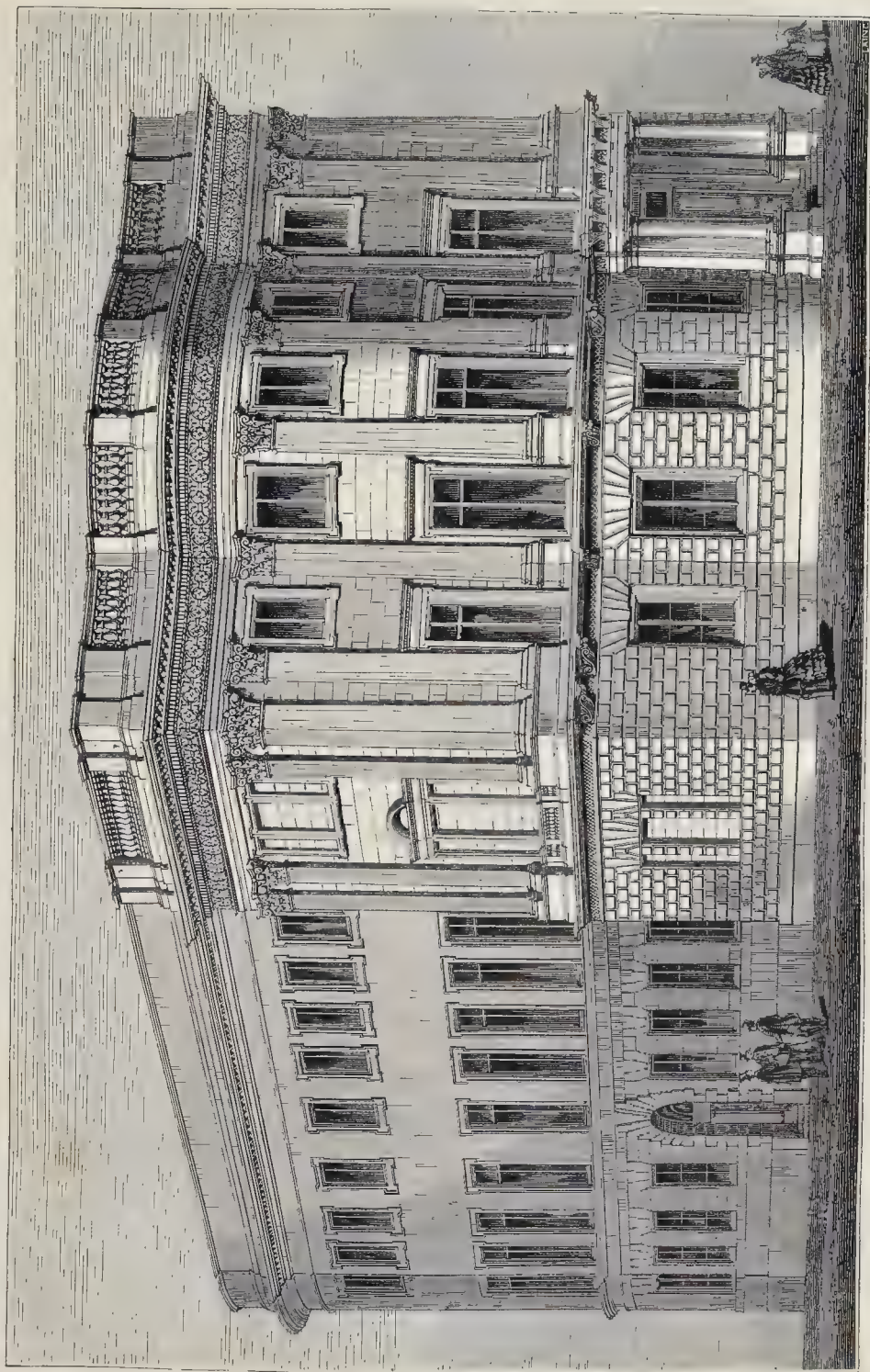
St. George's Hall, Bradford Competition.—As it is only by repeated exposure of all unfairness in the decision of competitions, that architects can hope to put a stop to the gross injustice they are, in nine cases out of ten, subjected to, I venture to trouble you with the following remarks on the conduct of the committee who decided the late Bradford competition. Having made careful inquiries on the subject, and been in communication with several of the leading professionals in that neighbourhood, I feel certain that my information is correct. Your former correspondent on the subject, "A Lover of Fair Play," gave sufficient account of the time spent in careful examination of the designs, and of the method by which the decision was arrived at. He alludes, also, to a report current in the town many days before the designs were sent in, that one or two gentlemen of the committee were more frequently in communication with the hereafter to be successful competitor than was proper or necessary. This report, whether well-founded or not, obtained such general credence that, with the

exception of two, the local architects did not send in designs. Still more deserves reprobation, the utter disregard paid to the most important item of their instructions to architects, i. e. the cost. The design selected for execution will, in the opinion of competent judges who have since examined the drawings, if carried out in its present form, cost at least one-half more than the stipulated sum. The second premiated design, described in a local paper as of a "highly ornate style, enriched to a remarkable degree," would, if built, cost some thousands more than even the selected one, and is confessedly wanting in the required accommodation. How, in the name of honesty, can gentlemen of the committee act so unjustly as to give the premiums to designs which, according to their own instructions, were inadmissible? It states, after mentioning that the amount to be expended was increased to 10,000l., "The directors wish it to be distinctly understood that no design will be admitted to competition which, in the opinion of the directors, and of such authority as they may call in to advise them, will, in the execution and completion thereof, exceed the last-mentioned sum."

Now, the directors and their advisers must be profoundly ignorant of such matters, if they for a moment suppose the two selected designs complied with the instruction as to cost: indeed, the author of the second design, I am informed, does not profess to have adhered to instructions on that head; and they must have been ill qualified for their task, if it never struck them that an extra 5,000l. expense would readily account for "marked superiority." Of course, the St. George's Hall Company have a perfect right to incur any amount of expense they think proper, but it is not equally clear that the committee are justified in violating the most essential of the conditions they themselves imposed. It is a strange anomaly that highly respectable men, of great talent and business acquirements, will, when upon a committee, often commit acts which, as private individuals, they would be thoroughly ashamed of. Would that some philosopher would enter into an inquiry of the subject, and give an explanation of this remarkable but disgraceful fact, such as would enable all lovers of fair play to know "when to seek and when avoid."

A COMPETITOR WHO ABIDED BY THE INSTRUCTIONS.

SMITHFIELD.—On the 9th instant the City Corporation Bill for the enlargement of Smithfield market was thrown out, on a motion for the second reading, by a large majority. On the same evening the Government's Smithfield Market Removal Bill was read a second time by a still greater majority. The latter Bill was then referred to a select committee.



VIEW OF HERTFORD HOUSE, PICCADILLY.

FOREIGN INTELLIGENCE.

Sardinia.—*Mysterious Ancient Structures.*—In connection with the vitrified towers of Ireland, the old cupola-shaped graves or altars of the west coast of Sardinia claim particular attention. Yet, although Count Della Marmora had examined nearly 3,000 of these towers, no satisfactory result as to their origin and scope could be arrived at. The librarian of Cagliari, M. Martini, has of late discovered some manuscripts, one of so early a date as the 8th century, also a chronicle in verse on the history of Sardinia, which contains a clue to these hitherto enigmatic buildings. M. Martini will soon publish these manuscripts in full. The museum of Cagliari contains many interesting sculptures and other antiquities,—amongst them a model in honour of Salustius, also some rare coins of Malta and Gozzo. Lord Vernon is at the present time examining the Island of Sardinia.

Statue in honour of Nicolas Poussin.—The municipal council of Andely, the birth-place of the great painter, have decided that the statue made by M. Brion, jun., by way of subscription, should be placed in the market-place of Grand Andely on the 15th June next, anniversary of Poussin's birth-day. On this festive occasion an ode, which has been crowned by the Société libre de l'Eure, will be read in public, to make the inauguration resemble some of the popular festivals of old.

Paris Improvements.—The municipal commission are very active in clearing off their arrears. The place about the church of St. Severin will be enlarged, which will thus bring to light one of the oldest and most interesting buildings for the archaeologist in Paris. The widening of the Rue Mathurin St. Jacques will be now the sooner effected, as the landlords of the houses to be demolished have consented not to claim the amount allotted to them for six years. Several localities of Paris have also received of late more appropriate names.

A Philanthropist.—M. Durzy, chevalier of the Legion of Honour at Montargis, France, has bequeathed his whole fortune (500,000 f.) to the town-council of his native city, for the sake of founding a public establishment of the following description:—A working man's school, where mathematics, music, drawing, and the English and French languages, shall be taught gratuitously, so many hours each a week; and formation of a public library. The tenth part of the yearly income is reserved for pecuniary assistance to old townspeople and others in needy circumstances. The mayor of Montargis is among the testamentary executors.

Bonn.—A number of Roman sepulchral monuments have been found lately near this place, about 250 yards distant from the locality where the Roman camp was discovered in 1818 and 1819. Besides several basso-reliefs of less interest, one large slab, with an inscription (hitherto undeciphered), and one sculpture representing several kinds of trees (!), deserve notice.

FOREIGN ART-UNIONS.

Hamburg.—The committee of this Association have just published a satisfactory report of the year 1850. The great exhibition, held from 20th May to 3rd July, realised a clear profit of 1,490 marks, after paying the expenses of 5,322 marks, of which 2,572 marks were for the freight of works of art. This sum has been left for the reserve fund. During the exhibition 118 pictures had been sold for 34,000 marks. The city picture gallery had been previously completed, and was opened on the 13th of March. By this one of the chief aims of the Hamburg Art-Union has been effected, and it is only a further increase of the collection now fairly established which is required. A great ornament had been obtained for it last year by the purchase of *Charitas*, painted by M. Decaisne at Paris, for which the Art-Union paid 2,500 francs. The permanent art exhibition had been open all the time, and the number of articles exhibited was 138, of which forty were by Hamburg artists. The increase of members also is very satisfactory, being now 583 instead of the 481 in 1849. The whole expenses of the Art-

Union, in 1850, were 9,000 marks, of which 5,000 were paid for eighteen oil paintings, and sketches allotted to members in the shape of prizes.

Munich.—The exhibitions of this year are of a promising character. Ch. Morgenstern has exhibited a landscape of the Vosges mountains, which appear in the distance in an immitable illumination. I. Schraudolf has exhibited drawings for the cartoons with which the Cathedral of Spyer will be adorned, by command of King Ludwig. Thence it is to be seen, that the restoration of the old *Kaiserdom* is not neglected. The painter, Levi Elkan, of Cologne, known as the author of the sculptures of the cathedral of that city, has exhibited an excellent picture representing Maximilian I., at the diet of Cologne.

Art Union of Vienna.—The exhibition of this year has been visited by greater numbers than is generally the case. A historical picture by Hayez, of Milan, the Delivery of Admiral Pisani from Prison, attracts most notice. Still, the deficiency of talent, kept down for so many years by Government, comes to be felt also in the arts, and it is now earnestly thought of, to appoint foreign artists as professors of the academy, and there is no doubt that *Rahl* will remain in Vienna, at least temporarily. His decided bent towards the elevating and simple, and his great capacity as a teacher will surely act beneficially on the young school of Austrian artists.

REPEAL OF THE TAX ON LIGHT, AIR, AND HEALTH.

THE Chancellor of the Exchequer, in his modified budget, opened on the 4th inst., has acceded to the reasonableness of the objection made by us as well as others as to his proposed substitute for the window tax. He is now of opinion "that the fairest mode, the mode most consistent with principle, is to impose an uniform duty upon old and new houses." Yet such, and so unfair, is the principle of the window tax itself, that no uniform substitute will, or ever can, deal equal justice to all in the way of relief; and we fear that too stringent an urgency of objections, though perfectly valid, will only risk the attainment, just now, in any shape, of the all-important sanitary relief obtainable in the removal of restriction and expense connected with the number or the opening of windows, and the access of light and air into dwellings (not to speak even of architectural freedom in their construction—no mean consideration itself). For this reason we incline to take the most favourable view of the new proposal of the Government, which really is an improvement on the old one. Sir Charles Wood himself admits that "no uniform rate upon the value of houses will give anything like equal relief" from such a tax as that on windows, so levied as it has been; but he thinks that this objection is qualified by the fact that it is only where houses are of great value that little relief (or, as in some few cases, even a positive increase of payment) will accrue, while great relief will be given to the poorer classes inhabiting houses of comparatively little value.*

"I propose," said Sir Charles, "to take a uniform rate of 9d. upon dwelling-houses, and 6d. upon those houses which contain shops. I propose to

* The power of such publications as *THE BUILDER*, and the success of those principles which such publications have advocated, were, we conceive, forcibly manifested in the following remarks by the Chancellor in his speech. "I have looked to that which, in my opinion, would be most beneficial to the great body of our labouring and working population. They, to a great extent, are not represented in this house; they cannot put pressure upon those who sit here, which will induce them to advocate their peculiar interests; and they are, therefore, in my opinion, the special objects of the care and solicitude of the Government,—government being instituted for the benefit of the many, and not of the few. We have given the many food and clothing, but there remained one other matter of vital importance to them—their dwellings. It was for their sakes, and to remedy this evil, that I last year carried the repeal of the duty upon bricks. It is for their sakes that I propose this year to reduce the duty upon foreign timber. So far as the comfort of the colliery labourers is concerned, I do not know that more can be done for them; but there remains another class—that large portion of the labouring population who are crowded in the dark alleys and narrow streets of our towns. There is evidence beyond dispute of the effects produced upon them by the dark and unwholesome character of their dwellings. There is evidence be-

exempt from taxation altogether all houses not exceeding 20l. in annual value. The result of this proposal is—I get rid of all reference whatsoever to windows in any shape. I reduce the number of houses paying tax at all from 500,000 to 400,000. I give a new benefit to shops, victuallers' houses, and houses used in the occupation of land. I give a relief from taxation altogether to the extent of 1,136,000l. The tax I propose to retain will amount to 720,000l. instead of 1,856,000l. It is true there are some few cases in which even under this proposal a house will be raised in taxation; there are some cases so anomalous, that it is utterly impossible to deal with them on principle; nevertheless, all houses of this description may open windows to an unlimited extent; and therefore they will not pay what they shall pay without, as I believe, an equivalent advantage."

The new proposal has met, on the whole, with a favourable reception in the Commons.

INTENDED NEW SCHOOLS FOR THE CITY OF LONDON.

THE corporation are about to erect schools for orphans at Brixton, from the designs of Mr. Bunning, their architect. There will be school-rooms for boys and for girls, and a large dining-hall, to be used in common. On the face of the gallery, which runs round the latter, Mr. Bunning proposes to introduce bas-reliefs of Hogarth's series, "The Good and Bad Apprentices." At one end of the hall there will be a statue of Whittington, and at the other a statue of the original of Scott's Jeannie Deans.

Mr. Bunning deserves credit for the endeavours he uniformly makes to bring the sister arts into union.

Externally the building is of simple (Italian) character, and is constructed of red bricks with stone dressings.

CONSOLIDATION OF PAVING BOARDS IN SCOTLAND.

As to the remarks by "A District Surveyor" relative to the general consolidation of paving boards, allow me to say, in Scotland the watching, lighting, cleansing, paving, and sewerage are now all under one general board of police management. To illustrate the bad effects of divided management, I may mention that some years ago there existed within the present municipal police boundary of the city of Glasgow, no less than four distinct police establishments acting quite independently of each other. The consequence of this system of divided management was, marked inefficiency in every one of the departments mentioned.

Since the whole have been amalgamated, and brought under one general management, improvement has been the order of the day. Many miles of sewers have been laid. Streets formerly nearly impassable are paved. Whole districts formerly enveloped in darkness are now lighted up; and last, but not least, the authorities are steadily purchasing old and ruinous tenements, with the laudable view of soon being able to open up the wynds and vennels of the city. The best of it is that all these improvements have been carried into effect free of any additional assessment on the rate-payers. I will tell you how this united general board is enabled to do so.

In the first place, they contract for their supplies of work and material on an extensive scale, and thus not only secure the services of respectable contractors, but effect a saving. As, for instance, the gas company, on the condition of being allowed to supply the gas required for the street lamps for a period of ten years in place of annual contract, made an abatement in their price equal to 1,000l. per annum. The contractor for the supply of

wood dispute of the effects which those who are crowded into dark cellars and ill-ventilated apartments suffer from that cause. We have evidence in abundance of the stunted growth, the deformed limbs, the broken constitutions, the enfeebled intellects, which are the consequences of the deprivation of air and light. We determined that, as soon as it was in our power, so far as taxation contributed to these effects, we would do all we could to place the labouring poor in a better sanitary condition; and that, so far as it depended upon us, we would endeavour to remedy that state of things which was proved beyond dispute to be the cause of this misery and death. I shall feel, that having contributed to cheapen their food and clothing, and to give them the benefit of dwellings as cheap as can be afforded, we shall close that course well with measures to bestow upon the labouring population in our towns the unrestricted enjoyment of the light and air of heaven.

granite-paving stones, also, in consequence of getting a contract for the supply of 20,000 tons in place of an occasional order for small quantities, reduced his price from 20s. to 16s. 6d. per ton; and similar reductions have been effected with many others on the same principle.

A popularly-elected board for the management of the lighting, paving, cleansing, and sewerage of the whole metropolis would be a great boon to the inhabitants.—FRIEND TO IMPROVEMENT.

ELECTRO-TELEGRAPHIC PROGRESS.

EXPERIMENTS with Mr. Bakewell's copying telegraph have been made between London and Brighton, with a view to test whether distance would interfere with the power of transmitting copies of writing. An instrument at the central office of the Electric-Telegraph Company, in Lothbury, was placed in connection with a corresponding instrument at the York Hotel, Brighton, and a communication in writing was opened between these stations. The trial, it is said, was perfectly successful. The writing formed by electro-chemical decomposition could be distinctly read and the signatures could be recognised. The rapidity with which the transmission was effected was about 150 letters a minute, and a much greater speed is said to be attainable in regular work. The messages were written in full, with capitals, points, and figures; but abbreviations, and even short-hand symbols might of course be used. This telegraph possesses peculiar means of obtaining secrecy as well as authenticity. Some of the communications were impressed invisibly on the paper, so that no trace of writing could be seen until the messages were washed with a solution that rendered them instantly legible. Thus the beau-ideal of the electric telegraph, as we regarded this very ingenious invention on its first announcement, seems to have been at length actually realized, and any one may now take his seat on a stool in Lothbury, and, with the flourish of a pen-holder radiating to the coast of his sea-girt abode, write his signature on documents lying "before him" on a desk scores of miles away from his cognate stool. Have we not here, too, already a power "much more akin to those of ancient magic than to those even of modern matter of fact?"—Amongst the most remarkable productions from Birmingham at the International Exhibition, there will be a piece of iron wire for telegraphic purposes, a mile long,—the greatest length of wire, it is said, that has ever been drawn.—The telegraph between Paris and Brussels has been opened.—From experiments made on the wires of the telegraph of the Versailles Railway, the mean quickness of sound has been ascertained to be 3,485 metres per second,—more than double the speed laid down by Newton, Halley, Duhamel, and others. If any one had heretofore dared to contravene the stereotyped dicta of men so eminent on a such point, and to declare their calculations to be thus far defective, he would have certainly been denounced not only as a mistaken, but as little short of a sacrilegious, humbug; thus does an enlightened people venerate and believe in even the errors of their great men, and inaugurate them as the truth. Nevertheless, "all old things are passing away: all things are becoming new."

FIRE IN THAMES BANK DEPOSITORY.—We regret to learn that property estimated at an enormous value has been destroyed by a fire which occurred on Monday morning last, in the Thames Bank Depository, in the Ranelagh-road, Pimlico. It appears that the "Home for Artizans" during the International Exhibition, mentioned by us some time since, only constituted a portion of the same premises; and it is a curious circumstance that after our remarks were made on the "Home," the proprietor of the depository wrote to us, stating his fear that these remarks might lead depositors to suppose that their goods were in danger from fire if in such proximity to the "Home," whereas the depository was fire-proof, and away from the "Home."

MACHINES FOR WORKING AND POLISHING MARBLE.

In connection with the paper which we gave last week on the mechanical processes employed in sculpture, some of our readers have asked for particulars concerning the machines used for cutting, working, and polishing marble. We cannot supply their wants better than by availing ourselves of the information on this subject contained in the third volume of

Mr. Holtzapffel's excellent work, "Turning and Chemical Manipulation."

"In the horizontal sawing machine for marble patented by Mr. James Tulloch in 1824, the entire arrangements are combined in a very effective manner, for cutting a block of marble into a number of parallel slabs, of any thickness, at one operation. The iron framework of the machine, shown in fig. 1, consists of four vertical posts strongly con-

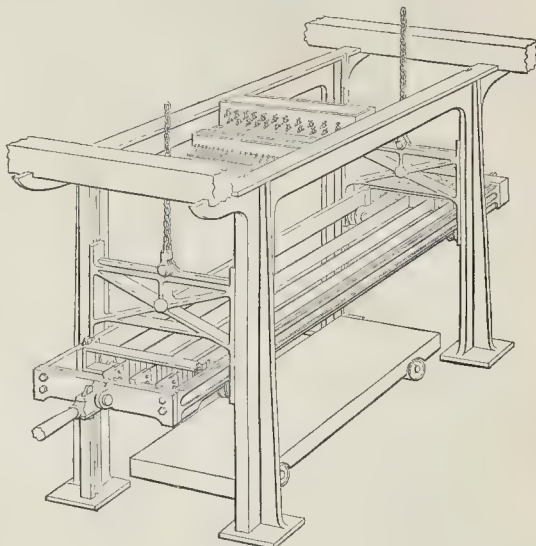


FIG. 1.

nected together at the top and bottom, to form a stationary frame from 10 to 14 feet long, 4 to 5 feet wide, and 8 to 12 feet high, within which the block of marble to be sawn is placed. The two upright posts at each end of the stationary frame have, on their insides opposite to each other, perpendicular grooves, within each pair of which slides up and down a square vertical frame: to the lower end of each of these slides is affixed a spindle carrying two guide pulleys, or riggers, upon which the horizontal saw frame rests, and is reciprocated backwards and forwards. The saw frame is thus traversed within the fixed framing, and supported upon the four guide pulleys of the vertical slides, which latter are themselves suspended by chains coiled upon two small drums placed overhead. On the same spindle with the drums is a large wheel, to which a counterpoise weight is suspended by a chain. The weight of the counterpoise is so adjusted as to allow the saw frame to descend when left to itself, and which thus supplies the necessary pressure for causing the penetration of the saws. The saw frame is made rectangular, and from 2 to 3 feet longer than the distance between the vertical slides, in order to permit of the horizontal traverse of the saws, which is from 18 to 20 inches. To allow of the blades being fixed in the frame with the power of separate adjustment, every blade is secured by rivets in a clamp or buckle at each end: the one extremity of the buckle embraces the saw, the other is made as a hook: the buckle at one end of the saw is hooked upon a horizontal bar fixed across the end of the saw frame, and the opposite end of the frame has a groove extending its entire width, through which a separate hook, provided with a vertical tightening wedge, is inserted for every saw, which thus admits of being replaced without deranging the position of the neighbouring blades.

The distances between the saws, and their parallelism with the sides of the frame, are adjusted by means of iron blocks made of the exact thickness required in the slabs of marble: the blocks and blades are placed alternately, and every blade is separately strained by its

tightening wedge until it is sufficiently tense. The blocks are sustained between two transverse bars, called *gauge bars*, and are allowed to remain between the blades, to give them additional firmness.

The traverse of the saw frame is given by a jointed connecting rod, attached by an adjustable loop to a long vibrating pendulum, that is put in motion by a pair of connecting rods, placed one over the other, and leading from two cranks driven by the engine. All three connecting rods admit of vertical adjustment on the pendulum. The connecting rod of the saw frame is placed intermediately between the other two, but its exact position is regulated by the height at which the saws are working, as it is suspended by a chain and counterpoise weight, which allow it to descend gradually downwards on the pendulum, with the progress of the cut, so as always to keep the connecting rod nearly horizontal.

In the London Marble Works four of these sawing machines of different sizes are grouped together, with the driving shaft and pendulums in the middle, and so arranged that each pair of saw frames reciprocate in opposite directions at the same time, in order to balance the weight and reduce the vibration.

Another mode of traversing the saw-frame sometimes adopted, is by means of a vertical frame that is reciprocated horizontally, on slides, and the connecting rod, instead of being jointed, is fixed rigidly to the saw frame, and slides upon a vertical rod. Various other unimportant modifications in the construction of the machines are also adopted.

One of the most difficult points in the application of these machines, was found to be the supplying of the sand and water mechanically to the whole of the cuts at the same time. This is now successfully effected by the following arrangement. Above the block of marble to be sawn, is fixed a water cistern or trough, extending across the whole width of the frame, and measuring about one foot wide and one foot deep: about twenty small cocks are arranged along each side of the cistern, and a small but constant stream from each of the

cocks is received beneath in a little box : a sloping channel leads from every box across the bottom of a trough filled with sand, which mingles with the water and flows out in separate streams that are conducted to each of the saw cuts. In the first construction of this apparatus for the feed, the sloping channels were led straight across the bottom of the sand trough, but it was then found that the water excavated little tunnels in the sand, through which it flowed without carrying the sand down. This difficulty was overcome by leading the channels across the bottom of the trough in a curved line, when viewed in plan. The form of the channels is shown in fig. 2,

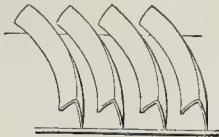


FIG. 2.

which represents four channels cut across the middle of their length, to show their section, from which it will be seen that the channels are made as a series of Gothic-shaped tunnels supported only on the one side, and open on the other for the admission of the sand: the water flows through these tunnels, and continually washing against the convex side of the channel undermines the sand, which falls into the water and is carried down : to assist this action the attendant occasionally stirs up the sand to loosen it. There is a sand trough and set of channels on each side of the water cistern, so that every saw cut receives two streams of sand and water in the course of its length.

The saws having been adjusted to the proper distances for the required slabs, the saw frame is raised by means of a windlass and the suspending chains attached to the vertical frames, and the block of marble to be sawn is mounted upon a low carriage, and drawn into its position beneath the saws, and adjusted by wedges. The saws are then lowered until they rest upon the block, the counterpoise weights are adjusted, and the mixed sand and water allowed to run upon the saw blades, which are put in motion by attaching the connecting rod to the pendulum. The sawing then proceeds mechanically until the block is divided into slabs, the weight of the saw frame and connecting rod causing them gradually to descend with the progress of the cutting.

To allow the sand and water to flow readily beneath the edges of the saw blades, it is desirable that the horizontal frame should be slightly lifted at the end of each stroke. This is effected by making the lower edges of the frame, which bear upon the guide pulleys, straight for nearly the full length of the stroke, but with a short portion at each end made as an inclined plane, which on passing over the guide pulleys lifts the frame just sufficiently to allow the feed to flow beneath the saws.*

ENGINE CHIMNEYS.

HAVING an order to design an engine chimney of a pleasing outline, I drew a curve from the neck to the base line, the shaft being 10 diameters high and the neck one-third the diameter of the base.

Upon applying my compasses to form sectional plans of the structure I found that the circles touching each other of the outline I had drawn increased uniformly from the top downwards, giving apparently an easy geometrical method of producing entasis in every description of column. I have applied the system to various columnar orders, and I believe it is scarcely possible to improve the entasis produced in this manner. The larger the scale of the drawing the more satisfactory will be found the result, whatever may be the ratio of increase in the circles. The method appears to give facility for the accurate setting out of any column without the use of unwieldy trammels or distant centres.

* To be continued.

I should be glad to have the opinion of experienced chimney-builders as to the different internal plans of engine chimneys. In this neighbourhood (Bristol) all the chimneys are cones following nearly the external form. Is there any advantage to be obtained by making the lower end of the flue as small as the orifice at the top? If so, may such internal flue be constructed as a separate cone, bonded or not to the outer one, or must it be part of the solid fabric.

S. C. F.

THE ARCHITECTURAL PUBLICATION SOCIETY.

PART III., due to the subscribers of 1850, has been issued, and Part I., for 1851, is just ready. The committee, up to this time, have fairly fulfilled all their obligations, and the subscribers have so much reason to be satisfied with the return they have had for their money as to justify them in pressing others to become members, and so increase the means at the disposal of the executive.

The text for 1850 consists of an Essay on Heat, by Mr. R. S. Burn; an Essay on Ventilation, by the same; an Essay on the Principles and Practice of Architectural Design, by Mr. Wightwick; and a continuation of the list of terms connected with the art, and forming the skeleton of the proposed *Cyclopædia*, the great work to which the efforts of the Society all tend.* The essays on Heat and Ventilation contain useful information. "The Principles and Practice of Architectural Design," is somewhat too large a title for six pages of letter-press.

Books.

Chemistry of the Four Ancient Elements, Fire, Air, Earth, and Water: an Essay founded upon Lectures delivered before her most gracious Majesty the Queen. By THOMAS GRIFFITHS, Professor of Chemistry in the Medical College of St. Bartholomew's Hospital. Second edition. Parker, Strand. 1851.

MR. GRIFFITHS'S book is well suited to effect its designed object, namely, to excite feelings of interest regarding the fascinating science of chemistry. It is, therefore, chiefly intended for those who have not studied the science, and indeed is not even meant as a student's book so much as a mere easy introduction to the more formal study of the science. Nevertheless, "the four ancient elements," as Professor Griffiths calls them, will be here found to embrace, in a general way, the whole range of chemistry, all known substances ranging themselves under some relation or other to these four forms of existence,—the solid, fluid, aeriform, and pyrriform. It is questionable, perhaps, whether the original idea of the more enlightened ancients in comprehending all natural substances under these "four ancient" forms meant anything else, or was really designed to signify a belief in four elements rather than four forms of matter. Even fire the ancient chymists or alchemists can be proved to have divided into two species, "combustible fire" and "incombustible fire;" so that whatever was their belief, it was really not that fire was one of four elements. In all probability their incombustible fire was oxygen itself, with which the higher order of them were perfectly well acquainted, as well as with hydrogen. While thus doing justice to the originators of the idea of "the four ancient elements," however, we must also remark that this author, in his introductory chapter on alchemy, opens a loophole, to which they are not entitled, for their escape from the charge of being the vilest of impostors, unless alchemy were much more than a mere search for an agent or agents to combine with lead, &c., and thus to constitute gold and silver. In giving some attention to the history of chemistry, we dipped into several of the more authentic records of alchemy, and uniformly found that the authors made no mere pretence

* The committee are extremely anxious that this desirable work should be commenced, and invite the attention of the members and the profession to this list of terms; they also request the contribution of drawings and articles for subjects contained in that list under the letter A.

to be in search of such agents, and in hope of finding them, but gave express instructions, such as they were, though in enigmatical forms, how to prepare them; just as Professor Griffiths might, how to prepare certain acids and alkalis wherewith to form certain neutral salts. It is very erroneous, therefore, to state, as he and most other modern chemists do, that the ancient alchemists merely hoped to find such agents, and merely searched for them,—although students of their enigmatical instructions merely did so. There must be a reconsideration of this subject, and the alchemists, one and all of them (mere students excepted), must either be condemned, out and out, as the basest of liars and grossest of impostors, or their pretensions be fully recognised and acceded to: they cannot rank in the class of mere dreaming enthusiasts at all.

As a specimen of the work, we may quote the following remarks on lime—

"Lime is well known, and generally obtained from a variety of marble called limestone, which is very abundant in many parts of England; and if it be heated red hot in kilns, the lime remains as a white solid mass, popularly called quick-lime, or live-lime, in allusion to its active, strong, and caustic nature, as it corrodes and destroys animal and vegetable substances with great facility.

Lime has a very powerful affinity for water, which, when poured upon it, combines with the evolution of great heat: this operation is called slaking the lime, and is conducted on a large scale by builders before mixing the lime with sand for mortar, which is of inestimable value in architecture, where stone, marble, or brick-work require cementing together, as it sets or hardens into a very solid compact mass.

When lime, or any other substance, combines with water, the result is called a hydrate (the term being derived from the Greek *ὕδωρ*, water); but it does not necessarily imply that an actual solution of the substance takes place, although such is frequently the case to a considerable extent.

Thus, if slaked lime be mixed with water into the consistence of cream, and allowed to remain at rest for some hours in a stoppered glass bottle, the greater part of the lime will subside or precipitate to the bottom, leaving a perfectly clear liquid, containing only a very little lime in actual solution, but tasting strongly acrid, and having the property of restoring the blue colour to litmus-paper, which has been reddened by an acid: it is one of the substances called alkaline, and it combines with, or neutralises acids.

The aqueous solution of lime obtained in the foregoing process is called lime-water: it undergoes a curious change when poured into a shallow dish, and exposed for some hours to the air: it becomes covered with a white film, and loses its acrid taste, and action upon the test-paper.

In many former experiments lime-water was employed as a test for carbonic acid; and the change just alluded to depends upon the formation of carbonate of lime, from a very minute quantity of carbonic acid, which air invariably contains, in addition to its larger essential elements, nitrogen and oxygen.

The fact is, that the lime contained in the lime-water, when exposed to air, reverts chemically to the same state as that in which it existed in the limestone previous to the action of heat, limestone being a natural compound of carbonic acid and lime, or carbonate of lime.

The affinity between these two substances being destroyed by fire or heat, the carbonic acid evaporates along with the smoke of the furnace, whilst the lime remains in a pure state, but ready to unite again with carbonic acid, whenever it may be presented: for this reason pure lime-water is used as a test of carbonic acid, be it produced by combustion, respiration, or any other means.

Limestone, or marble, which is chemically the same substance, may be also decomposed by a powerful agent, called muriatic acid (from the Latin word *maria*, sea-salt, because extracted from sea-salt): this acid will immediately liberate the vapour in question, so that

its properties can be examined with the greatest facility.

The apparatus required is very simple; let a pint glass-bottle, with a narrow mouth, be provided with a cork, through which a bent pewter tube, half an inch in diameter, passes tightly.

In the bottle place two ounces of small fragments of white marble; then quickly pour in sufficient muriatic acid to cover them: immediately insert the cork, with its tube, into the neck of the bottle; and then dip the end of the tube beneath the water in the trough: numerous bubbles will escape, which result from the strong effervescence that is taking place in the bottle: these are bubbles of carbonic acid gas, and may be collected in bottles filled with water, and inverted.

The theory of the action which produces the effervescence may be readily understood: marble is a compound of carbonic acid and lime: they are united by a certain degree of affinity; but muriatic acid has a greater affinity for lime than carbonic acid has, and therefore unites with it to form muriate of lime, and expels the carbonic acid in its pure state of vapour: this is a very instructive example of chemical affinity, and if sufficient muriatic acid be used, the whole of the marble will vanish, having yielded its lime to the muriatic acid, and its carbonic acid gas to the bottles in the trough."

Elements of Electro-Metallurgy. By ALFRED SMEE, F.R.S., &c. Third edition, enlarged. Longman and Co. 1851.

IN this book the student of electro-metallurgy principles and practice has his subject developed in a scientific form, which it would be well for him to peruse throughout before he attempts to dabble in electro-metallurgical experiments; otherwise, in place of finding this, as it really is, a pursuit both profitable and delightful, he may meet with such obstacles and reverses as may induce him to give up the attempt in despair and disgust. The subject is, nevertheless, even yet in its infancy, and only holds its place in science as a newly-organized branch yet to be ramified in a thousand directions into beautiful and fruitful results. In the meantime we have here a compendium of all that has been done, in the first place, in maturing the requisite apparatus and materials; and, in the next, in turning out those varied and beautiful works which render this new branch of manufacture as well as of science both a pleasure and a profit. The subjects more particularly treated of are,—galvanic batteries and other apparatus employed in reduction of metals, substances capable of receiving the metallic deposit, laws regulating the reduction of metals, electro-gilding, silver-plating, &c. the multiplication of coins and medals, copying of seals and plaster casts, multiplication of brasses, manufacture of moulds from fruits, vegetables, &c., application of electro-metallurgy to sculpture, bas-reliefs, and other purposes, multiplication of types, copper and steel plates, woodcuts and daguerreotypes, and on galvanic etching, electro-disruptive etching, and voltaic blasting. There is an appendix on "Electro-Metallurgic Patents," and the book is illustrated by electrotypes and numerous woodcuts. The present edition contains not only the results of the author's own experimental researches, but some account of the processes and experiments carried on by others, from which source alone this edition has been increased about one-sixth in bulk beyond the limits of those previously issued and now exhausted. We are glad to find that the author has expunged some unwise and erroneous expressions which appeared in the first edition.

The Mechanic's and Schoolboy's Steps to the Mathematics. By JOHN QUESTED. London: Rolfe and Fletcher.

The Art of Land Surveying explained by Short and Easy Rules. By the same. Second edition.

THESE "Steps to the Mathematics" will be found easy ones, even by the most short-winded, and though they will not take the

climber high up into his subject, he will find when he has ascended them, that he has cleared many obstructions, and is in a good position for a fresh flight.

A previous edition of Mr. Quedsted's little introductory book on land surveying has been already noticed by us.

Miscellaneous.

HOUSES FOR LABOURERS.—You frequently advocate the cause of the industrious classes in your truly valuable work: you may therefore not object to insert the following few lines. Many gentlemen are professors of philanthropy; but when the touchstone is applied, how frequently do they prove repellants. In the matter of improved dwellings for the working men—make them appear to pay well, how many benevolent individuals are ready to come forward to assist with their purses; knowing that in such case too much comfort cannot be supplied. Even gentlemen of the profession seem to hold economy more in view than any other point. It would seem as if one and all agree in making a broad distinction between the comforts of the poor and rich. We have now a model about to be submitted to the world at the Great Exhibition. I allude to that noticed in THE BUILDER of a few weeks since. Produce a list of high-sounding names to recommend a work, and anything will be gulped down by the people. I hope the intended plan is not to have a living-room with four doors opening into it, occupying two sides, and the window a third; two of the doors leading to bed-rooms, and an entrance to the principal bed-room through the scullery. Gentlemen, I am sorry to say, frequently bestow more expence on the plan of a hound-kennel than on the habitation of those to whom they are indebted for their every comfort. Building is not like an article of apparel,—a coat, for instance, where, if a gentleman pays five per cent. more, and should require two or three per annum, he would be paying ten or fifteen per cent. yearly; whereas the former being once well done, might not require any substantial repairs for perhaps a quarter of a century.—W. L.

WATER-PIPES IN FROST TIME.—At a meeting of the Royal Scottish Society of Arts, a paper was read by Mr. Macpherson, plumber, "On a method of preventing water-pipes from bursting during frost." Mr. Macpherson gave a full description of the means at present adopted to prevent this highly destructive occurrence, such as outside coverings of straw, rope-yarn, &c., to the pipes in exposed situations, and also the mode generally recommended of allowing the water to run or circulate partially through the pipes, all of which he demonstrated to be practically useless, and showed that the only effectual means of preserving pipes from the action of frost was simply to keep them empty. The difficulty, however, even in this, was the sudden and unexpected changes of temperature, which often in a single night froze the whole water contained in the pipes, rendering this precaution also useless, unless attended to with great care. He conceived it possible to employ some self-acting apparatus to shut off the water and empty the pipes, or to have a machine so constructed as to shut a cock at the freezing point of water (thirty-two degrees), and to reopen it when a rise of temperature took place. Water, as we all know, expands in freezing, and Mr. Macpherson applied this expansive principle to a small body of water confined in a better conductor of heat than the lead pipe, and in connection with a double-acting valve to shut off the water and empty the pipes.

EGYPTIAN ART AND SCENERY.—No scenery is grander in its impression, for none is so symbolical. This grand and solemn nature has imposed upon the art of the land the law of its own being and beauty. Out of the landscape, too, springs the mystery of Egyptian character, and the character of its art. Often, in a luminously blue day, as the Howadij sits reading or musing before the cabin, the stratified sand mountain-side, with a stately arcade of palms on the smooth green

below, floats upon his eye through the serene sky as the ideal of that mighty temple which Egyptian architecture struggles to realise—and he feels that he beholds the seed that flowered at last in the Parthenon and all Greek architecture. The beginnings seem to have been the sculpture of the hills into their own forms,—vast regular chambers cut in the rock or earth, vaulted like the sky that hung over the hills, and, like that, starred with gold in a blue space. From these came the erection of separate buildings, but always of the same grand and solemn character. In them the majesty of the mountain is repeated. Man cons the lesson which Nature has taught him. Exquisite details follow. The fine flower-like forms and foliage that have arrested the quick sensitive eye of artistic genius, appear presently as ornaments of his work. Man, as the master, and the symbol of power, stands calm with folded hands in the Osiride columns. Twisted water reeds and palms, whose flowing crests are natural capitals, are added. Then the lotus and acanthus are wreathed around the columns, and so the most delicate detail of the Egyptian landscape re-appeared in its art. But Egyptian art never loses this character of solemn sublimity. It is not simple infancy, it was the law of its life. The art of Egypt never offered to emancipate itself from this character—it changed only when strangers came. Greece fulfilled Egypt. To the austere grandeur of simple natural forms, Greek art succeeded as the flower to foliage. The essential strength is retained, but an aerial grace and elegance, an exquisite elaboration followed; as Eve followed Adam. For Grecian temples have a fine feminineness of character when measured with the Egyptian. That hushed harmony of grace—even the snow-sparkling marble, and the general impression, have this difference. Such hints are simple and obvious—and there is no fairer or more frequent flower upon these charmed shores, than the revelations they make of the simple naturalness of primitive art.—Nile Notes.

CHESTER SAVINGS BANK COMPETITION.—A premium of 20*l.* having been offered for the best design for the Chester Savings Bank, there were seven competitors. The selection has fallen on Mr. James Harrison, of Chester. The selected design for the Savings Bank is in the Tudor style. In the elevation to Grosvenor-street there is a decorated entrance archway, with the city arms over it, and a parallel parapet, enriched with shields, and terminating with gable ornament. In the front facing the bridge there are two gables and a large projecting bow-window corbelling out over the three-light lower window. The parapets are embattled and panelled. A clock tower rises from the parapet at the north-west angle, and is carried up square until it attains a sufficient elevation for the clock to be seen over the roof. Above the clock is an open octagonal lantern, crowned with a crocketed cupola terminating with a vane.

FIRE AT CONSTANTINOPLE.—The winter palace of the Sultan's brother-in-law, Mehemet Ali Pacha, has been consumed by fire. The loss is calculated at 150,000*l.*

TWISTING AND ROLLING IRON.—A patent specification has been enrolled by C. Harratt, of Royal Exchange-buildings, merchant, for making piles or fagots of iron for rolling into bars or plates for railway and other purposes, by coiling a rod or bar round a bundle of rods or bars, so as to lay the grain in different directions, and cause the fibres to be well interlaced.

TENDERS FOR DRAINAGE.—Herewith I forward the list of tenders supplied for drainage-pipes, to be supplied for the Rugby Local Board of Health, by reference to which it will be seen that builders are not the only persons who disagree in their calculations. The quantities were all supplied by Mr. T. W. Rammell:—

Standing, Franking, and Co.,	£3,080	0	0
Farnley Iron Company	2,875	7	1½
Thomas Smith	2,800	0	0
Spencer and Co.	2,151	2	3
Edward Brook	1,900	0	0
Henry Doulton and Co. (accepted)	1,900	0	0
Henry Walsall and Co. (schedule of prices)			

MANCHESTER ROYAL INSTITUTION.—The annual meeting of this institution was held on Monday in last week. The report stated that the greatest number attending the exhibition this season, in any one week, was 936. The wish expressed by a considerable number of the leading artists, that it should be held in the latter part of the year, after the close of the Royal Academy exhibition, and their statement of their intention to contribute if such change was made, had determined the council to hold the next exhibition during the autumn. The Heywood prizes had been distributed. The council did not consider any architectural design as of sufficient merit and importance to deserve a prize, but a "Design for a Civic Building," by Mr. Solomons, was thought worthy of commendation. Mr. J. A. Hamersley, principal of the Manchester School of Design, having presented to the institution a painting of "Mountains and Clouds; a Scene from the top of Loughrigg," had been elected the first associate. It had been estimated that no less than 100,000 persons had passed through the rooms of the institution in four days, to view the statuettes of the Peel testimonial.

THE ORDINANCE SURVEY OF SCOTLAND.—The appeal to the Government by the British Association in favour of a sufficient Parliamentary grant to insure, within a reasonable time, the completion of the ordinance survey of Scotland has been presented to Lord John Russell by the Marquis of Breadalbane and Sir Roderick Murchison, and backed by the Dukes of Buccleuch, Roxburghe, and Richmond, Lords Eglinton, Cawdor, Minto, and many other Scottish proprietors. A select committee to inquire and report has been moved for in the Commons, and agreed to. Mr. Charteris, in moving for this committee, remarked, that although the Scottish survey was begun in 1809, only 1-16th, or the county of Wigan, was yet published. On the English survey, 702,000*l.* had been expended; on the Irish, 820,000*l.*; and on the Scottish, only 66,000*l.*: so that "justice to Scotland" now demanded some attention to its interests on this subject. It is to be hoped the ordinance will now shortly have something else to do than play mischief amongst the civil surveyors from want of work of a more legitimate kind to do.

TESTIMONIAL TO MR. BRASSEY.—At the London Coffee House, Ludgate-hill, on Wednesday, in last week, an elegant banquet was given to Mr. Brassey, the railway contractor, by about 200 of his employers and coadjutors, including a number of the chief engineers, directors, and other officials of various railways. Mr. Meeking, one of Mr. Brassey's workmen, presented the testimonial, which consisted of a silver gilt salver, nearly 3 feet in diameter, surmounted with a border of oak leaves, the disc ornamented with twenty-four raised medallions, twelve of them enamelled portraits of railway engineers.—G. Stephenson, R. Stephenson, Brunel, Locke, Cubitt, Bruff, Errington, Rendall, J. Cubitt, Biddell, Robertson, and Dockray,—the other twelve representing, also in enamel, some of the most important engineering works achieved on the great trunk lines. In addition to this testimonial, the presentation included full-length portraits of Mr. and Mrs. Brassey. In all, the cost of this presentation is said to have been about 3,000*l.*

DONATIONS FOR CHURCH BUILDING.—Messrs. Truman, Hanbury, and Buxton, the eminent brewers, have placed at the disposal of the committee of the Church Extension Fund the munificent sum of 1,000*l.* towards the erection and endowment of the church of St. Thomas, at Lambeth. Sir Edward North Buxton, Bart., M.P., has given 500*l.* additional, and Robert Hanbury, Esq., 500*l.* additional, for the same purpose. Messrs. Barclay and Perkins, the brewers, have given the sum of 1,000*l.* towards the Southwark fund for building churches and chapels. Lord R. Grosvenor has given 2,000*l.* towards the erection of a church at Norwood; the Archbishop of Canterbury, 3,000*l.* for a church and schools at Croydon; the Bishop of London 3,000*l.* towards new churches in the metropolis; Mr.

Charles Freaque, of Brompton, 5,000*l.* towards a new church in Onslow-square, Brompton; the Rev. John Fletcher has given 1,000*l.* towards a new church at Paddington; Mr. C. J. Bevan, the banker, 1,000*l.*; Sir W. R. Farquhar, 1,000*l.*; Mr. R. C. L. Bevan, 500*l.*; Mr. B. Shaw, 500*l.*; Mr. John Deancon, 500*l.*; Mr. J. Labouchere, 500*l.*, towards St. Andrew's Church, Lambeth. The Solicitor-General has given 1,000*l.* towards a church in Palmer's Village, Westminster. Mr. Thomas Baring, M.P. has given 1,000*l.* towards St. Thomas's Church, Lambeth. "A Friend," per the Bishop of London, has given 5,000*l.* towards new churches to be erected in the metropolis. "A Friend" of the incumbent has given 5,666*l.* for a new church in Loughborough-road, Denmark-hill. The Rev. C. Kemble has given 1,200*l.* towards a new church at Stockwell. Mr. Henry Vallance has given 1,000*l.* towards a new church in Kensington. Mr. William Cotton has given 500*l.* towards new churches in the metropolis. The Dean and Chapter of Canterbury have given 500*l.* towards a new church in Newington. Mr. Edward Wigan, 500*l.*, and C. B. Young, 500*l.* towards a new church in St. Matthew's district, Denmark-hill.—*Morning Advertiser.*

MAP OF BRADFORD WANTED.—The Bradford council have got their Improvement Act, but have decided to do without the map which is absolutely requisite to enable them to do any thing with the Act for which they have striven. They have swallowed their pig, but choke upon the tail. They have sunk their well, as the *Bradford Observer* remarks, and fixed their pump, but they grudge the expense of a handle. At a recent meeting they formally refused to procure a map, either that of the Ordinance survey or any other. The cost of the former, it is said, would be 700*l.* less than the cost (2,000*l.*) of a new survey. The paper quoted points to Leeds, where for want of proper previous levels a large sum of money expended in the important matter of draining has been absolutely flung away. The corollary, we trust, will not be flung away upon the Bradford council.

THICKNESS OF PARTY WALLS.—At the Birmingham County Court, on the 27th ult., an action was brought to recover 2*l.* 10*s.*, as damages done to a garden by the fall of a party wall, this arising, as was alleged, from the insecure nature of its construction. Mr. Cutts, a respectable surveyor, had inspected the wall, which was, as so frequently occurs, but a 4½-inch erection, and, in his judgment, such walls were too slight for their purpose, however well they might be put together. After hearing, the judge said it was evident the wall was not sufficiently strong. Plaintiff would have a verdict for 30*s.*, damages to garden.

THE DESIGNS ACT EXTENSION BILL.—This Bill has at length been read a third time in the Commons. It has undergone some "amendments," however. On the motion for going into committee, to the surprise no less than the sorrow of some who were present, Mr. Arkwright opposed its progress, and moved its consideration "that day six months." As immediately remarked by Mr. Labouchere, "Of all the members of the House—remembering the illustrious name which the hon. gentleman bore—he was the last from whom he should have expected opposition to a measure for protecting ingenuity in inventions, whether these inventions emanated from a foreigner or an Englishman." "Not so fast," will others doubtless remark: "it was to be expected, from these very antecedents, that one who had benefited so vastly of old by the plunder of other men's brains from the very want of such a protective Act, should desire that a state of things which had worked so well to his own hereditary glory and advantage, should continue unamended." As for ourselves, however, not even a natural indignation at such an opposition from such a quarter will induce us to appropriate so much severity of resentment as our own. Nevertheless, whatever be the faults or shortcomings of the "Designs Act Extension Bill,"—considering its object,—considering the benefits already actually derived from that Act of which

it is but an extension, we do think that it was not for an Arkwright, whichever view we take of the original merits of the personal question, to attempt to obstruct such a measure, more especially after it "had been," as Mr. Labouchere said, "maturely considered in the House of Lords, where, out of all the witnesses who had been examined on the subject, only one witness was opposed to the measure." Poor inventors, it is to be hoped, may now more safely exhibit their cherished inventions in the International Exhibition of Industry and Art. In most cases we trust there is still time, as we always hoped there would be, to do so.

IVY ON BUILDINGS.—A correspondent, "Oxonienis," is anxious to have our opinion on the subject of ivy in its influence on buildings,—whether it be injurious or beneficial. By reference to the volume of *THE BUILDER* for 1847 (pages 319, 379, 391, &c.), it will be seen that this subject has been already mooted in our columns; but there still remains some doubt on the subject. Taking up the question started in *THE BUILDER*, the *Gardener's Chronicle* (as might be almost anticipated) advocates the cause of so ornamental a plant as ivy: so does "a rural dean;" but we should think there cannot be a doubt of the necessity for watchfulness and examination, to prevent the ivy from twining round copings, insinuating itself into joints or cracks, or concealing decay of any description, and so preventing its repair. Otherwise it would appear from the evidence that ivy really protects buildings from damp and decay, and as it is an elegant ornament, all that may really be requisite to guard against its injurious influences would appear to be a thorough examination occasionally, and a pruning of the ivy, or repairing of the wall, where it may be necessary.

MONSTER SHEET OF GLASS.—A large cast-iron plate has just been planed by the Haigh Foundry Company, which is intended for the Sutton Glass Works, to cast a monster sheet of plate-glass for the World's Exhibition. The dimensions are 18 feet 6 inches long, and 10 feet 4 inches broad; the plate itself being three inches thick, with plates to strengthen it underneath.

ASSESSMENT OF GREAT NORTHERN RAILWAY.—On Wednesday in last week, at a meeting of the representative vestry of St. Pancras, Mr. G. W. F. Cook brought up a report of the assessment committee as to the assessment of the Great Northern and Blackwall and West India Dock Junction Railways. The report set forth that, with regard to the Great Northern line and terminus in St. Pancras, they had assessed the buildings, &c., as follows:—Offices, 2,340*l.*; goods department, 3,366*l.*; passenger station, 2,533*l.*; arrival and departure stations, 2,600*l.*; goods sheds, 3,736*l.*; coke and coal depot, 560*l.*; engine-house, 4,800*l.*; locomotive stock for railway, 3,993*l.*; boundary wall, 1,680*l.*; chairs, sleepers, rails, &c., 7,086*l.*; and other items; making a gross total assessment of 34,000*l.*, producing a gross rating of 1,700*l.*, and net 1,530*l.*: thirty-three acres of land, at 30*l.* per acre, 990*l.*; making the total net assessment of the railway to the parish, 2,603*l.* The report was ultimately adopted.

EXHIBITION OF MODERN FRENCH ART IN ENGLAND.—We are informed that arrangements are being made to bring all the works of modern French art now exposed in the Louvre, to this country for exhibition and sale!

MEMORIAL WINDOW.—A stained glass window was last week inserted in the north aisle of the nave of Norwich Cathedral to the memory of the late Professor Smyth. It contains three principal openings, surmounted with tracery. The glass is composed of three canopies in the chief openings, incorporating figures of saints. Beneath are scriptural subjects, viz. The Adoration of the Magi, the Crucifixion, and Christ amongst the Doctors. The tracery above the canopies, is filled with angels with scrolls, musical instruments, &c. &c. Along the bottom of the window runs the inscription. There is a marble slab beneath on which is a more detailed inscription. Mr. Warrington, of London, is the artist.

AMERICAN PATENTS.—A patent has been taken by Mr. John A. Sprague, for an Improved Machine for Excavating and Conveying Earth. "The machine consists of wheels, axles, tongue, and forward bolster, of a common two-horse wagon, the fore and hind axles of which are coupled together by a frame, upon which, near the fore end, is a windlass, consisting of a lower cross timber, and two upright timbers, and an upper cross timber, and an iron shaft, and a rag wheel, and a crank." He claims the combination of the series of elevators with the scoop and a rising and falling earth bed furnished with an apparatus for emptying the same, the whole arranged and acting substantially as described. He also claims a regulator to the scoop attached in the manner and for the purposes specified.—Mr. Alanson Cary has a patent for an Improvement in Machines for Dressing Irregular Forms. "The nature of my invention," he says, "consists in a horizontal bench, in or near the centre of which is a circular table, which is fitted in such a manner to the bench as to be capable of receiving a circular motion: the table carries two slides, placed at right angles, one above the other, the lower one capable of sliding in a line across the circular table, and the upper one sliding in rebates or guides in the lower one at right angles to the direction in which the lower one itself slides: the work to be operated upon is secured by dogs to a plate above the top slide, and by means described, receives such a motion that a fixed point will mark the required pattern on the work: a rotary cutter is suspended on a swinging arm above the work: this is capable of being adjusted to take a cut of the required thickness, and while motion is given to the work in the required direction, it will cut it to the required form." The inventor claims the toothed wheel upon the shaft, arranged so that it is capable of being thrown in gear with either of the racks, in combination with the dog on the slide and the notched projection on the table, by which the slide is locked to or unlocked from the table for the purpose of enabling the wheel to give either a rectilinear motion to the said slide, or a circular motion to the table, as may be required, in the manner and for the purposes substantially as set forth."

PROTECTION OF HOUSE PROPERTY.—The Nottingham and Nottinghamshire Owners' and Agents' Society for the Protection of House Property, on the 27th ult. held their first annual meeting, when a report was read from which it appears that the society has steadily progressed since its formation, its members now representing nearly 7,000 houses, and that its finances are in a healthy state, the benefits far surpassing even what at first was expected. A sum had been lost by the members during the past year, of nearly 100*l*. by parties clandestinely leaving the premises they had occupied; but in no one instance had these parties been able to obtain a tenement belonging to any other member, so that eventually they would find an asylum in the houses of non-members only.

STEAM BOILER EXPLOSIONS.—An apparently safe and simple mode of testing high-pressure boilers is suggested by a correspondent of a Manchester paper:—On a Saturday, after the engine is stopped, fill the boiler to be tested completely full of water, then work the force-pump attached to the engine by hand, loading the safety-valve to one-third more pressure than the boiler is commonly worked at. Any weak part that might be in the boiler would give way, without doing any damage other than pointing out the place wanting repair.—An apparatus to provide an efficient and constant supply of water to boilers has been patented by Mr. Gray, of Glasgow, engineer. It consists of an open iron ten-gallon cistern, placed over the top of the boiler. In the centre is a cylindrical three-gallon vessel, communicating with the interior of the boiler by two pipes, the smaller a steam-pipe, just entering the boiler, but passing to the top of cylinder; the larger one reaching nearly to the bottom of the boiler, but just entering the cylinder. At

the top of each tube is a conical valve opening downwards, and in the bottom of the cylinder is a valve opening upwards, to admit water from the cistern. A lever is jointed on the edge of the cistern, forked to support a tundish, holding about two gallons, and so hung as to empty its contents on descending: on the other end is a weight heavier than the tundish when empty. Water is supplied to the latter by a pipe having a cock and ball float, which regulates the discharge. We have not room to describe the action of this apparatus, but it is said to be economical in cost, and not liable to get out of order.

COMPETITION FOR NEW TOWN-HALL, HEMEL HEMPSTEAD, HERTS.—We are informed that the committee appointed to adjudicate upon the drawings submitted for the above building, have decided upon erecting the design furnished by Mr. George Low, London. The style is Elizabethan.

STATUE FOR TRAFALGAR-SQUARE.—Allow me to suggest that the statue of King George, now deposited in Leicester-square, be placed on the vacant pedestal in Trafalgar-square, the non-occupation of which is unsightly:—the statue would then still remain in St. Martin's parish, of which I subscribe myself—AN EX-CHURCHWARDEN.

THE STATUES IN ST. PAUL'S CHURCH-YARD.—A correspondent calls attention to the state of the four statues at the base of that of Queen Anne, in St. Paul's Church-yard. He says the steps are disjoined, and asks "why should the costly works of the sculptor be so utterly neglected? A pair of old stockings are weekly looked after, and our mothers teach us that a stitch in time saves nine, and we all know that this applies to all stations, circumstances, and things in life. The same hint will apply to the cloisters at Westminster."

MODEL DWELLINGS AT BRIGHTON.—A branch of the metropolitan Association for Improving the Dwellings of the Poor, has been formed at Brighton. Lord Carlisle was in the chair at the numerous meeting at which it was resolved to form the branch association.

GLASS CHIMNEY-PIECES.—At a recent meeting of the Liverpool Architectural and Archaeological Society, Mr. A. Forrest exhibited a glass chimney-piece, 3-inch thick, enamelled with colour and gold. The substitution of glass for marble and other stones in architectural decoration has been already patented by Miss Wallace, of Fitzroy-square, as formerly described in THE BUILDER, and quoted from its columns by many of our contemporaries.

TENDERS

For repairs and alterations of the Borough Market, Southwark:—

H. W. Cooper	£1,398
Curtis	1,882
W. Holmes	1,633
Carter	1,579
Rowland and Evans	1,527
J. Cooper	1,450
T. Roper	1,440
J. and J. Coleman (accepted) ..	1,294
Walker and Soper	1,205

For a range of warehouses, Nottingham. Mr. T. C. Hine, architect, Nottingham. Quantities furnished:—

Pollock and McLennan	£5,926
Farrell and Griffiths	5,224
Atack	5,200
J. and B. Dales	4,819
Hill	4,790
Norman and Booth	4,765
Ferguson	4,575
C. C. and A. Dennett (accepted) ..	4,395
Neale and Wilson (accepted)	4,385

For the erection of a new church at Fairfield, near Liverpool: Mr. Rallex Drown, architect:—

	In Field and Upstand Stone.	In Wooden Stone.	If the Spirit be not Burnt.
G. Myers	£4,236	3,898	0 3,850
A. Dempster	1,170	3,351	10 3,757
T. Holmes	3,850	3,850	0 3,219
J. & W. Jones	3,060	3,550	0 3,300
A. & C. Holmes	3,577	3,151	0 3,197
H. Gates (accepted)	3,530	3,150	0 3,230

For building three pair of semi-detached cottages at Finchley, for Mr. W. Morgan. Mr. Eppy, architect:—
Pleasance £2,375 || Richardson | 2,017 |
| Taylor | 1,795 |
| Seal and Jackson (accepted) | 1,696 |

For a set of wool rooms, &c., Nottingham. Mr. T. C. Hine, architect:—

Pollock and McLennan	£1,367
Atack	1,200
Farrell and Griffiths	1,145
Norman and Booth	1,090
Nicholls	674
Ferguson	1,038
J. and B. Dales	1,035
C. C. and A. Dennett (accepted) ..	1,030

For a new church, to be built at Clapham. Mr. J. Tarring, architect:—

Hutton	£7,338
Holland	7,163
Haynes	7,020
Neaham	6,987
Nicholls	6,736
Higgs	6,617
Piper	6,555
Brass	6,382
Myers	6,369

For two Italian Villas, for Mr. J. C. Hook, A.R.A.; Messrs. Castle and Jayne, architects. Quantities furnished:—

Glenn	£1,692
Henry Burton	1,688
Haynes and Co.	1,410

TO CORRESPONDENTS.

Southwark.—"G. G." suggests that a cheerful and more agreeable aspect should be given by painting to Southwark Bridge.

"Larch Wood."—A correspondent asks for information as to the character of the soil.

"Draining Bedford Level."—Another inquirer wants to know what means are to be used to drain the great Bedford level.

"Senec" (we will see to it), "A. B.", "E. C.", "J. S." (Randall and Saunders, Bath), "C. F. D." (shall hear "Chanticleer" Crow), "Rev. R. C." "Mr. P." "Lord L." "G. H." "P. G. H." "G. W." "T. E." "W. G." "Dr. B." "M. and A. O. C." "S. L. jun." "J. H." (we shall be glad to receive the information), "J. D. P." "R. M." "J. C." "W. S. H. H." (a gallery has not yet been obtained for "The Architectural Exhibition"), "A. S." "A. Sub-scriber." "Something New" (by writing to Munich), "A. Sub-scriber." Carlisle (advice on such data would be mis-leading: employ an architect), "S. K." (we cannot assist), "Messrs. H." "R. B." "M. P." "W. M. and T." "J. E. B. C." "W. M." "Constant Reader" (there is no foundation for the report as to plot of ground, Parliament-street), "J. S." (we are not aware of any further progress), "Rev. F. B. A." (we will send if practicable), "Marinus" (the best advice we can give is—employ a competent architect), "B." Folkestone (there is no general Act on the subject), "I. C. B." "W. P." (if our correspondent refers to the Ordnance Survey of London, the map is not yet published), "G. W. B." "E. B." (there are several theories; but we have not time to refer), "J. E." "H. D. O." (five per cent. usually, unless amount be small, when more may be charged. Expenses may be added), "A. Sadler" (we have often called attention to the matter; justly complained of: repetition would be useless), "The Hand Book to the County Courts," by D. E. Colom-bias, Solicitor, Simpkin, Marshall, and Co. Industrial Investment and Emigration, with an Appendix on Compound Interest, Tontines, &c., by A. Scatchell, M.A. and 2nd edition. J. W. Parker. "Illustrations of Medieval Costumes in England," collected from MSS. by E. A. Day and J. H. Dine, Part II. Bowerth. "A System of Apparatus for the Use of Lectures and Experiments in Mechanical Philosophy," by the Rev. R. Willis, M.A., F.R.S., &c., with three plates. J. W. & Sons, High Holborn, London. "Boulevard central Des Architectes. Bulletin pour l'exercice, 1851." Paris.

"Books and Addresses."—We have not time to point out books or find addresses.

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ADVERTISEMENTS.

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The Builder.

No. CCCCXXVIII.

SATURDAY, APRIL 19, 1851.



LONG bright days may now be looked for, and we repeat the advice we have before given, that our young readers should seize such brief opportunities as occur, and be off with their sketch-books to some of the fine old remnants of the past which stud the country. Health, recreation, and knowledge may all be found thus. For the second of these we are warm advocates: the provision of innocent amusement is of the utmost importance to a state.

"Seek to solace when sadness thee assails.
In dolor long thy life may not endure;
Wherefore of comfort set up all thy sails:
Without Gladness avails no Treasure."

And if you will, however adverse the circumstances and threatening the appearances, you may ever "*smell the rose above the mould*." "All work and no play" does not merely make "Jack a dull boy," but an unhappy one, and sometimes a dangerous.

We had a delightful day, aided by fine weather and a pleasant companion, last week at Ely, which, out of the way as it once was, is now, by means of the Eastern Counties Line, readily accessible. A wander through the cathedral there, or indeed through any of our cathedrals, is full of interest, apart from the tangible beauties it presents; but the mind must be prepared to receive it. "There is a sense of hearing that the vulgar know not, and the voices of the dead breathe soft and frequent to those who can unite the memory with the faith."

The story of Ely is tolerably clear for nearly 1200 years back, when we see Etheldreda, the virgin-wife, founding a religious establishment there, the ruins of which may yet be traced. We have the Danes burning her church in 870, and its re-dedication (after restoration) by Dunstan. Then we have Simeon, in 1081, laying the foundation of a new conventual church; the present cathedral, and carrying on the works till 1093, when he died. Other bishops continued the work till 1189. How well these were done, the nave and transepts bear witness. Of one portion of this Norman work, the south-west transept, we gave an illustration a few weeks ago,* when we called it, rightly, one of the most striking specimens of the architecture of the period that remains to us. Northward, in the first half of the thirteenth century (1235 to 1252), built the presbytery. This man, says Bishop Godwin, was much commended for his house-keeping and liberality to the poor, "which may well seem strange, considering the infinite deals of money spent by him in building of his church and houses. The presbytery of the cathedral church he raised from the very foundation, and built a steeple of wood toward the Galilee at the west end of the church." The presbytery is a magnificent specimen of Early English: the sight of it is worth a journey of a hundred miles. Alan de Walsingham, under Bishop Hotham, at the beginning of the 14th

century, put up the octagon lantern at the junction of the nave and principal transept, the old tower having fallen: and in the next century Alcock and West put up the two chapels which bear their names, and are specimens of the last period of pointed architecture.*

The Lady Chapel, which is peculiarly placed, on the north side of the choir, should on no account be missed by the visitor. It is a truly beautiful specimen of the decorated period, though sadly disfigured: the arcade and stalls around the walls are scarcely to be matched for the beauty of their details, which resemble in several respects those of the north porch of St. Mary, Redcliff, at Bristol.

We have from time to time spoken of the important works in hand at Ely for the restoration of the edifice: we shall take an early opportunity to do so more in detail. Much has been done here at great cost, and more is now going on, including fitting up the organ in a gallery on the north side of the choir (with a new stone staircase up to it), and a carved oak screen at the junction with the transept. Mr. Scott is the architect engaged upon the work, and Rattee is the carver.

Some of the stained glass, by the way, that has been put in is muddy and bad; and the experimental paintings in the south-west transept are perfectly abominable, and will, of course, be removed.

Besides the buildings immediately connected with the cathedral at Ely, are some others (remains of the old conventual arrangements) which are of considerable interest, and at the same time excellent specimens of their respective styles. BISHOP CRAWDEN'S CHAPEL is one of the best of these, and of this we now give an interior view.†

This chapel is a detached building to the south of the cathedral. It had for some time been allowed to remain in a very dilapidated state, but is now, together with the other parts of the cathedral, undergoing a careful restoration—and there are but few specimens of the same date more deserving of preservation. Some time since in giving a view of the screen to Bishop Alcock's chapel, we remarked that the work was too much crowded together: here we have the detail so judiciously arranged that no portion of it is lost. The chapel is about 30 feet in length, by 14 feet in width: it is divided into four bays: the two nearest the east end are occupied by very good two-light windows: the third bay has some splendid tabernacle work, with a small single light in the lower part—and so far the two sides of the building are alike; but the fourth bay, on the south side, is merely a flat wall, with some remains of painting; while, on the north side, the bay is partially occupied by a doorway. The east window is of five lights, with good and somewhat curious tracery in the head: this has been partially filled with painted glass, of very doubtful merit, which has been omitted in the drawing: the piscina and ambry are quite worthy of the other portions. The tile pavement is very excellent, of great variety, and in good preservation. The devices will be easily understood from the drawing, except perhaps the floor to the altar, which has two figures (Adam and Eve) with a tree and the Tempter between them.

Our drawing can only give a general idea of the beauty of this chapel, but the most minute

portions of its excellent and varied details will repay attentive examination.

Alan de Walsingham was Crawden's architect, and commenced the chapel about 1321. It was little known before Mr. Wilkins illustrated it in the *Archæologia* (vol. xiv. p. 105), and even now it is seen but by few.

At the bishop's palace, hard by, Dr. Turton, the present excellent diocesan, has a very interesting collection of pictures; and having looked over these, and tasted at the adjoining hotel some of the noted *eels*, which, in early days, say some, gave a name to the place, we found our way to the station, and so to London.

CAUSES AND CURE OF SMOKY CHIMNEYS.*

The fourth cause of "smoky chimneys" enumerated in our list (see page 68), is that of *deficient capacity of flues*. By the term capacity, as here used, we mean general fitness for the intended purpose, and it therefore includes the questions both of *form* and *size*.

First then as to *form*, of which there are two kinds, which have a direct bearing upon our subject, viz., transverse sectional form, and longitudinal form.

As regards transverse sectional form, there exist ample proofs that the circular form is best, as far as relates to action, inasmuch as it contains the greatest amount of area with the least amount of periphery or outline; and therefore presents the least amount of internal surface to retard the current or "draught" by friction, and it is also the best form for perfect cleansing. The rectangular form of flue however, if properly constructed in all other respects, is sufficiently good for all practical purposes, as regards action; and infinitely superior, as regards economy of space in building, facility of construction, and strength of the wall in which it is constructed.

There is little room for error in the transverse sectional form of chimneys, since either circular, rectangular, or in fact any other form which admits of sufficient area being given, will equally answer the same end. Not so, however, with longitudinal form; and the imperfect action of many chimneys, if properly investigated, might be traced to the want of due attention to this point. It may be laid down as a general rule, that whenever a chimney is made to deviate, in any degree, from a straight line, it is a step taken in a wrong direction; for it is a fact sufficiently established in that branch of physical science which treats of the motion of fluids, that curves, elbows, projections, widenings, and contractions in tubes, retard the passage of fluids through them; and a chimney is a species of tube, and subject to precisely the same conditions, as regards the passage of fluid through it, as a gas-pipe or a water-pipe.

In addition to the obstruction which sharp curves, or projections of any kind, offer to the current or "draught," they also give rise to difficulties in the operation of sweeping, which are frequently the means of wythes being broken away, to the injury of the action of both flues, as explained at page 68. We have known one case in particular, where, on account of an awkward elbow, the chimney had to be swept from the roof; and the brush as frequently passed into and down a chimney of the adjoining house, as down that which was undergoing the operation. Curves in chimneys are, in all cases, most objectionable; and when circumstances render them indispensable, they should be made from as large a radius as their position will admit of.

It frequently occurs that chimneys which are faultless in respect to form, between fire-place and roof, are ruined by the form given to their tops. Zigzag chimney-tops may be seen almost everywhere; and we remember seeing, within the last few months, a stack of three flues, which was built as completely spiral as the blade of a screw-awg. Along with these two erroneous and fantastic methods

* Illustrations of Alcock's Chapel may be found in Vol. VII., p. 150. Exterior of the east end, Vol. V., p. 333.

† See p. 251, in our present number.

* See p. 75, ante.

See p. 212, ante.

of building chimney-tops may be classed nearly the whole genus of metallic addenda which misdirected ingenuity has devised. Were it not that their name is legion, we would have taken pleasure in giving diagrams of the chief of them, and in rendering transparent their fallacy. We must, however, content ourselves with a passing remark that there is but one species of this numerous family that possesses any claim to notice: the rest are all equally as absurd and erroneous in principle as they are outrageous to all rules of architectural symmetry. And even this one—the revolving hood or cow—*is unnecessary, as we will hereafter show; and quite as unsightly as any other of its kindred.*

The size of chimneys, *i. e.*, their transverse sectional area, is a point of equal, or even of greater importance than that of form; and it is therefore most advisable that we clearly understand the nature of its relation to the action of chimneys. As we have already remarked, a chimney is a tube, and is subject to the same physical laws as any other tube used for conveying fluids. Now the flow of fluids through tubes is proportional to the velocity of the fluid and the transverse sectional area of the tube, *i. e.*, if a tube of a given area passes a certain quantity of fluid through it at a given velocity in a given time, and it be required to pass the same quantity of fluid through another tube of only half the area, in the same time, we must increase the velocity of the fluid in a suitable proportion, and the required result will follow. Let us further exemplify this principle by referring to the action of a 9-inch flue, the sectional area of which is 61 square inches; and suppose a current of smoke passing through it at a velocity of 10 feet per second, and carrying off thereby 38.75 cubic feet of smoke per minute: the same flue reduced to an area of 40.5 square inches, would only carry off 19.375 cubic feet per minute at the same velocity of current, *viz.*, 10 feet per second. In order, then, to carry off the former quantity, 38.75 cubic feet per minute, with the reduced area, we must increase the velocity of the current to double its former velocity, *viz.*, to 20 feet per second.

We have practical demonstration of these facts in the case of all chimneys in which an accumulation of carbonaceous matter or soot takes place. For instance, the flue of an ordinary chimney, which we will suppose to be perfect in its action in every respect when quite clear, and capable of carrying off 20 cubic feet of smoke per minute, in course of time becomes virtually reduced in area, by the accumulation of soot, until it is only three-fourths of its original size; and as the velocity of the current or "draught" capable of being generated by the fire, as already explained, remains the same, it follows that only three-fourths of the smoke, *i. e.* 15 cubic feet per minute, can be carried off, and the remaining 5 cubic feet per minute, of course, backs into the room, and the chimney then "smokes for want of sweeping." The sweep is sent for; the area of the chimney is restored to its original proportions by the removal of the soot; and, the velocity of the current still remaining the same, the flue again becomes equal to its task of carrying off the 20 cubic feet per minute.

At page 3, vol. ix., we showed that a long chimney produces naturally, a greater velocity of current or "draught" than a short one, all other things being equal. A long chimney will, therefore, carry off a greater quantity of smoke in a given time than a short one, their sectional areas being the same; and hence we often find that a third-floor chimney "smokes," whilst that of the ground-floor is faultless, although the two may be similar in every respect except their lengths.

The form and size of the fireplace or opening into a chimney constitute a question of such importance as to merit especial consideration. We have seen (page 518, vol. viii.) that the rarefaction of air, which we will here repeat, is the primary cause of the action of chimneys, is produced by the air being brought into contact with the fire; and it must, therefore, be obvious that the closer the air entering a chimney can be brought to the fire the more

perfect will be the rarefaction, and consequently the greater will be the velocity of the current or "draught." We see this fact fully exemplified in the action of air-furnaces—a brassfounder's spit-furnace, for instance—where, in consequence of *all* the air passing into the chimney having first to pass through the fire, rarefaction is produced in the highest degree; and the current or "draught" becomes so rapid and powerful as to be equal in effect to a blast produced by mechanical appliances, as that of a fan-blower, or a pair of smith's bellows.

The form and size, or area, usually given to fireplaces seem almost to have been devised for the purpose of defeating the important operation of rarefaction, by admitting too large a proportion of air that has not been in immediate contact with the fire. The sectional area of the opening of an ordinary fireplace as at present constructed is generally from eight to ten times that of the chimney; and the top of the opening is usually so far distant from the fire that the air enters at that point at a temperature not much above that of the atmosphere; whereas it ought not to be less than from 100 deg. to 150 deg. Fahrenheit.

In order more fully to establish the importance of the form and size of fireplaces in relation to the question of rarefaction, we will compare the effects of different sized openings by aid of the diagrams, fig. 14, where A and B

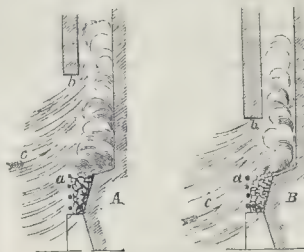


Fig. 14.

represent two fireplaces exactly similar in every respect excepting the distance from the top of the grate at *a* to the underside of the arch at *b*, that of A being nearly double the distance of the other. Suppose *c* and *c'* to represent the currents of atmospheric air flowing into the chimney, and it will at once be seen that a greater quantity of cold air would pass into A than into B; and therefore the rarefaction in A would be the least perfect of the two. But if we attach a plate or board to the front of the fireplace B as at C, fig. 15, so as to cover

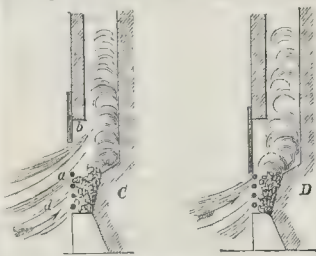


Fig. 15.

half the opening *a b*, it will readily be perceived that the proportion of the current of cold air *d* passing the fire without being raised in temperature, would be smaller than in either of the previous cases, and the rarefaction would be proportionally more perfect. By closing the opening altogether, as at D, the current of air would be obliged to pass through the fire, and it would therefore become rarefied to the highest degree that this form of firegrate is capable of. This however, is unnecessary, as the degree of rarefaction produced would involve a consumption of fuel which, for ordinary purposes, would be excessive. The experiment can be tried very simply, and with little trouble, by placing any ordinary piece of deal board over the opening; and it serves to

establish the truth of the following proposition, *viz.* the greater the area of the opening of the fireplace or firegrate the more likelihood is there of its chimney "smoking" for want of sufficient current or "draught," and vice versa. TBA.

A DESCRIPTION OF THE ANTIQUITIES OF POLA, IN ISTRIA.*

THE Paper on the Architectural Remains of the Roman Provinces, read at the commencement of this Session, recommends the examination of some of the Roman provincial towns in addition to that of the eternal city; and it reminds us in the sequel, that in Dalmatia and Istria, among other provinces of the empire, monuments of much interest are to be found.

It is to the remains of a city in the last-named province, that attention is now invited; and a short notice of the town, its history, and its monuments, may, perhaps, be acceptable, though the subject is without pretensions to novelty, and has already been fully treated by many well-known architectural writers. As it is, however, only recently that facility of access to the district in which these remains are situated, has been afforded by the establishment of Steam Navigation along the coasts of the Adriatic, many now present may not have visited Pola in Istria, and to them the opportunity is afforded of obtaining a correct idea of these antiquities, and of judging how far they are worthy of examination among the numerous other objects of interest, presented in the course of foreign travel.

The town of Pola is situated at the head of a deep and capacious land-locked bay, near the southern extremity of the Istrian peninsula, in a position to which in ancient times it was greatly indebted for its maritime importance, and to which it still owes its imposing appearance when viewed from the harbour. On entering the bay, says Allason, the magnificent amphitheatres burst upon our view. Taken in all its circumstances, it is an object which has no rival among those remains of former times which attract the researches of the antiquarian traveller.

Like most places which have any claims to antiquity, its history commences in the regions of fable, and claims for its founders the emissaries despatched by Æetes in search of Medea, after her flight from Colchis. Under this tradition may perhaps be typified the migration of a Thracian race from a peninsula called Istria, at the mouths of the Danube, who may have given to their new location the name which previously designated the land of their birth.

The natural advantages of the port may have induced the Istrians to build Pola: at any rate, the inhabitants soon became adventurous navigators, but at the same time addicted to piratical enterprises, for which, and their innate ferocity, they rendered themselves but too notorious. Their lawless proceedings brought them into collision with the Romans about the year 180 B.C., by whom Istria was ultimately subjugated, and a colony founded in Pola to resist the attacks of the Liburnians and Dalmatians. Its maritime importance was meanwhile not neglected, and a lively intercourse was kept up by sea with Ancona, Ravenna, and the rising town of Aquileia. Having taken the republican side in the civil war subsequent on the death of Cæsar, it was besieged and dismantled by Augustus, 42 B.C., and afterwards bestowed as a reward on his soldiers after the battle of Philippi, when it was restored under the name of Julia Pietas. The fortunate position of the town on the grand lines of communication between Rome, Aquileia, Constantinople, and the different parts of the empire, added to the natural advantages of its soil and climate, advanced it to a high state of prosperity in the time of the Antonines, 161—172 of our era. Taking the capacity of the amphitheatre to represent the amount of the population, we may conclude that Pola contained 25,000 inhabitants in the first century of the Christian era; but as its

*Read by Mr. C. C. Nelson, Fellow, at the Ordinary Meeting of the Institute of Architects, April 7.

greatest prosperity occurred at a later period, that number may be increased to 30,000, without exceeding the amount which the apparent extent of the city justifies. In the times of its splendour, Pola was a favourite and celebrated place of retirement for the victims of reverses, either in war or in court favour.

Having escaped the incursions of the barbarians, and the ravages of Attila, the city continued to flourish till the termination of the Western Empire. A.D. 493 it became subject to the Goths under Theodoric: from them Belisarius obtained possession of it for the Byzantine emperor, A.D. 539; but its Roman institutions remained undisturbed, and Ravenna, the seat of the exarchate, having taken the place of the ruined Aquileia, Pola reaped the advantage of its relations with Italy. A.D. 789, under the Italian kingdom of Charlemagne, it became the residence of the dukes of Istria. Soon after this period, accounts of internal contentions, pestilence, and famine, and the repeated attacks and spoliation of the Venetians, the Pisans, and the Genoese, fill the pages of its history. A.D. 1271, a descendant of the Roman family Sergi took possession of the castle, and assumed the name of Castropola; but A.D. 1331 Pola was surrendered in perpetuity to the Venetians, who were, however, subsequently entirely discomfited by the Genoese in a naval action off the mouth of the harbour, A.D. 1379, when the latter demolished the town, and carried off the bronze gates of the Duomo, with other plunder, to Genoa. In the lapse of years the town was gradually repopulated, though it still continued to suffer many vicissitudes from plague and the loss of its commerce. A.D. 1630, the Venetian citadel was erected on the site of the ancient capitol and of the mediæval castle of Castropola. In the next year occurred the last visitation of plague, which reduced the town to a state of the greatest desolation. On the dissolution of the Venetian republic, A.D. 1797, it fell under the dominion of Austria, at which time the level portion of the ancient city only was occupied by hardly 600 inhabitants. A.D. 1805, the French annexed it to their newly-formed kingdom of Italy, and subsequently, A.D. 1810, to France. The year 1813 is the date of its restoration to the dominion of Austria.

It would thus appear that the epoch of the destruction of ancient Pola must be placed in the fourteenth century, when the repeated assaults and capitulations of the city occasioned the spoliation of the buildings to supply materials for repairing the walls. A French engineer, named Deville, is said to have built the fortress, erected in 1630, with the stone entirely obtained from the theatre; but the first act of spoliation would appear to have been committed on that building long before his time. The fortifications hastily thrown up in 1806 with the material nearest at hand, the poverty of the inhabitants, and the plunder of precious marbles committed by strangers, have, in modern times, further contributed to the destruction of the ancient monuments. Allason reckoned the number of the inhabitants at 700 when he visited Pola, soon after the departure of the French; at present it is said to amount to 1,300 souls.

In addition to the description already quoted of the striking appearance which meets the eye of the traveller on entering the harbour, it may be briefly stated that the present town is built on the slope of a hill, crowned by the Venetian fortress; and that the amphitheatre, without the town, has all the effect in the distance of a perfect and uninjured building. On landing at the port, and ascending to the town, the first object claiming attention is the Corinthian temple erected by the colony, 19 B.C., in honour of Rome and Augustus. This temple is prostyle, and consists of a cella of small dimensions (31 ft. 6 in. by 23 ft. 3 in. internally), having antæ at the external angles, a pronaos, and a pedimented portico of four columns in front, with two columns on the flanks, the angle column being reckoned twice. The external dimensions taken on the entablature over the columns are about 56 ft. long by 30 ft. wide.

The shafts of the columns are formed of

variegated Istrian marble, resembling that called Cipollino. The capitals and bases are highly enriched, the latter being supported on a stylobate, about 5 feet in height, which is continued unbroken on the sides and back of the temple. The shafts of the columns are plain, but those of the antæ have five flutings on each face. The walls of the cella, and all other parts of the exterior, with the exception of the shafts, are of white marble. The entablature retains proofs of the highly enriched state in which this part of the building was originally executed, and the circular sunk panel in the tympanum of the pediment is supposed to have contained a bronze bust in relief, or some other metallic embellishment. The style of the whole appears to justify the correctness of the date assigned to it—that of the Augustan era. Numerous sculptured fragments are to be seen in the Piazza in which the temple is situated. This part of the town must have undergone great changes since the date of Mr. Allason's views, which convey the idea of the temple being placed in a kind of ruined garden, rather than on the side of the public piazza; and we may thus learn to estimate the state of desolation which then existed in the heart of this once populous town.

Parallel to the front of this temple, at the distance of about 70 feet, stood a similar edifice, of which the back portion of the cella alone remains: to this the name of the temple of Diana has been commonly assigned, but without any substantial reason. The temple of Augustus, after suffering from the effects of fire and neglect, was ultimately converted into a public granary, to which circumstance it owes its present state of preservation, which will be further secured by the more appropriate use to which it is now assigned, as a museum to preserve marble fragments and other antiquities.

Adjoining the temple of Diana the remains of the mediæval palazzo publico, built A.D. 1300, by the Castropola family; the Baptistery, facing the Duomo, a Byzantine work, built on the plan of a Greek cross; and the Duomo itself, erected in the latter part of the fifteenth century, claim due attention. An inscription, recording the erection of a former church in the year 857, which appears on the wall of the present building, misled the celebrated Agincourt, who had not visited it in person, into the erroneous statement that this church is a type of the sacred architecture of Italy in the ninth century. In the Campanile adjacent, which was built in the latter part of the last century, numerous inscribed and sculptured stones are inserted.

Quitting the town, on the way to the amphitheatre, we observe the remains of a nymphaeum, now covered over and used as a public washing cistern: it contains an abundant source of water, surrounded by semi-circular steps of Roman construction, after the fashion of a bath. The amphitheatre is situated at a short distance from the town, close upon the shore at the head of the bay. It is supposed to have been erected in the latter part of the first century of the Christian era, probably under the auspices of the Emperor Vespasian; though one author, Stancovich, assigns to it a date previous to the reign of Augustus, an opinion which is at variance with the received account, that previous to his time Rome itself had only amphitheatres of wood. The building is placed, like the theatres of the ancients, on the side of a hill, a position which has enabled the architect to economise the construction of a very considerable portion of the artificial substructure, usually required in forming the seats for the spectators. It will be seen from the transverse section of the building, that while the half of the exterior which is next the shore consists of a basement, supporting two tiers of arcades and an attic, the other half on the higher level has only one tier of arcades and the attic. Though such a position was generally selected for the theatre, the instances are very rare in which it was adopted for the amphitheatre.

So perfect does this building appear at a distance, very few stones of the external wall having been removed, that the total absence of all the usual internal arrangements and sub-

structure, with a few trifling exceptions, which becomes visible on entering, is very striking: in fact the mere shell or outer wall alone remains, and so complete is the work of destruction internally, that for many years it was the received opinion, that all the internal fittings to accommodate 20,000 spectators were entirely of wood. Excavations by Carli, in the years 1750—1788, by the French in 1810, by the Austrians in 1816—1821, and more careful researches, have brought to light proofs, that all the conveniences and appliances usually found in the Roman amphitheatres at Rome, Verona, and elsewhere, were at one time to be seen constructed of stone or marble in the present building. Drawings and a detailed description of the seats which have been found, are given in the book of the Canonico Stancovich, and Canina's work (*Parte Romana*) presents a parallel of the whole edifice with others of like kind, in which it is restored in conformity with modern opinions and recent discoveries; but this author has committed an error in representing two tiers of arcades on both sides of the building in the transverse section.

Previous to the excavations by Carli, many eminent travellers and authors, misled by the position of the building on the side of the hill, and having no assistance in the shape of apparent internal fittings, by which to form a correct opinion, supposed that it was a theatre, of which the portion at the higher level formed the *auditorium*, and the lower part, with the additional arcade and basement, the usual fixed scene. Martire di Angera, in 1501, fell into this mistake, which was afterwards adopted by Maffei, in 1728, till, finding difficulties in reconciling his hypothesis with the existing remains, and knowing that an undoubted theatre actually stood in the immediate vicinity, he was induced to regard them as those of a magnificent palace.

The plan of the amphitheatre is elliptical, the longer axis measuring 436 and the shorter one 346 feet. The exterior wall, which alone remains, is divided into 72 arcades, of which the two forming the main approaches at each end of the longer axis, are wider than the others. The four projections, each occupying the width of two arches and three piers, constitute another peculiarity in the external elevation, into which they are at intervals introduced, and have been the origin of further mistake with early writers. Serlio, 1551, believing the fittings to have been of wood, took them for buttresses to the shell of the fabric. Maffei considered them part of the scenic decoration of the theatre, forgetting that they are hidden from view on the inside of the building. The received opinion now is, that they contained stairs, giving access to the upper parts of the building which were assigned to the lowest classes of the spectators, and to the terrace roof, on which the men appointed to manage the velarium, or awning, were stationed.

The construction of these stairs is detailed in the fourth volume of Stuart and Revett's *Antiquities*. The access to the other portions of the interior are considered to have been similar to those adopted in the other amphitheatres, with such modifications as the peculiar position on the slope of the hill rendered necessary.

The general arrangement and subdivisions of the seats, the corridors, entrances, the arena, &c. in the Roman amphitheatres, is too familiar to require a lengthened notice, and the work by Canani, already mentioned, may be referred to with advantage for any further information on the subject. The marble seats of this building, which are now preserved in the Museum at Pola, have names and numbers inscribed on them, with divisional lines, which give about fifteen inches in width to each sitting.

From the peculiar position of the building, great care was necessary to provide ample means to convey off the heavy rains, which, rushing down on it from the impending superior slope might, when added to the quantity falling over the whole surface of the interior, flood not only the arena, but also the galleries and corridors. All due precautions

seem to have been taken, by constructing a heading drain to receive the water from the hill on the outside of the building at the highest level: this drain communicated by means of channels, which also carried off the water from the upper circles, with a drain next the podium of the arena: this latter drain received also the internal water, and conveyed the whole by subsidiary channels to a main drain, which communicated at once with the sea-shore. The rain-water from the main cornice outside was discharged at once through the apertures formed in the cornice at certain intervals.

The requisite public conveniences seem to have been placed in proper positions in the corridor, with smaller conduits leading from them to the larger drains.

Stancovich gives a calculation of the quantity of water which it might have been necessary to convey off at one time, and this appears to be so considerable, as to produce the consideration, whether a large excavation found in the centre of the arena might not have been intended to receive the rush of water, and to prevent the overflow of the drains by the quantity suddenly poured into them. It is believed that the main drain to the shore is immediately connected with this excavation. In this excavated space there are piers, both square and round, which it is supposed supported the floor of the arena. Naumachia would hardly have been introduced into an amphitheatre situated on the shore of a land-locked bay, which would have afforded the best natural basin to receive the vessels destined for the mimic combat. But the exact destination of the above-named excavated space, and whether it was, perhaps, intended to receive the beasts placed in cages, as in the Flavian amphitheatre, are still matters for consideration.

To convey an idea of the comparative size and capacity of this amphitheatre, it may be stated that the dimensions of the Coliseum are stated to be 626 by 517 feet, with accommodation for 87,000 spectators sitting, and 20,000 additional standing; of the amphitheatre at Verona, 506 by 405 feet; of the amphitheatre at Nîmes, 437 by 332 feet, with accommodation for 24,200 spectators sitting; of the amphitheatre at Pola, 436 by 546, with accommodation for 26,000 spectators sitting, and 4,000 additional standing.

But the number of spectators here given seems to have been calculated upon a somewhat inadequate allowance of space to each person; and Maffei, allowing 1 ft. 6 in. to each sitting, supposes the capacity of the amphitheatre at Verona, the next in size to that at Rome, to have been not more than sufficient for 22,000 spectators sitting.

The details contained in the fourth volume of Stuart and Revett's *Antiquities* are so ample, as to render it unnecessary to do more than to refer to them for more intimate acquaintance with the style and peculiarities of this building. It may, however, be permitted to observe that, in many respects, the design and execution hardly equal the goodness of the material. It would appear, however, that the Romans, in building their amphitheatres, seem to have studied rather the general effect to be produced by the mass, than to have attended to high finish or refinement in the detail; and it must also be borne in mind, that the building under consideration is the work of an age some 150 years posterior to the Augustan era.

An inscription confiding the building to a *Venetian* senator, which appears on the walls, was occasioned, it is said, by a proposition seriously made to batter down the building with cannon—which was fortunately defeated by the urgent representations made by the citizens to the Venetian senate.

In respect to situation, this building has a decided advantage over the other Roman amphitheatres, and the drawings now exhibited show that it is so well placed in connection with the accessories to a well-conceived composition—the whole being, considered as a picture,—that the architect may be supposed to have had something beyond mere economy of labour and materials in view when, like the designer of the Sicilian theatre at Taormina,

he placed his building in so striking and picturesque a position.*

SOME OF THE IMPEDIMENTS TO THE ADVANCEMENT OF ARCHITECTURE.†

THAT the position at present held by architecture is not that most agreeable to its professors, most of them will readily concede, though upon the causes of that position I do not look for the same unanimity. Many will be disposed to think that the fault lies wholly with the public, and will descant at length upon the coarsely utilitarian and mercenary tastes of the day, and the absence of any refined esthetic cultivation; and they will forbid the indulgence in brighter anticipations until the Greek Kalends, if, indeed, they do not positively affirm that the golden age of architecture is altogether past.

But I am not disposed quietly to sit down under so depressing a conclusion, and one which I feel is likely to be as unjust towards the public as it is calculated to prove injurious to the proper cultivation and further development of the art we have adopted. I fear that the words "further development" will be received by some with a species of quiet wonder that any one should be found indulging in a belief so utopian as that architecture is capable of further development. Be that as it may, it cannot be injurious for me to attempt to distinguish how much of the present condition of architecture is due to the profession, and how much to the public.

And as in the observations I am about to offer I shall adopt the barrister's privilege, and indulge in considerable freedom of remark, I wish it to be distinctly understood that I do not adopt the barrister's license—that I make no personal allusions,—but speak only of principles and conduct, without reference to the persons by whom they are supported.

When urging the claims of our profession to courteous and respectful treatment, such as is usually accorded to the legal and medical professions, I have been told that such claims would be valid if admission to its practice were guarded by the ordeal of an examination; but that so long as it is open to any comer or goer, be he builder or tailor, cobbler or ship-broker, its members must submit to the unworthy treatment at present too frequently meted to them. I am sure, for the reason assigned, that the gentleman who thus hypothetically admitted the claims to courteous and equitable consideration, quite misunderstood the advantages to be secured by an examination; but still I think that this suggestion, which has been frequently made, is worthy of more consideration than it has yet received.

The esthetic elements of architecture are too subtle to be submitted to the rude analysis of question and answer, especially as we have no standard by which the student's conceptions of beauty may be adjusted; but his scientific and business-like talents and experience are as easily determined in architecture as in medicine or law, or in the departments of learning at a university. Aspirants to the ministry in the church are examined upon their attainments in the various branches of learning required in their sacred calling; but no one attempts to gauge the depth of their piety, the extent of their charity, the strength of their fortitude, the earnestness of their self-denial and self-devotion, without the possession of which qualities their office sinks from a position the most sacred to that most profane. And so in architecture: there is no difficulty in testing mathematical acquirement, the knowledge of the strength and stress of materials, or the rules of proportion; the amount of ecclesiastical or archaeological lore; and the capacity for devising the most convenient arrangement of limited space; or of meeting the accidental requirements of peculiar localities; though it is hopeless to determine how far the student is suited to become a minister of beauty, an exponent of that divine sympathy which knits into perfect accord the most cultivated minds of every

age. But in the absence of an examination much may be done towards impressing the public with a sense of the claims of our profession to respectful treatment by the personal conduct of each practitioner. No man can long pursue an independent and upright course without earning the respectful regard of most of those who come into communication with him; and if every architect would steadily pursue such a course, the respect accorded to each would be gradually extended to all. At present, I fear that the eagerness of professional rivalry too frequently induces a forgetfulness of that high-minded chivalry which should animate all who devote themselves to the ministry of the beautiful; who aspire, however humble their talents or opportunities may be, to emulate the noble efforts of their brilliant predecessors. We look not for highmindedness from the sordid man; for sublimity or nobility from the ignoble and mean.

The management of public competitions is frequently adduced as evidence of the universally low appreciation of architecture; but I rather regard it as indicating the absence of self-respect on the part of the profession. If a man makes a purchase of any kind, he generally has submitted to him a variety of patterns or designs from which to make his selection. That there is great pleasure in the exercise of choice is proved by the enormous time which ladies consume in shopping, gentlemen at the wine-merchant's, and both at the silversmith's, upholsterer's, or paper-hanger's.

Now, as the public are allowed so much choice when only spending a small sum, they look for at least as much where the outlay is so serious as in building operations; and I am not sure that when a man first employs an architect, he has not a vague sensation of surprise that he cannot inspect several yards of designs, and have any that he likes cut off to order; but, at any rate, he is quite determined to have a choice in so weighty an affair as a building. The lady's dress may be irreparably torn at the first ball, and the wine unmistakably corked when decanted, but the house will probably endure for many generations: if deliberation be required in the choice of the former, whose interest is so temporary, how much should it be exercised in the more enduring. It is also to be remembered that no specific charge is made by the tradesman, however extensive the choice, or whatever trouble may be given; but though only one architect be employed to prepare a variety of designs to order, he will require some remuneration for his trouble; and though the amount may be extremely inadequate in his own estimation, his employer will probably have a very different opinion. It was a happy thought, therefore, that of inviting a number of architects to compete for a premium, the amount of which should be very much less than the usual professional charge; for thus not only is money saved, but time also; and a greater variety of choice is secured, for the designs of fifty architects will exhibit more variety than fifty designs by one.

Let us take a case by way of illustration, and see how "competitions" injure the profession. A committee is appointed to obtain designs for a building which is to cost, complete, say 6,000*l*. If one architect be employed, his charge for a design, working drawings, specification, and contractor's estimate would be 2*l* per cent. or 150*l*. But if, instead of going to one architect, the committee advertise for designs, and invite the profession at large to compete for a premium of 50*l*., they are likely to obtain fifty designs, with *bona fide* estimates (or such as profess to be so), for the 50*l*.; in other words, they have a very much more varied choice of designs for one-third of the regular cost; and, after all, can confide the execution of the work to some favoured practitioner, who will readily consent to have his 5 per cent. mulcted of the 50*l*.; and if the committee manage well, they will very likely obtain a larger discount off the commission.

Now, what have the committee done? In what manner have they acted? Why, they are shrewd men of business, who know how to get twenty shillings' worth for a pound. Argue

* To be continued.

† Read by Mr. Boulton at the Liverpool Architectural and Archaeological Society, April 2.

chitects, perhaps, will consider them illiberal, mercenary, and deficient in a proper appreciation of the high office of art; but people in general will say that the committee are quite right to get as much as they can for their money; and the architects will again say that this is only additional evidence of the widespread deficiency of all esthetic feeling. To this general accusation I venture to take exceptions: it is not the committee or the public who are principally in error, but the profession. So long as architects hold themselves and their art so very cheaply, that they will not only rush into any public competition, and embarrass the committee with a surfeit of choice, but will demean themselves so far as to intrigue for permission to submit a design, even though it be known that an architect is already in consultation, they should not be surprised if they are treated with some of the contempt such mean and paltry conduct deserves. If we do not respect ourselves and each other, and act towards each other with the courtesy such a feeling induces, we cannot be surprised if the public follow the example afforded by architects, and are deficient in their respectful treatment of the profession.

Let us look at competitions in another view. According to the *hypothesis* of architects, all the public are ignorant of architecture, particularly building committees; and there never was a competition in which the selection was made strictly according to the merits of the design, or the conditions laid down by the committee in their instructions: consequently there is no use in engaging in a competition without the advantage of a friend at court. According to the *practice* of architects, competitions are such fine opportunities for achieving distinction, it is quite worth while to devote a considerable amount of time and money, in order to obtain admission into the lists; and the amount of talent each competitor possesses is so overwhelming, that he is quite certain of taking the judgment of the committee (although they are hypothetically unequal to a judgment), and that, consequently, the committee are most impartial and competent. And so long as the profession offer such practical evidence of their faith in committees, can we wonder if committees and the public adopt a testimony so flattering to their self-love? It matters not to these gentlemen that the fifty designs have cost, at a low estimate, 500*l.* actually expended out of the pockets of the profession: that is no concern of theirs: if architects like to engage in speculations of this kind, and the public benefit by the monomania, it is likely that the public will forego the advantage? If we were in similar circumstances, should we act differently?

Various suggestions have at times been made for placing competitions on a basis of greater equity, but I do not think that the system is capable of any such amendment: it is radically bad, and should be abolished altogether. Experience has so satisfied me of the general incapacity of committees to select the best design from any number that may be submitted, that I carefully avoid engaging in competitions except under very peculiar circumstances. Were designs sent in with the proper name of each competitor legibly affixed thereto, and publicly exhibited before selection, the opportunity for a public introduction might yield some consolation for disappointment, and redeem labour and money from utter loss. But whilst the award is made by a synd pro verbiably irresponsible, who in their corporate capacity are troubled with no tenderness of conscience, not even with a sense of honour, whilst the names of competitors are unknown, or are only revealed through the indiscretion of an honorary secretary, and whilst such repeated attempts are made to lower the respectability of the profession, and reduce the sufficiently low scale of remuneration, I consider that all who so compete betray the best interests of the whole body, and act injuriously each for his own interest.

The system of architectural competitions is entirely without analogy in any other profession: it is so very peculiar "none but itself can be its parallel." If a man be at death's

door, be the disease under which he is sinking ever so singular, and the danger ever so imminent, he does not invite the doctors to a competition, and offer a premium of 10*l.* or 20*l.* for the best prescription; but he has a consultation of two or three, or perhaps half a dozen of his own, or his friends' selection, pays each his proper fee, and then lives or dies as it may happen.

If an attorney have a cause in Chancery or any other court (of course, if he be a fortunate man it will be in the *former*), he does not think of offering 5*l.* or 50*l.* for the best opinion, but, according to the nature of the case, he chooses his counsel, gets the opinion, pays for it, and enters it in his ledger to the debit of his client. He allows no considerations of the difficulties to be encountered by young and unknown barristers to interfere with that routine which experience has shown to be the best for all the parties concerned; but leaves Mr. Briefless and Mr. Done-up to bide their time. So in the church and the army and navy: in none of these are there competitions like those to which architects are liable: the ordinary spirit of competition which pervades all businesses of court influences these: the church has its simony, and the army its purchased promotions; but there are the usual accompaniments of connexions and money. But architectural competitions are *sui generis*: their best plea (professionally speaking), that of affording openings to young men of talent, who would otherwise "bloom unseen, and waste their fragrance on the desert air;" and all that nonsense, I believe to be entirely fallacious. In the first place, I never knew of an architectural competition in which the selection was made in strict accordance with the conditions prescribed, or in which there were not strong grounds for suspecting the existence of secret influence; unless there be exceptions in the St. George's Hall and Assize Courts competitions in this town; but these exceptions prove the rule. It is seldom that the business is conducted in so barefaced a manner as at the Ipswich grammar school; but generally speaking, the successful man has some friend or Scotch cousin on the committee, to whose good offices he is indebted for success; clearly showing that it is not the *friendless* young man who succeeds, but he who has interest, and for him the competition may be a successful blind.

I believe that, generally speaking, architects begin to practise at too early an age. It not unfrequently happens that shortly after the expiration of his articles, the tyro takes an office, paints up his name, hires a boy, and then sits down to wait for business. Who can wonder if he finds the public chary of their faith in his great abilities? I am sure I have no wish to under-rate them, but fear they are unsupported by experience, that *pabulum vite* of success. I have no doubt that he is a very competent draughtsman, particularly in ecclesiastical architecture; that he can make good caricatures and illustrations; copy a specification, though unable to write one, and square dimensions with accuracy and despatch. But these acquirements, manifold though they be, and the results of five or six years' pupillage, do not make an architect,—they scarcely constitute the undeveloped rudiments of one.

The fact is, we want schools of architecture, offices in which the principal has the ambition not only to accumulate money, to make a lucrative business, but to practise architecture, and educate architects; and to accomplish the latter it is manifest that he must offer his pupils and assistants adequate inducement, pecuniary and otherwise, that they may stay with him; but this I fear is very far from the usual practice (I mean in London and throughout the country): architects, though professors of a *liberal* art, screw their assistants just as much as any merchant or tradesman screws his; consequently, the number of practising architects increases in a ratio much greater than the amount of business to be shared amongst them; and as drowning men catch at straws, many of them jump at a competition, or anything else which gives a glimmer of business. Unfortunately their conduct reacts upon older practitioners; and so altogether the public

form a very disrespectful, not to say contemptuous, opinion of the profession.

Now, in the high and palmy days of art, either in Greece or Italy, different eminent masters founded or adopted various schools, each practising its own peculiar style, and each with its own recognised head, who had his full staff of assistants; and as these would necessarily vary in talent and experience, the division of labour,—that prime secret of pre-eminence in every pursuit,—was more readily attained than in the present day, when every architect is expected to be an admirable Crichton, "a perfect monster, which the world ne'er saw;" not only thoroughly acquainted with all the fine arts in theory and general effects, but perfectly grounded in all their respective details: of knowledge more extended than was required by Vitruvius; prepared to design in every style which has ever prevailed "from Indus to the pole," whether the edifice be a series of wine-vaults, like the rock-temples of Ellora,—a palace of industry, after the temple of Karnak,—a refreshment saloon, like a Chinese pavilion,—or a Swiss cottage in the fens of Lincolnshire: to say nothing of churches, strictly ecclesiastical; club-houses, and offices *à la renaissance*; castellated gables, and Grecian court-houses. Now it must be manifest, and that without depreciating the talent of the present race of professional men, that the architect of past time, who confined himself to the development of one style, giving to its rudimentary forms the expressions which naturally sprang from idiosyncrasy or circumstances, would probably attain a higher reach of excellence in the particular school to which he confined himself; and having a good staff of competent assistants, he would be able to supervise a much greater extent and variety of work than if he were embarrassed with all the details of each separate building; and these assistants, by changing their engagements from time to time, would be able to study that different character of every school, until they had adopted some one of those existing, or had acquired materials from which to develop a new style.

I see no force in the argument, sometimes used, that the position of the modern architect is rendered difficult from the variety of styles now existent. I do not think that the Freemasons experienced this difficulty. When Lalys, who was architect to Neath Abbey and Henry I., practised architecture after his return from the Holy Land, I find no record of his ever building an Egyptian Hall like that in Piccadilly; or that he put an obelisk instead of a spire on a church tower; and although he and other mediæval architects must have seen or heard of the works of ancient Rome, if not of those of ancient Greece, they did not attempt to revive an effete style, but, satisfied of its unsuitability to time and place, they contented themselves with pursuing the track commenced by their ancestors, and you know to what grand and beautiful results that track led those by whom it was steadily, and through centuries, pursued!*

THE PORTLAND GALLERY, REGENT-STREET.

THE private view of the exhibition of the "National Institution of Fine Arts," on the 12th inst. was numerous and well attended: a crowd filled every room, and comprised many eminent as well as notorious persons: artists, literary men, pretty women, priests, prelates, and peers, were singularly mixed; as our readers will guess, when we say that at one moment the Bishop of London, Cardinal Wiseman, and Father Gavazzi were standing shoulder to shoulder!

We notice with great pleasure the steady progress of this institution, and congratulate the members on the fair promise given that their exhibition will become one of real national interest, and only second in importance to that of the Royal Academy.

The increasing difficulty of procuring a favourable position on the walls of the Academy, or of the contemporary societies, will doubtless induce many rising members of

* To be continued.

the profession to take advantage of the opportunity to have their performances properly seen, which is afforded by the new institution, so that an augmentation of excellence may be anticipated. In the present exhibition there are many good and few really bad pictures.

Mr. R. S. Lauder, R.S.A. is very prominent: no one understands better than he does the theory and practical resources of colour. The free use of the "chromatic scale," rendered subservient by his knowledge of the value of middle tone, singularizes him wherever present. His (61) "Christ walking on the sea" is, however, less remarkable for this than for the simple and religious feeling with which it has been conceived. All must admire the spiritual and grand expression of the head, the quiet majestic position, and the extremely clever management of the light. It is a fine picture, and can scarcely be viewed without emotion.

(194), "Christ denied by Peter" (by the same artist), is more remarkable for its fine colour and management of light and shade: the reflection from the fire, on which all the light depends, is singularly truthful. We are not quite satisfied with the expression of the principal figure: less of rebuke and physical suffering, and more of dignified sorrow, would better accord with the text. Still as a work of art it deserves a high place. (281), "John the Baptist in the Wilderness," is as beautifully, though more carelessly painted. (256), A graceful embodiment of Tennyson's vagarie, "The Lady of Shalott," is admirable for all the qualities that signalize his style, and helps to make this member's contributions an exhibition in themselves.

Mr. J. E. Lauder, R.S.A. has produced a vigorously painted illustration of "The Edict of Leo the Iconoclast" (43), a fine picture, but a little disagreeable in colour. He also contributes (505), "The Widow," a loosely, but cleverly, painted Interior, and several works of minor importance.

(32), "Destruction of Pompeii and Herculaneum," by L. W. Desanges, belongs to the Martin and Danby school. It is a little incomprehensible, but evinces both ambition and talent. We like him better in his more recognised style. (1), "Corinna, the Lyric Muse," (55), "The Favourite," (157), "A Study," and several portraits freely and gracefully painted, with now and then an unreasonably strong commingling of lamp and moonlight, assist the collection, but are scarcely up to what he can do.

An extravaganza by a P. R. B. (177), an "Incident in the Life of St. Elizabeth, of Hungary," by J. Collinson, which needs a quotation in the catalogue, shews many good points, obscured by studied ugliness, and furnishes another instance of painstaking mistaken enthusiasm. The interior of the Cathedral, the pavement, with its brasses and other separate portions well painted, are spoilt by the introduction of a number of meaningless hideous dolls, as far from nature as much of the picture is from art. The thought and earnestness shown in the work, however, save it from condemnation. In another specimen of the school (53) "The Banishment of Hamlet," all redeeming qualities have been studiously and very efficiently discarded.—(2), "The Death of the venerable Bede," by R. Burehett, is an unpleasant subject, but has something in its execution that promises good things.

(21), "The Swing," W. Underhill, a Woolmerish interpretation of Reynolds. The happy childish glee of the occupier of the swing is successfully life-like; but the colour throughout, more especially in the flesh tones, is too violent. With careful constraint over a striking predilection for this dangerous indulgence, the artist has abilities that, if properly directed, will entitle him to a good position.

(39), "Llyn Idwal, North Wales," S. R. Percy. A beautiful landscape: the translucent water and an exquisitely painted foreground place this picture high in our estimation. The artist's best picture, however, is undoubtedly (250) "Summer—Storm clearing off." If a strict adherence to truth, a wonderful facility in representing it, and a happily chosen subject

are the essentials of a fine picture, this is one. The dividing and disappearing clouds,—the lightning-stricken trees, with the branches borne down by the weight of their rain-loaded foliage,—the sullen quiescence of the water, with all its play beaten out of it, still overhung by a dark enshadowing cloud,—the freshness of the river herbage shining with crystal drops,—are all portrayed in such an earnest unaffected style as to divide admiration between nature itself and the power of the artist. We must warn Mr. Percy, nevertheless, against repeating himself in his smaller works; these are too often alike.

(49), "An English Brook—Coming Shower," A. W. Williams. Not so successful in regard to subject-matter as his work of last year: the picture relies mainly upon the faithful presentation of its circumstances; beautifully painted as it is, it fails to interest. (211), "Snowdon" is a capital specimen, full of light and air.

To enumerate all the works by the family bearing the last name would extend our remarks further than conveniently practicable. That Nature has been their guide, their many contributions severally demonstrate.

Mr. Dighton is one of those who delight in the rugged and uncivilized. (3), "The Falls of the Ogwen" looks to have been painted on the spot.

(18), "Lime-kiln in the Highlands," by H. McCulloch, R.S.A., is painted with a masterly hand.

In fruit and still life Mr. Duffield almost equals Lance in finish and clear rich colour.

Mr. Niemann has established himself as an imaginative and poetical landscape painter by his "Heath Scene from Macbeth" (319). It is painted with the firmness and power of an accomplished hand. (63), "A Highland Loch," (135), "St. Michael's Church, Coventry," are other favourable specimens of his skill. We must give praise, too, to his smaller works in watercolours, which are admirable.

(68) "The Highland Sword Dance" is one of those passages in Scottish domestic life that Mr. M'lan loves to represent, and knows so well how to make the most of. (319) "Highland Children going to School, Lochabar," is a still better depiction of a more interesting episode. (305) "Crossing the Brook," C. Dukes, a charming little picture, better than either (186) "La Fleur searching for the Letter," or (248) "The Willful Boy," (230) "The Wheeler's Shop," by D. Pasmore, has some elaborate manipulation in the middle distance and distance, which would have told to greater advantage had the whole of the foreground being in shadow. Last year led us to expect more from him than he has yet realized. With a passing notice of the several admirable performances contributed by Messrs. Cobbett, Earl (whose dogs deserve notice), Wingfield, Oliver, and the equally clever Mrs. Oliver, A. Montague, Barrard, Bendley, H. B. Willis (especially 57), F. W. Hulme, Miss M. Gillies (216), W. Hemsley, and an expression of praise for Mr. Talfourd's charcoal or chalk portraits, we conclude our notice, and wish the Institution the success it is justly entitled to.

INVENTORS' AID ASSOCIATION.—Our readers have probably observed an advertisement, headed "Inventors' Aid Association," a title significant of its objects. We have perused the prospectus of the company, and are disposed to think that, with proper management, the association is calculated to effect good. The association proposes submitting inventions brought to them to practical men of science, and, acting under their advice, to obtain "letters patent." They propose, too, to enable the clever poor man to submit his already patented invention to the man of capital, and thus enable him to make more advantageous terms than he has hitherto been in a position to do. The meditated alteration of the patent-laws will not abridge the operations of such an association, but rather afford it more scope. Patented inventions, which have passed the ordeal of the company, will have an increased chance of receiving attention from the public.

THE NEW BUILDINGS BILL.

A DEPUTATION of the Master Carpenters' Society, consisting of Mr. Higgs, Mr. Stephen Bird, Mr. Eales, and Mr. George Bird, had an interview with Lord Seymour on the 5th inst. The members urged strongly upon Lord Seymour's notice their objections to the appointment of a barrister to administer the powers of a Buildings Bill; but after hearing the objections for some time, his lordship replied "That he thought the House of Commons the best place to discuss that question."

The Builders' Society have come to the resolution, that a court of professional referees would be preferable to the law court proposed, and as questions of mere law would sometimes come before them as arbitrators, that a well qualified lawyer should be appointed to assist them when required, but without judicial authority.

We understand from good authority that the Bill will not be presented before Easter, and that in all probability a new Bill will be printed. The builders about Sydenham have had a deputation upon the Bill.

The following is the petition of the churchwardens and representative vestrymen of the parish of St. James, Westminster, to the House of Commons:—

"That a Bill is now before your honourable House, entitled the 'Metropolitan Buildings' Bill,' by which it is proposed to create a new court of law, to be called the Court of Metropolitan Buildings; to appoint a new judge, a deputy-judge, a clerk, a deputy-clerk, an architectural referee, an assistant-surveyor, bailiffs, and other officers. The judge and deputy-judge are to have the extraordinary power of inflicting a fine of 200*l.* a day, and to commit builders and others to the House of Correction for a period of three months, without bail; also to seize, not only their goods and chattels, but also any money, bills of exchange, or other securities for money which may be discovered belonging to them; and the clerk of the court is to have the power to sue in the name of the builder or party, or in the name of any person in whose name such builder or party might have sued, for the recovery of the sum or sums secured or made payable by such securities for money when the time of payment becomes due. A proviso excepts the wearing apparel and bedding of the unfortunate victim or the family dependent on him, and the tools and implements of his trade, to the value of the trifling sum of 5*l.* No power of appeal is allowed against the decision of the judge, except upon points of law; the costs of the appeal, if against the decision of the judge, to be paid out of the funds of the court, as are also the costs of any proceeding taken by the plaintiff or the defendant, who may be found to be in the wrong, however vexatiously he may have acted; but there is no provision for the payment of the costs of the defendant, however careful he may have been to obey the law. Should the general fund of the court from fees and penalties not be sufficient to pay the salaries of the judge and his officers, as well as costs incurred by them in supporting their own unlawful decisions, the deficiency is to be made good out of the Consolidated Fund of the United Kingdom.

That the said Bill enacts that the district surveyors, fifty-two in number, who are now appointed by the local and county magistrates, shall in future be appointed by the Commissioners of Woods and Forests. The incomes of these surveyors, derived from fees, amount altogether to about 20,000*l.* per annum, and their districts correspond with the parochial divisions. The said Bill re-enacts the leading provisions of the present Building Laws, viz.—the division of buildings into classes, limiting the size of the houses according to their class, and apportioning to each class of houses or buildings certain thicknesses of brick walls.—The said court of law is created with a view of enforcing these obsolete and useless restrictions.

That your petitioners consider the Metropolitan Building Acts to have had the effect of injuriously limiting the size of houses, and consequently to have been a chief cause of the confined and miserable dwellings of the humbler classes in the metropolis; that they have encouraged bad building, and have been the means of covering the suburbs of the metropolis with thousands of wretched hovels, which are a disgrace to a civilised country.

That your petitioners consider, —injurious as these laws have been upon the dwellings and upon the health of the humbler classes,—that they have operated most prejudicially upon the houses of the middle classes, and have also retarded architect-

tural improvement in the buildings of the metropolis.

That your petitioners consider the said Bill as an attempt to perpetuate an unnecessary and injurious interference with the details of the construction of houses, and that even with its cumbersome machinery of a new court of law and its fines and imprisonment, it will not achieve what is sought for by the preamble, viz.—the proper construction of buildings, the health of persons residing therein, or the more effectual administration of the law in relation thereto.

That your petitioners further consider, that many of its provisions are a direct encroachment on the rights and liberties of the people, and even should the Bill be passed into a law, that its penal enactments never can or will be enforced. Such an Act of Parliament, your petitioners submit, would neither be just nor efficient, and would be better qualified to entrap than direct those it should govern.

Your petitioners therefore humbly pray that your honourable House will reject the said Bill, and pass a law to require that the party and external walls, and the covering of the roof, of every house shall be constructed with incombustible materials to prevent the spread of fire from one building to another, leaving it to the architect or builder to exercise his own taste and skill in the erection of the house or other building, without any reference whatever to limitation of size or details of construction, and that the supervision of all buildings may be placed in the hands of surveyors appointed by and under the control of the parochial authorities, to be assisted by a surveyor-in-chief, as arbitrator in all technical matters, leaving all legal questions to be determined by the stipendiary magistrates of the district or by the County Court of the locality. Also that an Act on this principle may be extended to the whole kingdom."

On the 12th this subject was brought before the Marylebone vestry. Mr. George Bird said that the Bill was tyrannical and oppressive, and, if passed, would prevent a man interfering with the interior of his own house unless he had the permission of the Government surveyor. Under the present Act the fines and penalties inflicted last year amounted to 36,500*l.*, which would be increased to 60,000*l.* if the proposed Act became law. Even a poor landress would not be permitted to alter her copper without giving forty-eight hours' notice to the surveyor, who would be paid for inspecting the apartments, in addition to the 5*l.* which the resetting of the copper would cost. In conclusion, he moved the appointment of a committee to confer with the metropolitan parishes to obtain a fair, just, and equitable Building Act, instead of the proposed arbitrary, unconstitutional measure now before the House. The motion was carried.

Last week Lord Seymour received a deputation from the Royal Institute of British Architects with much courtesy, and having heard the suggestions offered with apparent attention, expressed a wish to receive a more *comprehensive* opinion from the body of the Institute on the general principles of the Metropolitan Buildings Bill, and particularly in respect to the schedules. A very full committee has been named, consisting of the Council, with Messrs. Bellamy, Bunning, Cundy, Cumberland, Godwin, Hardwick, Jennings, Pocock, Smirke, and Tite, with power to add to their numbers.

SCHOOLS FOR ST. JAMES'S, WESTMINSTER.—The lamentable occurrence at the Tooting Pauper School has not, we find, been lost on the authorities in this parish, nor, we hope, on the future prospects of their pauper children. The governors of the poor have purchased a site of twenty acres of land, adjoining Battersea Common, Surrey, where industrial schools for boys, girls, and infants, are about to be erected under the superintendence of Mr. Charles Lee, architect. These schools are to be like those lately erected by the same architect at Annerly, strictly industrial. The larger portion of the boys will be occupied on the land, by which means they will gain health, and be fitted for country or colonial employment, instead of swelling the large pauper population of London, the certain effect of bringing them up as shoemakers and tailors in London workhouses.

RAILWAY JOTTINGS.

THE works connected with the crossing at the mouth of the river Tay, on the Edinburgh and Dundee Railway, are nearly finished. The crossing is effected by means of a floating railway, which will steam between Ferry-Port-on-Craig and Broughty Ferry, at each of which places a basin has been prepared for landing. The basin at Ferry-Port is about 600 feet long and 300 broad, with entrance lock 85 feet wide: depth of water at extreme ebb 8 feet, at flow 26. There is a coal stait with tipping cradle and other facilities for loading vessels by waggon-loads at once. Dundee and other towns will thus be supplied from the adjoining county of Fife instead of from Newcastle, as it actually is at present. An inclined plane and adjustable platform lead the carriages down to the deck of the float, the latter of which is about 140 feet long and 30 broad, and is worked by two oscillating engines of 60-horse power each. The basin at Broughty is nearly as large as that on the south side. The crossing is now open.—As the engineer of the Whitehaven and Furness line was boring between the termini of that railway and the Whitehaven Junction line, preparatory to commencing the tunnel, which is in future to connect the two lines, he came upon a seam of excellent coal, not less than 7 feet thick, and very little below the surface.—A contemporary describes a "model of a set of gates for a road crossing a railway, the invention of Mr. T. Adcock, jun. of Penkridge, joiner and builder." The object of the invention is to enable one man to open four gates simultaneously. The gates are connected by iron rods attached to the heel of each gate, and carried through a tube beneath the ground. They are worked by a jointed chain passing over the segment of a cylinder. If our contemporary thinks that this invention is quite new, he will find by reference to *THE BUILDER'S* indices that he is mistaken.—The first rails on the Panama Railroad were laid on 24th Feb. Most of the labourers had been ill with fever. The Copiapo railroad is making progress. About four miles of tract had been already laid. The survey of the route for the Santiago Railway has been commenced. The surveying party have already carried their line as far as Vina de Mar. Hitherto, it is said, no insuperable difficulties have been encountered. The railway between Callao and Lima is progressing rapidly, and will be concluded probably in April.—The contract for the completion of the Southport Railway, by continuing it into Chapel-street, says the *Liverpool Times*, and also for the erection of a station, has been taken by the successors to Messrs. S. and J. Holme, of this town. The new station will have about thirty yards frontage. The old erection, which is constructed of timber, will be removed from its present site into Kirkdale.—Mr. Verity, the contractor, is commencing the cutting of the South Yorkshire Branch Railway, which extends from Worsbrough to the Black Horse engine, on Silkstone Common. Mr. Verity's portion of contract is at the Worsbrough end.

A model has been sent to the International Exhibition of the wrought iron girder bridge for the South Wales Company, intended to span the Wye at Chepstow, and in course of construction at the works of Messrs. Finch and Willey, of Liverpool, engineers. The design is by Mr. Brunel. The extreme length of the bridge is 629 feet, height from bottom of river 106 feet. The number of links used in its construction is 1,000. The bridge will be a kind of suspension one, of novel construction.—The last great sale at the Britannia Tubular Bridge has just been reported on. The property was that of Messrs. Nowell, Hemmingsway, and Pearson, and of the Chester and Holyhead Railway Company.—A correspondent of *Herepath's Journal*, in speaking of the hopeful prospects of railway property in general since the mania and consequent panic, refers to a saving of 60 per cent. on the cost of engines, and 67 per cent. on the consumption of coke, now being effected by the Edinburgh and Glasgow company, who are working one-third of their passenger trains with an engine costing about 1,200*l.* and consuming 10 lbs. of coke per mile, instead of the

heavy engines previously employed, which cost about 2,000*l.* and consumed 30 lbs. per mile. The saving caused by the relief afforded to the permanent way is also to be taken into consideration. This item of locomotive power is a most important one, for it costs the London and North-Western company, in the items of coals and coke alone, a sum of 110,000*l.* annually. The light locomotives alluded to, if we mistake not, are those manufactured by Messrs. England and Company. The same writer notes the remarkable increase of population in districts through which railways run, as a source of increasing prosperity.—The increase of fourth class travellers on railways is something extraordinary. While the number of first-class travellers has increased 16, and of second-class 97 per cent., and while third-class travellers have actually diminished 2 per cent., the passengers by parliamentary trains have increased 330 per cent. upon their number in 1846. Yet, for their most numerous class of customers, railway directors seem to take the least care.—The coal monopoly of London is already tottering to its fall by the inroads of the Great Northern supply upon the market at reasonable prices. The *Observer* says, that the price will, in all probability, be brought down to 15*s.* a ton. We hope to see it less even than that ere long.—Plank roads have been extensively constructed in the state of New York, and, instead of lessening the disposition for railways, have very sensibly contributed to render them not only more necessary, but more lucrative. The plank roads have cost on an average 1,833 dollars per mile. A pair of horses on such a road perform treble the work they could do on a common road in good order, while their improved condition and diminished cost far more than make up for the outlay in tolls.

LARCH—(PINUS LARIX).

IN reply to your correspondent, who wishes for information respecting the durability of larch, permit me to state, that for years past I have made it my study to test the lasting qualities of that most valuable yet too much neglected timber, and can vouch for its being second to none, not even English oak, in its possession of that quality. I have, upon every opportune occasion, recommended its introduction to some of the best builders of the day, and also to the railway and electric telegraph companies, and always, where used, it has given the greatest satisfaction, and, if wished, I can point out works carried out with it, where it may be seen and tested.

Permit me to take this opportunity of calling the attention of large estate owners to the value and beauty of the larch fir, and conclude with an old writer, that if the singularly unfertile heaths in the southern counties of Surrey, Sussex, and Hampshire, and also many other places which at present lie useless to the country, yet on which larch rises with luxuriance, were planted with these trees, they would probably pay a hundred-fold, compared with any other crop they are capable of producing. I know this to be the case from the price I have paid per acre, and the time they took growing, &c.

FRED. S. MARTIN.

ARTISTS' GENERAL BENEVOLENT INSTITUTION.—The anniversary festival of this excellent charity was held on Saturday evening, in the Freemasons' Hall,—Sir R. H. Inglis in the chair, and several of the most eminent artists of the day were present. The subscriptions announced in course of the evening amounted to upwards of 400*l.* although the meeting was less numerously attended than usual. The expenditure of last year was little short of 1,000*l.* In all, 19,661*l.* have been expended in relieving 1,230 cases of distress amongst artists, their widows, and orphans.

COLOSSUM.—The alterations necessary for producing the two grand panoramas of "London by Day," at a morning, and "Paris by Night," for the evening exhibition, are completed, and this establishment, which has been redecorated, will open on Easter Monday.

CEILING ORNAMENTS :

ARMY AND NAVY CLUB.

IN our account of the new club,* we spoke with commendation of the enrichments in *carton pierre* and *papier mâché*, executed by Messrs. Jackson. Repetitions of some of these have been sent by the manufacturers to the Great Exhibition, and we give in our present number engravings of two of them at large.

SANITARY STATISTICS OF THE METROPOLIS.

STATISTICAL SOCIETY OF LONDON.

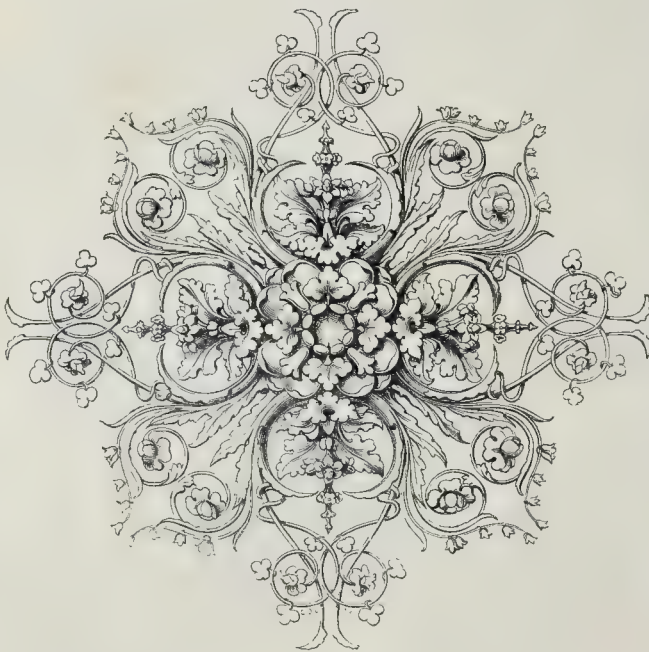
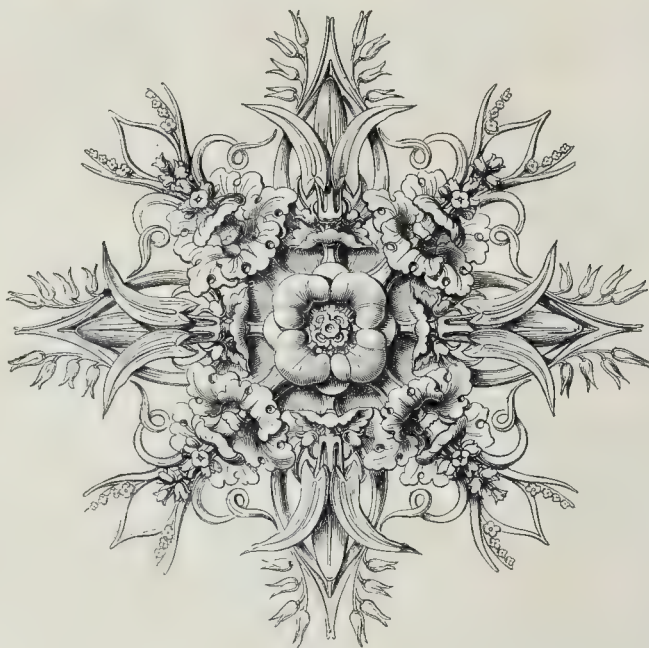
ON the 14th of April (Lord Overstone, president, in the chair), a paper on the "Sanitary Statistics of the Metropolis" was read by Mr. R. Thompson Jopling, embodying several interesting observations connected with its sanitary condition.

In section first Mr. Jopling directed attention to this subject, as presenting a wide field for future investigators; and pointed out that until a comparatively recent period, it had been almost wholly neglected; mankind, in short, appearing indifferent or ignorant of the powerful action exerted on longevity by the physical agents of life.

The first subject to which attention was drawn was that of population as bearing on national prosperity. In Table 1 it was shown that at the completion of the nineteenth century the number of inhabitants of this metropolis will have reached the enormous amount of 4,816,062, presuming the ratio of increase to continue the same as at present, viz., 1.515 per cent. per annum. To accommodate this mass of human beings, there will be required 160,535 acres of ground, containing 650,819 houses, as shown in Table 2, being an increase in size of more than double the present area of London. The results of Table 3 exhibited that the daily consumption of water will average 101,137,302 gallons; an amount wholly beyond the present means of supply. Should the Thames at this period remain the common sewer of the metropolis, we shall have flowing into it daily no less a quantity than 2,408,031 gallons of sewage,—an amount of excrementitious matter which, with the daily abstraction of 101,137,302 gallons of water for domestic purposes, will render the river little better than a pest spot.

In Table 5 was shown some remarkable results as occurring in the rates of mortality, between the metropolis and England and Wales, and that the deaths in London are upwards of 15 per cent. greater than those of England and Wales collectively. The period of life most fatal in the metropolis is during the first five years of existence: in the first year it is 15 per cent.; and, in the second, it reaches the enormous amount of 57, or about three-fifths more than for England and Wales. During the second and third years, the mortality is not much less, averaging 49 per cent., or an increase of nearly one-half more. In the third year it is still higher, being 53; and, between the fourth and fifth, it diminishes to 47 per cent. From 10 to 25 years of age, a remarkable change takes place in the mortality between London and England and Wales, the former exhibiting 10 per cent. less than the latter. After the age of 25, the mortality again increases until the period from 55 to 65, when it becomes 45 per cent. more than

CEILING DECORATIONS, ARMY AND NAVY CLUB-HOUSE.



England and Wales. From 65 to the remainder of life, it shows the same features as between 10 and 25, being 13 per cent. less.

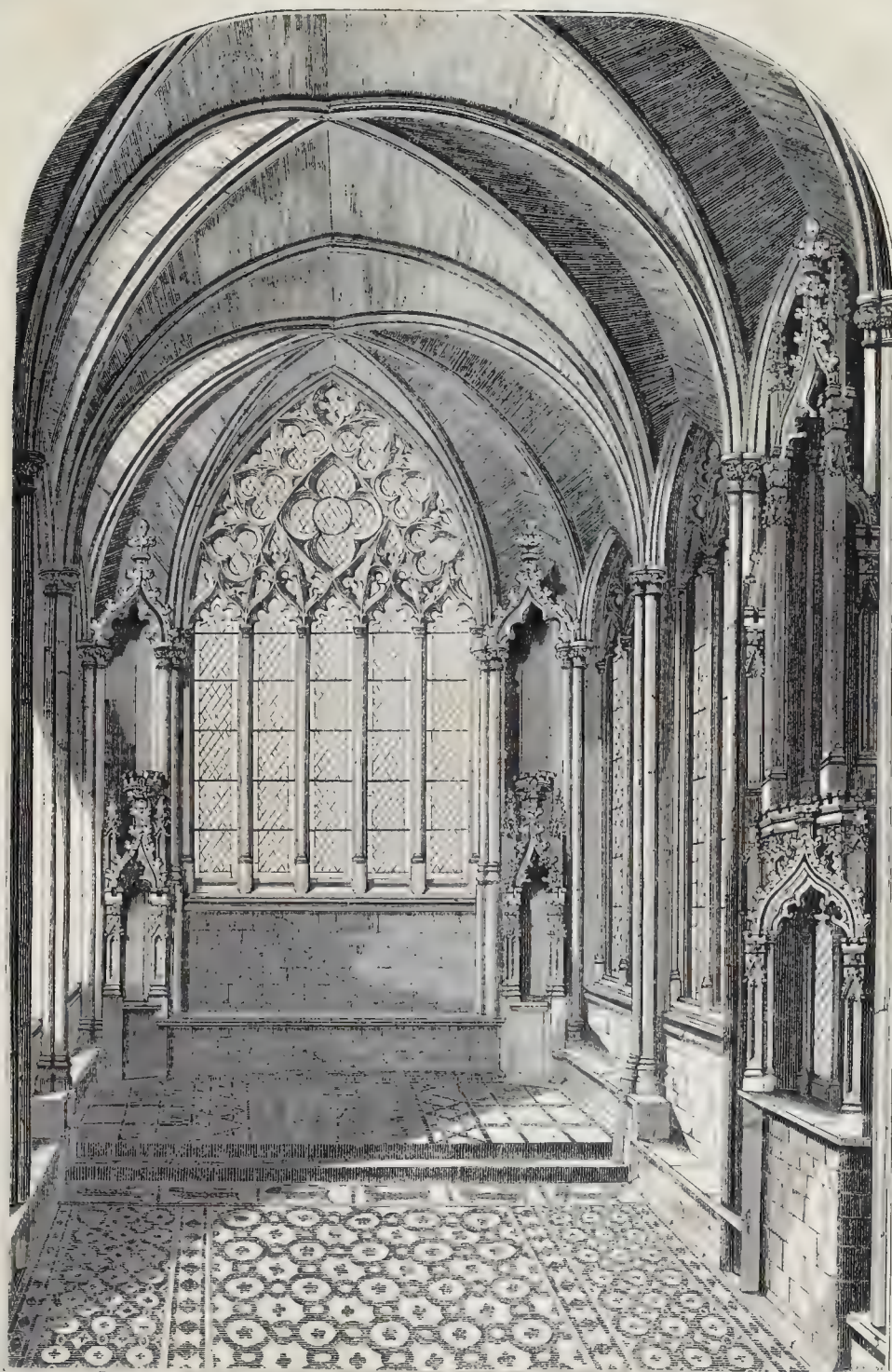
Mr. Jopling concluded the first part of his paper with a few remarks on the superior longevity of females over males, and purposes, in the second section, to point out the diseases chiefly concerned in producing the difference in mortality between London and England and Wales.

FALL OF A SEWER.—On Tuesday last, while some excavators were at work in a sewer in Mount-gardens, Westminster-bridge-road, a paved passage leading from the main street to Philadelphia-terrace, and forming a nearly parallel line with the South-Western Railway, which here traverses Carlisle-lane, a great mass of earth gave way and buried three of the men, who were afterwards extricated, but much bruised, though not fatally, it is believed.

* See p. 154, ante.

PRIOR CRAWDEN'S CHAPEL, ELY.*

[CIRCA 1221]



* See page 24 in our present Number.

THE BOILER EXPLOSIONS.

IN THE BUILDER you have very properly called attention to the fearful steam boiler explosions with which we are so frequently visited. Were it Labour v. Capital, we should long since have had an abundance of legislation to cure the evil; but as it is Capital v. Labour, the Legislature stirs not; the truth is kept from view; and such awful catastrophes are palliated, excused, or preposterously ascribed to some mysterious agency, which really only exists in the imagination. The chief cause of these awful indications, by which so many unfortunate beings are frequently hurried into eternity, arises from employing men who know little or nothing of boilers and engines, and the power they have to control, beyond the mere turning "on" and "off" the steam. And why? because they are cheaper; and these are often required besides to perform labour wholly incompatible and inconsistent with a due discharge of their duties to their engines, even if they do understand them. Hence arises the deficiency of water, the excess of pressure, or both conjointly, added to which perhaps there is a defective boiler; and now you have the chief cause or causes, if not the whole, of these slaughtering explosions.

Thus engine proprietors wilfully jeopardise the lives of all persons within the influence of such disasters by employing incompetent persons for the sake of saving a few shillings per week, instead of well-trained engine-drivers; and hence such lamentable results are almost continuous. Locomotive engines afford evidence in point that it is not necessarily so, for these are under the control of well-trained men; and though there are, perhaps, thousands in daily use, working at a much greater pressure than any fixed engine, accidents of the above nature are of rare occurrence indeed. Neither the employment of inspectors, nor the proving of boilers occasionally, would afford security; for, in the latter case, it might possibly facilitate the catastrophe sought to be avoided, while, in the former, a boiler may be in the best condition on inspection, and yet explode under such management as the above within a few hours. Indeed, the only remedy for the present deplorable state of things seems to be to punish the cupidity of all engine owners by subjecting them to ample damages for the loss of life and injuries occasioned, to be paid to the survivors and friends; and I doubt not that we should not only have boilers properly made, but competent and well-trained hands to manage them, when we should rarely hear anything more of this horrible slaughtering system. W. G.

At the inquest in the recent Manchester case, Mr. W. Fairbairn gave evidence to the effect that he had inspected the burst boiler at the coroner's request, and that, in his opinion, the accident did not arise so much from defective construction as from gross mismanagement or ignorance. Other evidence appears to have shown that there was not so much mismanagement, or even ignorance, as utter recklessness in spite of warning, both as to the want of repair in the boiler, and also as to the peril shortly before the explosion took place. And this seems to be the view taken by the jury; for in this case a verdict of manslaughter has been given against the engineer and his employer. The jury were of opinion that the boiler was efficient and perfectly competent to perform all the duties required from it, but that gross negligence had been displayed in its management and attendance. In the case at Stockport a verdict of accidental death has been given, with an addendum in form of an opinion, that the junction-valve upon the boiler, leading to the bowking kiers, was closed at the time of the explosion, and that the overloading of the safety-valve prevented that relief which was necessary for the escape of the steam; but that the jury had no evidence before it to show by whom, or by what means, the junction-valve was closed; but that the overloading of the safety-valve was attributable to the act or sanction of the engineer, Joseph Hyde, of whose conduct in this matter the jury expressed their unqualified

censure. It was also the opinion of the jury that the applying of this boiler to high-pressure steam was highly censurable. With a view to guard against imperfect boilers for the future, the jury recommend a certain standard to be adopted, say twice the extent of pressure intended to be applied; and that all boilers be tested and stamped or registered by a responsible and appointed authority prior to their removal from the makers' premises.

It is stated by a correspondent of the *Gateshead Observer*, that no less than 1,600 men and boys have been destroyed by explosions of boilers in this country within the last three years only.

FOREIGN INTELLIGENCE.

Paris.—The Jardin des Plantes, which at one time was the first establishment of its kind in the world, has been behindhand of late years: all the departments and enclosures of the quadrupeds, which are now of wood, are to be replaced by iron railings, and new walks will be laid out. An immense place, Rue de Buffon, will be converted into a school of arboriculture, through which the little river la Bièvre, converted into a canal, will pass.

Paris.—*Cathedral of Notre Dame.*—The new clerestory of the cathedral is near its completion. The series of painted glass windows is noticeable. It represents the chronological history of the bishops and archbishops of Paris from St. Landry, who lived under Charlemagne, until M. Affre. These stained windows are from the manufactory of M. Maréchal, of Metz. In another passage the history of St. Geneviève, patroness of Paris, is also depicted on glass. A winding staircase leads thence to the place containing the treasures of the cathedral, &c. This new clerestory has cost one million of francs, and the total restoration of Notre Dame will cost nine millions more, which heavy expense, however, was unavoidable. The several flying buttresses which were rebuilt, have alone cost three million francs.

Pesth.—There has been exhibited here of late, in the Hall of the National Hungarian Casino, an interesting work, chased in silver by M. Szentpetery, a jeweller, more than seventy years old. It represents the captivity of the Hindoo king Porus by Alexander the Great, and has been made after the painting of Lebrun. The size of the silver plate is 25 inches by 12, on which there are represented in the foreground, forty-six human figures, and sixteen horses and elephants; in the background, 105 human figures, and a proportionate number of horses and elephants. Amateurs here declare it equal to any work of Benvenuto. It is destined for the London Exhibition, and will be offered for sale.

Liebig and the English "Proletariat."—The German philosopher measures (strangely) the degree of civilisation a nation may have reached, by the quantity of soap used, which is very much akin to the old proverb, that cleanliness is next to godliness. The average consumption of this proprietary substance averaging about 5 lb. for each person in this country, places the people far above any of its European neighbours in the scale of culture and civilisation.

Coburg.—The small townlet of Sonnenberg will appear at the London Exhibition with a very artistic plastic representation of the villa of the Duke of Coburg, *Rosenau*, well known to English tourists. M. Hoffmeister will exhibit a festival table and armchairs, ornamented with wood carvings in the Gothic style, at which curious work more than twenty artists, amongst them Behrens of Coburg, have exerted themselves for many months past.

Société Nationale des Antiquaires de France.—This head Archæological Society of France has, at their meeting of 9th April, elected seven resident members, viz. Messrs. W. Brunet de Presle, author of "History of Sicily under the Greeks;" Ernest Vinet, translator of "Zosimus;" Huillard Bréholles, author of "Norman Monuments in Sicily and Italy;" Abbé Arthur Martin, one of the authors of "The Monography of the Cathedral of Bourges;" F. de Lasteyrie, author of "History of Glass

Painting," &c. Mr. Roach Smith, of London, and Don Sebastian Castellanos, conservator of the antiquities of the National Library of Madrid, have, on the same occasion, been elected foreign associates.

Latent Discoveries in Algeria.—The ruins of Tagumadi (*Thamugadis*?) have of late yielded important results, and promise to become a source of much interest. They lie seven leagues north-east of Lambesis, and are surrounded by mountains, mostly covered with snow. The native Arabs call them Bordsch Timiga. At a depth of three metres, a theatre nearly in an entire state of preservation has been found; also a temple, which, according to an inscription, has been the capitol, and whose fluted Corinthian columns have, near the socle, a diameter of nearly two metres. The largest and best-preserved monument of Thamugadis, however, is a triumphal arch with three portals, adorned with marble Corinthian columns, whose sculpture is very superior. A number of Mosaic also, and other more ruined monuments, await the attention of some studious traveller.

NOTES IN THE PROVINCES.

THE Church of Felpham, near Bognor, has been of late rather extensively repaired. The interior has been restored, and the old oak benches replaced by new sitings affording increased accommodation.—Mr. Fulton, the engineer, has been employed to ascertain the expense and practicability of deepening the Medina, so as to give 4 feet of water at the Town Quay of Newport at the lowest state of the tide, and has made a report to the town council, in which he estimates the cost at 8,000*l.* It is stated that parties are in treaty for the purchase of Worcester-terrace, Clifton-park, Clifton, with the idea of finishing it immediately. Two treble villas are being built on the waste piece of ground between Clifton-park and the back of Pembroke-place. Other villas are also to be forthwith completed.

At a recent meeting of the Altrincham Gas Company, the directors "congratulated the shareholders on the prospects of the company, and thought they should soon be able to reduce the price of gas to the consumers, and thereby promote an increased consumption."—Messrs. Robert McKean and Co., of the Victoria Iron Works, Birkenhead, have lately erected an iron entrance-gate at the east entrance of the pile of offices known as York-buildings, at Liverpool. The entrance length of the frame is 19 feet 6 inches, the width 7 feet 6½ inches, the length of gates 15 feet 1 inch, and the width 3 feet 1 inch. The gate was designed by Mr. Picton, the architect of the buildings.

At the last meeting of the Sheffield Gas Company, the chairman, while boasting that the directors "had reduced the price while they had increased the dividend," rather inconsistently said, that if 6s. 8d. "did not satisfy customers, he thought they would hardly be satisfied unless the gas were given." Does he not think there may be still a margin within which he might "reduce the price" while he "increased the dividend?" Something like this, however, may be in contemplation, for in moving that a dividend of 9 per cent. on the paid-up capital be paid to the shareholders, and a balance paid to the depreciation fund, he added that "they had been taunted that they must be bad managers that they could not get a better dividend, and yet sell at a lower price: he wanted to show that he could pay a better dividend, and that he would do so." Now, by the expansive law of gas statistics, there is but one way of legitimately, and securely, and assuredly doing that, viz. by lowering the price.* The

* At the same meeting a shareholder stated that he "had been to Southport to see the working of White's water or ruin gas, and found it was sold at 7s. 6d. per 1,000 feet. The patentee had also explained it to him in the presence of the manager of the Manchester works, and a gas manager from London, and they were satisfied there would be no advantage from the patent, if he could do what he said. The South Metropolitan Gas Company had made trial of the patent, but on recently visiting their works he found they had had to abandon it, and that they had thrown a deal of money away." It may be recollected that we more than once gave a caution as to the alleged advantage of this sort of gas, and that we have never yet either said or seen anything to qualify that caution.

gas-fitters and the Sheffield Gas Company seem to be still in the midst of their old misunderstanding.—Various designs appropriate to the manufactures of the district have been prepared at the Nottingham School of Design for the International Exhibition.—The interior of the chancel of Ashbourn Church will, after Easter, says the *Derby Mercury*, undergo repairs and alterations, to render it in ecclesiastical harmony with the fabric.—Considerable improvements are being made in the Manchester and Salford public parks. Amongst others, the health of the people has been considered in the drainage of Peel's-park with tiles. A terrace and bridge has been added to Phillip's-park.—It is proposed to erect a new church and schools in the district of Strangeways, Cheetwood, &c., Manchester.—“There were a large number of competitors for the 50l. premium for the best plan of a covered market-house,” at Stockport, says the *Manchester Courier*; “but the manorial toll committee had reduced the number to 15. Those plans, with their elaborated sections, have for some time been exhibited upon the walls of the committee-room at the Court-house, for public inspection. The estimates range from 800l. to 8,000l. The architects have not been confined to the site of the old post-office, or the ground upon which the Stockport bank stands; but have extended their scheme by taking into their plan the whole of the back side of Bridge-street Brow; and some very eligible designs have been drawn for the Castle-yard plot, which, we learn, have met with much encouragement. The competitors come from all parts of the kingdom.”—A sum of 1,100l. has now been subscribed towards the erection of baths at Oldham. Efforts are being made to increase the amount, but there does not appear to be at present much prospect of the 12,000l. resolved on being realized. The identification of the baths with a Peel testimonial is said to have prevented the obtaining of some subscriptions.—The erection of a monument to the late Mr. Edward Baines is engaging some attention at Leeds. The subscribers are looking for a site.—The new Congregational Chapel, Sunderland, the foundation stone of which was lately laid, is to be of stone, and to have a pediment in the principal front, the tympanum of which is broken by a large semi-circular arch and window. In the inside the cast-iron columns are carried up to the roof and the ceiling is coped in the centre to correspond with the arch and window. Accommodation is provided for upwards of 1,000 persons.—The contract for the formation of the additional reservoir at Whittle Dean (near Newcastle) has been taken by Mr. Richard Cail, who is to complete it during summer. The reservoir is to cover forty acres of land, and contain 120 millions of gallons of water. The present reservoirs hold about 220 millions of gallons.—At a recent meeting at Newcastle to consider the project of corporation gas works it was stated that the price of gas in Newcastle and Gateshead would shortly be further reduced.—An attempt made at Longton to originate a Branch School of Design in connection with the Longton Athenæum has proved so far successful that a grant of valuable books and examples for drawing has been made from Somerset-house, and drawing classes have been commenced under direction of a teacher qualified by study at the Stoke School of Design. An annual subscription, amounting to about 30l., has been raised for expenses, besides donations towards the cost of fitting up the rooms.—In the Edinburgh council a report was lately read from the Lord Provost's Committee regarding the contracts for the erection of the slaughter-houses. The contracts accepted were as follows:—Mason work (Mr. James Gowans), 8,499l. 10s.; wright work (Mr. John Shennan), 2,699l. 15s.; slater work (Mr. John Young), 675l. 13s.; plumber work (Messrs. Hume and Melville), 720l.; smith and tin work (Mr. George Knight), 383l. 10s. 10d.—total, 12,978l. 8s. 10d.—Mr. Kirkland, of Glasgow, architect, has designed an Ionic arch to replace the towers of the original plan of the

Portland-street suspension bridge there. The arch is surmounted by a cornice supported by two fluted columns and two plain pilasters. The elevation of the erection will be 42 feet altogether. The sides are ornamented with niches. The chains will clear the main cornice.—On Tuesday, the 18th of March last, the foundation-stone of the parish church at Virginstown, in the county of Devon, was laid by the Rev. Ponsford Cann, rector. The building is to be Early English in style, and consist of south porch, nave, and chancel, and a bell gable on the west end. The walls are to be built of native stone, with wrought quoins from Halwill, window jambs and arches of Polifant stone, open timber roof, covered with Delahole slate. The interior fitted with open sittings, stained and varnished. Estimated cost, 510l., to be carried out under the superintendence of Mr. William Rundle, architect, by Messrs Lose and Squires, contractors.

ENGINEERING AND ARCHITECTURE IN IRELAND.

HER Majesty's Board of Ordnance have issued orders for the construction of chapel schools at Portobello-barracks, Dublin, Mullingar, Templemore, Birr, Fermoy, Buttevant, and Belfast.

A Scotch church is to be erected at Queens-town, Cork, and advertisements have been issued for tenders to execute the works according to plans and specifications in possession of Mr. David Patterson, Queenstown.

The board of guardians of the South Dublin Union have determined upon remodelling and altering the present chapel of the workhouse according to plans prepared by the architect to the Poor Law Commissioners.

The unfinished works on the road leading from Ferns to Bagnalstown, are to be completed, and two bridges erected: the amount of work to be done is about 1,972 perches, and the probable cost will be 2,700l. Plans for the foregoing have been prepared by the county surveyor, and the grand jury are receiving tenders for their execution.

The large bridge over Lough Athalia, on the Midland Great Western Railway, is progressing: it consists of two abutments and three piers, the centre pier being considerably larger than the other two. There are five bays, two of 60 and three of 40 feet span. One of the three 40-feet spans is crossed by a number of cast-iron girders, made by Mr. Stephens, of Galway. The section of the girders is that of two boxes placed one on top of the other: these boxes are composed of plates of cast-iron, firmly rivetted together with iron bolts. The patentees are Messrs. Fairbairn, of Manchester. The stonework was wrought and quarried at Merlin Park.

The board of guardians of Cebridge Union intend erecting a fever hospital at the workhouse, and are prepared to receive tenders for the execution of the works according to the plans prepared by the Poor Law Commissioners' architect.

A new Sessions-house and Bridewell are to be erected at Coleraine.

Local agricultural schools are to be erected at Kilkenny, according to plans prepared by the architect to the Commissioners of National Education, Mr. Darley.

The Commissioners of National Education also have determined upon erecting model agricultural buildings in the county of Leitrim, and also to make alterations to the Leitrim National School-house, according to the drawings of their architect.

The Great Southern and Western Railway Company have obtained permission from the Lords of the Admiralty to construct a dock at their terminus, Cork. The area of the proposed dock will be five acres, exclusive of an entrance dock. The extent of wharfage will be 1,400 feet. The cost of construction is estimated at 45,000l. We believe Mr. Sanction Wood is the architect.

The Board of Public Works intend erecting a new lunatic asylum at Grange Gorman, Dublin, in connection with the present one, and will receive proposals for its erection ac-

cording to the drawings of their architect, Mr. Owen.

A new school-house is to be erected in the parish of Doon, according to drawings by Mr. James Paine, architect. Tenders are invited for the execution of the works.

The board of guardians of Abbeyleix Union have advertised for proposals to raise the idiot wards of the workhouse and execute sundry works, according to the drawings by Mr. Wilkinson.

The board of superintendence of county Leitrim gaoil intend erecting a drying-room in the female prison, and have invited tenders for the execution of the works.

On Monday, the 24th March, the first stone of a new workhouse at Glyn, county Limerick, was laid by the Knight of Glyn. Mr. George Paterson, the contractor, presented the knight with a beautifully chased silver trowel. The building is to be erected from the drawings of the architect to the Poor-Law Commissioners.

The Drainage Commissioners applied for a large presentment at the Clonmel assizes for bridges to be erected in the South Riding.

ENGINE CHIMNEYS.

1. WHATEVER be the form of the exterior, the flue should not be smaller at top than at bottom. *Cateris paribus*, a flue 24 inches in diameter at top and bottom will draw better than one 36 inches in diameter at bottom, and 24 inches at top. The opening at the summit is the gauge, and should always be made a matter of calculation. If any difference be made between the top and bottom diameters, the flue may generally, with advantage, be contracted at the throat.

2. The internal flue should never in any case form part of the solid fabric, but be built entirely independent. S. E. R.

ARCHITECTURAL ASSOCIATION.

At the ordinary meeting held on March 14th, a paper was read by Mr. J. K. Colling, upon “The Principles of the Coloured Decorations of Mediaeval Architecture,” in which he remarked upon the increasing interest taken in the subject at present, and the advance made beyond the safe but effortless style of a few years since: he considered that in the painting of the Exhibition building a return had been made to the principles which guided the decoration of the buildings of the mediæval ages, and reviewed the various proposals made by different parties in *THE BUILDER*, and other papers: he then proceeded, by reference to a numerous collection of drawings and lithographs, to explain the principles of the Gothic colouring, pointing out their almost invariable adherence to the rules of heraldry: that colour should not be used upon or next to colour, but separated by black, white, or gold, which simple rule, almost always disregarded in modern practice, will be found to hold in nature, and is therefore a principle of good colouring; that their arrangement is simple and the colours few even in the richest designs; that the primitive colours are broken up into small spaces, and that alternations of two colours, as red and green, are frequent. He further described the several methods of Gothic colouring in their chronological order, and derived the first patterns from the marking out the joints of the stonework in colour, and perhaps painting a rosette in the centre of each stone; the progress to flowing patterns in simple subdued colours, to, finally, the introduction of gorgeous and varied colouring, which, however, he considered was generally confined to a portion only of a building, as screens, tombs, &c., the larger spaces being more subdued.

In the discussion which followed, it was stated that classing yellow with metals instead of colours in heraldry, was not wholly conventional, the same arrangement being found in nature, as in the white and yellow flowers spangling the green fields of spring, as noticed by Mr. French; and it was said that in the rainbow it is found a component of each secondary which divides the primaries: its superior brilliancy causes it perhaps, as the

element of light, to range rather with white than blue or red. It was also noticed that when colours were used in contrast, their tones should agree: thus a deep red requires a deep green, as may be observed in different flowers, and there may be a contrast of tones of the same colour, as in diapers of deep green upon a light one, or red upon chocolate—as in examples from Wells cathedral—or in nature, in the acorns and young shoots against the foliage of the oak. It was thought, regarding the origin of these decorations, that many were imitated from hangings, tapestries, &c., in churches, as some panels of diaper work have been found with loops on the upper edges, and, as it were, hanging before the rectilinear ornament derived from the jointing of the stonework.

The next paper was announced to be on March 28th, by Mr. Gooch, upon "Public Abattoirs."

IMPROVEMENT OF LODGING-HOUSES.

It is not more than two or three years, we should think, since we had to complain repeatedly, not only of the indifference of our contemporaries of the metropolitan press generally to all our efforts in favour of an improvement in the construction of houses occupied by separate families as lodging-houses, but even of a positive opposition in the shape of leading articles against these efforts, in which little else than prejudice and misapprehension assumed the form and place of reason and fact. It is not a little gratifying, therefore, to find our leading and potent coadjutor, the *Times*, taking up the cudgels on our side, and destroying all future chance of further success to prejudice and error on this subject.

"A foreigner," says the *Times*, "from any European metropolis, will learn with surprise on visiting this country that, with the exception of one or two edifices, for which we have to thank a band of ardent philanthropists, there are no such things here as several suites of apartments for as many separate households, architecturally arranged in one building. He will hear that the window-tax for any such building mounts up as rapidly and as ruinously as it would for a nobleman's mansion, while colleges and inns of court are only saved from this penalty by special exemptions. He will notice that, as a general rule, every household, contrary to all the suggestions of economy, occupies its separate portion of the earth's surface; and he will find that where the very great convenience or overpowering necessity of a different usage has brought several families under one roof, and into one staircase, it is in the case of old mansions, which, as thus occupied, are almost worthless to their proprietors, costly to their occupiers, most inconvenient for the purpose, rendered still more uncomfortable to reduce the window-tax, and profitable only to a low and unscrupulous class of hucksters, who rent such houses cheap, in order to sublet them high, and who concern themselves as little about the character as they do about the comfort of their inmates. Such is the spurious and the only form in which nests of lodgings for the poor are found in this country. Nay, the very word 'apartment,' which, in the French original, means a separate suite of rooms sufficient for one family, has lost its meaning in this country, and, by a singular and unmeaning corruption, has come to be used for any one room."

But it is not foreigners alone that may be surprised at this: in Edinburgh, Glasgow, and other northern towns of our own empire, there are numerous streets of large buildings composed of suites of rooms, each suite as separate and independent as if it stood on a pavement in place of in a "common stair." This system, we have often said, is what the metropolis must now adopt. It has already spread far beyond all reasonable bounds along the surface of the earth, and now, like the great Babel of its antitype, it must aspire heavenwards—it must increase in height as heretofore in length and breadth. The very value of the ground it impels towards this result.

The improvement of dwellings for the poor has formed a subject of discussion

in the Commons within the last ten days, on a motion by Lord Ashley for leave to bring in a Bill to encourage the construction of lodging-houses for the working classes. Leave was not only granted, but a most favourable feeling evinced towards the object in view during the discussion that ensued upon Lord Ashley's disclosure of the present order of things, on which he enlarged rather than on any statement of his views and hopes for the future. In reply to a remark of Lord C. Hamilton, Mr. Labouchere said he hoped shortly to effect a great reduction in the expenses of charters for building associations.

HOUSE OF COMMONS.

We have just had another of those harping and interminable "discussions" which are ever and anon coming on in the Commons about Mr. Barry and his progress—his doings too much, and his doings too little—his deviations either to the right hand or to the left of that mean line of direction, whatever it may be, resultant from the sum total of those antagonistic forces of opinion and of resolution to which he is ever exposed. The laugh was lately against him because the turncocks supplied too little water to the reservoirs: now it is reiterated because the supply is too great—"a larger supply, indeed, than would be afforded to a town of 14,000 inhabitants." Before, on several occasions, most expensive amendments and improvements of the original plans were ordered by the House: now, nothing but grumbling is heard why the expense exceeds the original estimates. A particular style was voted by the House in the outset: now the characteristic and requisite details which go to make up that very style, and constitute one of its essential features, are objected to. Mr. Barry has introduced some ornamental shield work, &c., in the new House of Commons, to make it consistent in some slight measure with the richer details of the House of Lords. Consequently Mr. Barry is worried because he does not paint this shield work without colour, or because the House is not like "the unadorned one" himself. Had it been consistent with propriety of style or correlation to make it perfectly plain in the face of such a rich display as that in the House of Lords, doubtless it would have been represented as a deliberate insult to the distinguished Commons of this Kingdom. As it is, gilding is all very well for the Lords, but the Commons are far above all that sort of thing. There is gilding in the decoration of the House of Lords; but gingerbread is sometimes gilded with Dutch metal: ergo, the decorations of the House of Lords are mere "gingerbread gilding." And as the decorations of the House of Commons have some such affinity to those of the House of Lords in point of richness, as the Commons themselves may be supposed to have to the Lords in point of wealth, Sir D. L. Evans rises "to call the attention of the House to the so-called interior decoration of the new House of Commons, persisted in by the architect in opposition to the declared wishes of the members of the House." A discussion thereupon ensues, when it turns out that "the House" never "declared" any "wishes" on the subject at all! Mr. Barry suspended the work on its merely being objected to by the Chancellor of the Exchequer,—as likely, we presume, to form a peg to hang such a cloak upon as that form may be called which the protean prejudice of certain members now assumes. "Heraldry," Mr. Barry remarks in his defence, "is absolutely essential to the character and the full expression of the Tudor style of design adopted by Parliament, and the only means of giving historic interest to it." Besides, the House had actually voted 8,600*l.* for this very purpose! And all that Mr. Barry has done, it is said, does not exhaust the foregone decorative liberality and *pénchant* for display of his not generally so extravagant paymasters. Mr. Greene quaintly questioned the propriety of "scraping it all off again," but "of course the House might exercise its pleasure on that point." They will not convert all

the gilding scraped off, however, into much of the solid gold granted for the purpose of laying it on.

FREE ADMISSION TO ST. PAUL'S.

THE days of the twopenny exhibition are at last really numbered. On 1st May, as announced in the Commons by Sir George Grey, the area of the cathedral is to be thrown open to the public, and the twopenny abolished.

AFTER a contest for twelve years, we have at length, thanks to the support of the public press, obtained the suppression of the twopenny admission fee to St. Paul's Cathedral,—that is, free admission to the level interior of the edifice, with its monuments, &c. As a member of the Society for obtaining free admission to public edifices, I have all along noticed, and am now grateful for, the unceasing energy and interest you have shown in our cause, and congratulate you on the result. Some persons may perhaps think that we have not obtained enough, and that we ought not to rest until we have obtained similar exemption from the other fees charged for visiting the whispering gallery, and other portions of the magnificent structure, up and down stairs; but having obtained the principal advantage, as much by discretion as by zeal, let us look most to the preservation of what we have gained, and discreetly consider how far it would be advantageous, on all sides, to facilitate further accommodation to the public by a reduction of these charges. That boon will best grow out of the good and proper use the people make of the present acquisition. It therefore behoves every one, not only to behave with propriety himself, but to discountenance and prevent any impropriety in others. Few, indeed, are likely to deserve reproof, but a very few instances may bring discredit on the public at large: it is, therefore, necessary to watch the least tendency to indecorum.

G. F.

MASTERS AND WORKMEN.

IMPORTANT TO BUILDERS.—SNEELUS V. AUSTIN.

THIS was a suit instituted in the Marylebone County Court, by the plaintiff, a journeyman plasterer, against the defendant, a builder in an extensive way of business in Gloucester-road, Paddington, to recover the sum of one shilling and three pence, which the plaintiff claimed under the following circumstances:—It appeared from the evidence that the plaintiff had been in the defendant's employ six weeks, and that at the conclusion of the day's work on Tuesday, the 18th of March, he and his brother workmen were discharged without any previous notice. On the following morning they went to collect their tools at the building, and requested payment of a quarter of a day's wages, which was refused, and hence the present proceedings. Mr. Herring, who appeared as solicitor for the plaintiff, observed that although the claim sought to be recovered was so trifling in amount, the question involved a principle of very considerable importance. There were thirteen similar cases against the defendant, and the issue of the present case was most important, not merely as affecting these cases, but to the whole of the building trade. He (Mr. Herring) was instructed that it was the custom of the trade to pay workmen a quarter of a day's wages upon summary dismissal, and if he established that fact, his client would be entitled to his Honour's judgment. Two witnesses were called on the part of the plaintiff, both of whom distinctly swore that it was the custom, as stated by the plaintiff, for the masters to pay a quarter of a day's wages under the circumstances described. One of the witnesses (Fairburn) said he had received such compensation from Mr. Houston, master plasterer, of Praed-street, and from others.

Mr. Randall, of Wigmore-street, attorney for Mr. Austin, contended that no such custom ever existed, and that masters could discharge their men at a moment's notice, the men having the same privilege to leave their employers; the tools being always collected by

the "hawk boy," and ready to be carried away at the shortest notice. This, however, was a combination of workmen, who had instituted these proceedings from vindictive motives, in consequence of their having been dismissed for drunkenness and neglect; a course of proceeding which he hoped would meet with no encouragement at the hands of the Court.

Mr. Randall then called Mr. Houston, who positively denied Fairburn's statement. Mr. Row, Gloucester-road, Camden-town, and Mr. Brown, of George-street, Euston-square, and several other tradesmen, of many years' standing and respectability, also swore that no such system ever existed as that deposed to by the plaintiff.

His Honour observed that he was perfectly satisfied with the reply to the plaint, and gave judgment for the defendant.

The case excited considerable interest, and the court was crowded during the inquiry with masters and workmen.

Books.

Industrial Investment and Emigration; being a Treatise on Benefit Building Societies, and on the General Principles of Associations for Land Investment and Colonization, with an Appendix on Compound Interest, Tontines, and Life Assurance. By ARTHUR SCRATCHLEY, M.A., Actuary to the Western Life Assurance Society. Second edition, much enlarged. Parker, West Strand, 1851.

We have no doubt that Mr. Scratchley's book is by far the best that has yet been written on building societies; but having already recorded our opinion of its merits (vide Vol. VIII. p. 92), we need only now express our satisfaction in learning that a great number of terminating societies have been converted into permanent associations, as recommended by Mr. Scratchley, and that there appears to be a good prospect of the abolition of those false principles, by means of which so much mischief has been done by building societies. As many of our readers know, we have, from the very outset, expressed our want of confidence in the system on which these societies were established. We hope the time is at hand when this feeling will no longer exist, and when we can conscientiously advocate the principles of a class of institutions capable of elevating the working classes as provident and independent beings, and of doing them otherwise a great amount of good. The enlargement of the scope of Mr. Scratchley's book and other improvements are noted in the title already quoted in full.

A Treatise on a Box of Instruments and the Slide Rule, for the use of Engineers and others, Schools, &c. By THOMAS KENTISH. Second edition. Relfe and Fletcher, 15, Cloak-lane.

THE fact that this is a useful little book is substantially adduced by the demand for a second edition, which appears to have been for some time published. The impressions now on sale contain a figure of the magnetic compass card and an appendix.

Advice to Builders, Buyers, and Renters of Houses. By Mr. J. S. ERLAM, Architect. London: Shoberl, 1851.

THIS work is much too *jeune* to be of any real service, and is written in a shambling style, ill calculated to support the claim which Mr. Erlam rightly sets up for the "educated architect." We should have passed it by in preference to giving a damaging notice of it (as we have often done in other cases), but being pressed in more than one quarter for an opinion, are forced to this expression of it. A careful revision, and a little industry, would make it a useful volume.

SCOTCH SOCIETY OF ANTIQUARIES.—A *conversazione* was held on 3rd instant in the hall of the Society of Antiquaries at Edinburgh, where a large but select company crowded the rooms, and a great variety of articles of a national and other archeological interest was exhibited.

Miscellaneous.

BIRMINGHAM BATHS AND WASHHOUSES.

—The borough baths and washhouses in Kent-street, Birmingham, are making rapid progress towards completion. The building is of brick, with stone dressings, style Elizabethan. The baths are divided into two classes. A new patent porcelain has been used in fitting-up some of them. There are thirteen first-class baths for males, and twenty-four second-class, in one department, with a private plunge-bath, 17 feet long by 15 feet wide. The charge for the first-class bath will be 6d., for the second, 3d. A long corridor leading from the main entrance leads to a swimming bath, about 89 feet long and 34 feet broad, with a depth of water graduating from 7 feet to 4 feet. The temperature is to be regulated. It is surrounded by twenty-two dressing-rooms, and roofed with glass. The female department is on the opposite side of the building, but corresponds in all respects with the male, except that there are only seven first-class baths, and eight second. The washing department has separated stalls and every other convenience. The cost of erection is about 10,000*l*.

VALUE OF LONDON PROPERTY.—On the 11th inst. Messrs. Cafe and Reid sold various leasehold and freehold estates and other property, amongst which were the following:—

Leasehold.	Annual rent.	Annual Ground-rent.	Term of lease.	Price.
No. 35, Hill-street,...	50 <i>l</i> .	8 <i>l</i> . 8 <i>s</i> .	87½ yrs.	105 <i>l</i> .
No. 33, " "	50 <i>l</i> .	8 <i>l</i> . 8 <i>s</i> .	87½ "	100 <i>l</i> .
No. 7, " "	52 <i>l</i> . 10 <i>s</i> .	10 <i>l</i> . 0 <i>s</i> .	87½ "	518 <i>l</i> .
No. 124, New Bond-street, (Shop, &c.)	230 <i>l</i> . 0 <i>s</i> .	6 <i>l</i> . 12 <i>s</i> . 6 <i>d</i> . 14 "		3,890 <i>l</i> .
lease renewable for ever on fine of 48 <i>l</i> . 7 <i>s</i> . 6 <i>d</i> .				
No. 8, Albany-street, Regent's-park, with premises, No. 47, Little Albany-street, Nos. 7 and 10, William-street, Regent's-park,	74 <i>l</i> . 0 <i>s</i> .	13 <i>l</i> . 0 <i>s</i> .	97½ "	875 <i>l</i> .
No. 26, South Audley-street, Grosvenor-square,	154 <i>l</i> . 0 <i>s</i> .	39 <i>l</i> . 0 <i>s</i> .		830 <i>l</i> .
No. 13, Little Compton-street, (let in rooms),	90 <i>l</i> . 7 <i>s</i> .	10 <i>l</i> . 0 <i>s</i> .	12½ "	275 <i>l</i> .
Freehold.				
No. 11, Old Bond-street (Shop, &c.), No. 8, George-street, Hanover-square, with leasehold ground at corner, 250 <i>l</i> . 0 <i>s</i> .	200 <i>l</i> . and premium,	21 "		5,150 <i>l</i> .
				2,850 <i>l</i> .

ARCHITECTURAL SOCIETY OF NORTHAMPTON.—A committee meeting was held on April 8th. Mr. James stated that he had received communications from the Dean of Ely, and other friends of the late Marquis of Northampton, respecting some memorial to his lordship, and that a meeting should shortly be convened in London to consider the subject. The Cambrian Archeological Society was taken into union for the interchange of reports, notices, &c. It was resolved that, unless circumstances led to an alteration, the joint meeting with the Warwickshire Archeological and Natural History Society, to be held at Coventry, should take place on Tuesday, May 20th. The Mayor of Coventry has granted St. Mary's Hall for the meeting, and agreed to preside. The report of the sub-committee, respecting the restoration of the ancient painted glass from Aldwinkle St. Peter's (which glass fortunately fell into the hands of Sir George Robinson, who has kindly placed it in the hands of the society for restitution to its original place), was read and adopted. The list of architects and church artificers will be shortly placed in the hands of members of the society, as well as the volume of reports and papers.

THE MANCHESTER ROYAL INFIRMARY.—The north wing of this building, to the rearing of which Jenny Lind sang to the tune of 2,500*l*., has now been erected, at an entire cost of 14,000*l*. In plan it nearly corresponds with the south wing on the opposite side of the building, the main difference being that there is a sunk area around it. The centre of the front is occupied by a portico to make it correspond with the front of the centre and the front of the south wing. This portico is a copy in its main details of that attached to the Ionic temple of Ilissus at Athens. The entire length of the front of the wing, taking it from the

extreme ends, one facing Parker-street at the back, the other to the front, facing Piccadilly, is nearly 60 feet, the width 57 feet, and the entire height of the building from the cellar floor to the top of the entablature is 50 feet. The exterior is of smooth stone, and the back of white brick, the area having a coping of dressed stone. It comprises a basement, a first floor, and two storeys above that, the arrangements of all being similar in one particular,—a corridor, 9 feet wide, extending from one end to the other, giving a length of 60 yards; and the rooms, all 20 feet wide, are arranged on both sides of it. They are all arched and fire-proof, the floors of stone and the ceilings of iron, with ventilating arrangements between floor above and ceiling below. The new work commences about 60 feet from the centre of the old structure in front. Mr. Lane is the architect. By the erection of the two wings a spacious quadrangle has been formed, covering an area of 123 feet from wing to wing, and 134 feet from the back to Parker-street.

METROPOLITAN COMMISSION OF SEWERS.

—A monthly court was held last week, when a rate was ordered on the western division of the Westminster sewers, of 6d. in the pound, and 2nd and 10th of May next appointed for hearing appeals against the same.—In connection with the late fatal accident in Great Scotland-yard, a claim for compensation, on the part of Messrs. Robins, Astor, and Co. was made on the commissioners for injury sustained. Mr. Shaw was appointed to act as arbitrator on behalf of the commission.—A public urinal and water-closet was ordered to be erected in Covent-garden-market, at an expense of 150*l*. New works were ordered in connection with various sewers.—In reply to a question in the Commons, put by Sir Benjamin Hall, Lord Ebrington said that it was quite true that 91,000*l*. had been received,—that 7,635*l*. had been expended in works, and 21,000*l*. in the expenses of management and superintendence; but that it should be remembered that the commission was a body both for collecting and for expending, and the machinery for collection was both complicated and expensive. Out of the 21,000*l*. upwards of 3,500*l*. were traceable not to the expenditure of the commission, but to the collection of the rates, to enable them to carry on the works. It was also right to add, that in the charge for management there was the expenditure for preparing specifications for works to the extent of 170,000*l*. and for which the contracts would have been taken, if the wording of the Act of Parliament had not been defective. The commission, he added, ought not to be blamed for that.

THE PROTECTION OF DESIGNS EXTENSION ACT.—The chief points of the new Act are:—1. Any new invention, proper for letters patent, may be exhibited at any place certified by the Board of Trade, and yet entitle the inventor to subsequent letters patent, provided there be no other public exhibition or use. The inventor to be allowed to contract for the sale of his right to the invention; and no publication in any catalogue, newspaper, &c., to affect the validity of the letters patent: patents may be dated as early as the day of provisional registration. 2. The Attorney-General, or deputies, to examine descriptions of new inventions, and give certificate of approval. 3. The Registrar of Designs to register this certificate, and give certificate of registration. 4. Inventions to be marked "provisionally registered." 5. Provisional registration to confer the same rights, &c., as provisional registration of designs. 6. Designs known abroad may be provisionally registered and protected, provided no public sale, or exposure for sale, has taken place.

ROMAN CATHOLIC HALL AT LIVERPOOL.

—An extensive building, to be devoted to religious and charitable purposes, and, when occasion requires, to the holding of meetings, is projected by the Liverpool Roman Catholics. A committee is in process of formation for the procuring of subscriptions and the purchase of ground. The building, it is estimated, will cost about 7,000*l*., to be raised partly by small shares.

ORDNANCE SURVEY OF SCOTLAND.—A memorial to the Lords of the Treasury has been agreed to by the Edinburgh Council, complaining of the state of this survey and the smallness of sums still granted for carrying it on, and urging their lordships to grant such annual sum as may be necessary to complete the survey in a reasonable period. The memorialists in doing so remark, that "besides the large staff of engineers formerly employed in Ireland, and now available, many hundreds of well-educated civil engineers and surveyors, trained to habits of accuracy and activity during the execution of railway projects, may at once be engaged, if funds were provided;" and thus the object in view be attained within ten years from this date. The estimated sum necessary to complete the survey of Scotland, on the large scale now in progress, is 720,000*l.*; but, add the memorialists, "it can be shown that a large portion of this sum may be saved to the country, not only without loss, but with the greatest possible advantage, for it is calculated that probably not more than one-half the amount would be required to produce a properly shaded map on the scale of one inch to a mile, that is necessary for an outline map on the large scale. . . . which will, practically speaking, serve no purpose whatever, and which in no foreign country has been deemed necessary."

RAILWAY AXLES: INFRINGEMENT OF PATENT RIGHT.—A case of patent-law importance was lately tried at South Lancashire Assizes. The plaintiff was Mr. Newton, of Chancery-lane, and the defendant Baron (or James) Vaucher. On 15th May, 1843, Mr. Newton took out a patent for a Mr. Babbitt, of the United States, for a soft metal bearing for axles, preventing the metal becoming overheated. In 1849, Vaucher pretended to discover that a patent of his, taken out in 1835, embraced Mr. Newton's improvement, and he accordingly took out a patent, and made axles similar, to prevent which the present action was brought, proving that Vaucher's first patent was for securing a steam or water-tight joint, and had no relation to friction. The judge said, if a man took out a patent for a certain purpose, and did not suggest others, then the man who applied similar means to another purpose would be an inventor. It was certainly strange that defendant should take out a patent in 1849 for doing what he was entitled to do by a patent of 1835. The jury gave a verdict for plaintiff on all the counts, but nominal damages were agreed to.

A STRANGE NUISANCE.—At the Surrey Assizes, at Kingston, the cause of "Mackley v. Smith," was tried before the Lord Chief-Justice. The defendant, who had purchased a piece of land of the plaintiff, had caused a number of scaffolds to be erected upon his piece of land, and from these were suspended tea-kettles, teaboard, watering-pots, horse-collars, horses' and bullocks' heads, and also a figure representing Maria Manning, all for the purpose of annoying. It appeared that the noise and jingling of these articles when the wind blew was such as to create the greatest possible annoyance to the other tenants of the plaintiff. In course of the case the lid was suddenly lifted from a large box, which exhibited a model, the sight of which convulsed the court with laughter, and the Lord Chief-Justice, who was unable to refrain from joining in the laugh, observed that the model ought to be sent to the Exhibition,—as a specimen of industrious malignity, we presume. The jury returned a verdict for 500*l.* damages against the defendant, and served him right.

THE HUDDERSFIELD PEEL MONUMENT.—At a recent meeting of the committee for this monument, it was unanimously resolved that it should be a marble statue, 8 feet 6 inches high, to stand on a pedestal erected in some public place. The secretary read the offers of two sculptors, Mr. Alfred Bromley, Leeds, and Mr. M. Noble, London; also a large number of testimonials in favour of the sculptors. Mr. H. Lord then moved that the commission be given to Mr. Bromley. A long and warm discussion ensued, which has been adjourned for a fortnight.

VICTORIA BRIDGE, GLASGOW.—The foundation-stone of this new bridge was laid on the site of old Stockwell bridge, with great ceremonial, on Wednesday, in last week, by the Duke of Athol, as Grand Master of the Freemasons for Scotland. The banks and places of business were closed, and the whole city was in holiday attire. A vast concourse of people witnessed the ceremonial, which went off with great éclat, in the midst of instrumental music and general enjoyment. The craft came out pretty strong in a procession estimated to have numbered 2,500, with "splendid" insignia and ornaments, of no less than sixty-five lodges. The Grand Master was assailed by some of the spectators with a significant cry of "Glen Tilt!" The contractor, Mr. York, has the northern abutment and first pier nearly ready for the springers, and the coffer-dam of the south land stool is already far advanced.

RUGBY DRAINAGE TENDERS.—In consequence of your giving the tenders for the supply of stoneware pipes for the Rugby drainage, headed with a forcible remark respecting the discrepancy therein exhibited, I feel anxious that parties who take an interest in that and other work of a similar description should know the cause of the great difference. It is observable that those who tender so very low have country establishments. I would therefore suggest to any one who may wish to ascertain the difference in quality between country and Lambeth pipes to take a fair sample of each, break them, test the body, and judge for themselves. I can only say, that had I known that any other but the Lambeth pipes would have been allowed to be used, I should not have tendered, the competition being so truly unequal. I hope, in justice to others as well as myself, you will give insertion to these remarks.—THOMAS SMITH.

FARM BUILDINGS.—A Bill has been brought in by Mr. Cochrane and Mr. Forbes, to extend the provisions of "The Drainage of Lands Act, 1849," to the advance of private money for the erection and repair of farm buildings on lands in Great Britain and Ireland. It proposes to give landlords the power to borrow money for this purpose, provided always the sum borrowed or advanced under the Act does not exceed in amount eighteen months' value of the land in respect of which it is borrowed. Every rent-charge to be granted in respect of money thus borrowed may be made payable for any period exceeding twenty-two years, but not exceeding thirty years. All buildings erected or improved under the Act must be insured against fire.

MAGNETIC POWER IN MOVING AND STOPPING TRAINS.—A patent specification has been enrolled by J. P. P. Ambenger, of Paris, civil engineer, who claims—1. The application of magnetic power to brakes upon railways. 2. The application of magnetic power to give adhesion to wheels of carriages on rails. 3. The employment of iron filings (in making the electro-magnets) to increase the surface of contact. 4. The application of magnetic power to moving carriages as described. 5. The application and use of the said magnetic power as a motive-power, as described.

PATENT LAW AMENDMENT.—On the motion of Lord Brougham in the House of Lords the Patent Law Amendment Bill has been read a second time, and referred to a select committee; and on the motion of Earl Granville, the Patent Law Amendment (No. 2) Bill has also been read a second time, and referred to the same committee.

ROAD-MAKING.—A correspondent, who believes that late experiments in road-making, of all descriptions, chiefly fail from want of a previously formed foundation, suggests that the ground be first solidified by some sort of pile-driving apparatus. A small engine of three-horse power, he thinks, moved by men or horses, according to circumstances, might possibly answer.

IRISH VIEWS.—Mr. Alfred Phillips, at the Royal Apollonion Rooms, St. Martin's-lane, has introduced "dissolving views" to illustrate a pleasant musical and literary entertainment there given.

EXTRAORDINARY COOPERAGE.—An invention has been patented for constructing casks, barrels, puncheons, and everything in the cooperage line, by machinery. The invention is in operation at the St. Kollox Works, Glasgow. The staves of an ordinary-sized cask are said to be prepared, put together, and headed in little more than ten minutes,—cutting and joining done with mathematical precision, and the hand needed only to arrange the staves and fix the heads. The patentee is Mr. James Robertson, formerly of Liverpool.

ART-UNION OF LONDON.—The annual meeting for the distribution of prizes will be held on this occasion at the Lyceum Theatre, Strand, on Tuesday, April 29. Mr. Mathews having in the kindest manner given the council the use of the house for this purpose. The subscription lists will remain open until the 26th.

ST. GEORGE'S HALL, BRADFORD, COMPETITION.—We have received a note from the successful competitors, in reply to the letters which have appeared in our journal. The reply, however, does not touch the point at issue, namely, whether the plans can be carried out for the sum rigidly stipulated by the committee.

FUND FOR THE LATE EDITOR OF THE LITERARY GAZETTE.—A strong committee has been organized, we are glad to see, to raise funds to place Mr. Jerdan, the founder, and, for thirty-four years, editor of the *Literary Gazette*, in a position of comfort for the rest of his life. We shall have something to say on the subject.

SUPPLY OF WATER TO THE METROPOLIS.—It is stated that Government have abandoned the idea of adopting any of the proposals for the supply of water, but that a proposition will be submitted to Parliament having for its object the taking up all the water companies, giving 6 per cent. interest on the capital invested.

THE MUSEUM OF ECONOMIC GEOLOGY, PICCADILLY.—It is proposed that this museum shall be opened on the 28th or 29th of this month, probably by H.R.H. Prince Albert in person. No one can say that the officers here have been hurried in their arrangements.

ARTIFICIAL MARBLE.—Mr. St. Clair Massiah, of New Broad-street, has patented some improvements in the manufacture of artificial marble and stone, and in treating marble and stone. He claims the employment of nitric acid in the white and naturally veined marbles, and a mode of obtaining the compound colours, which may be tripled and quadrupled by multiplying the processes,—also the same process when applied to old, inferior, or decrepitating marbles, whereby they are effectually strengthened and dyed.—*Mechanics Magazine.*

FALMOUTH UNION WORKHOUSE COMPETITION.—I send you the amounts of tenders for the Union Workhouse at Falmouth lately competed for. The sum placed at the command of the architects was 3,200*l.* whereas the lowest tender for the selected design is 4,250*l.*

G. Powell, Penryn	£5,401 0 0
Farley and Salmon, Truro	4,942 10 0
Gerrish and Salmon, Truro	4,860 0 0
Prior, Truro	4,550 0 0
T. Oliver, Falmouth	4,250 0 0

Amount of contract entered into with T. Oliver, 4,375*l.* inclusive of foundation and boundary walls.

TENDERS

For the Merthyr Union, each person taking out his own quantities:—

M. Davis	£9,531
J. Gabe	8,878
W. Jones	8,052
H. Price	8,440
W. Hambleton	8,300
J. Daniels	8,123
M. Locock	8,000
W. James	7,562
Thomas C. Morels	7,455
C. Roberts	7,450

For the erection of a new Parsonage-house for the Rev.

J. Carr, of Millbrook, in the county of Bedford:—	
Whitman	£1,344 18 0
Chutnal	1,318 0 0
Twelvrees	1,203 0 0
Welch	1,011 0 0
Bryant	1,068 0 0
Colt and Masters, of Bedford	997 0 0

PUBLICATIONS.

THE ART of PORTRAIT PAINTING in OIL-
COLOURS, with Observations on Setting and Painting the Figure.
/ HENRY MURRAY.

Just published, price 1s.,
THE ART of PORTRAIT PAINTING in
WATER-COLOURS. By Mrs. MERRIFIELD, Honorary Member of
the Academy of Fine Arts at Bologna, Author of "Ancient Prac-
tice of Painting," "Art of Fresco Painting," &c. &c.

The Builder.

No. CCCCXXIX.

SATURDAY, APRIL 26, 1851.

EN Easter Monday we "took a walk," as people say when they go out without any very precise destination in view, mainly to see the resorts of the people on that day, and the aspect of the streets. At the National Gallery,* although a large number of persons (all orderly and well-behaved) passed through the rooms, the attendance was less than we have seen it on former similar occasions, partly because of the Vernon collection and exhibition by the School of Design at Marlborough-house, which divided the crowd, and partly because the fineness of the morning (too soon changed) sent thousands by steam-boat and by rail to find fresh air and recreation away from town. Around the Exhibition Building in Hyde-park, too, there were fewer persons than might have been expected.

Considerable activity prevails, as a matter of course, in that part of the Kensington-road which adjoins the scene of action. The Hippodrome, which is being built on a plot of land at the corner of the Victoria-road, for Mr. Batty, is making rapid progress. It is an oval, called 500 feet by 400 feet (it looks scarcely so large), and will accommodate 14,000 persons. The seats, of which there are six or seven ranges all round, are roofed over: the enclosed area is open to the sky. The entrance for the horses is at the south end, and over this is the gallery for music. Blue and white are the colours used for decoration: externally, the sides as well as

the roof of the building being slated, the appearance is not very prepossessing. The public entrance is by a composed archway of three openings, formed in the Kensington-road, which has in the frieze some small Roman figures on horse-back, and is otherwise adorned with flying horses. Mr. G. L. Taylor is the architect, and Messrs. Haward and Nixon are the contractors employed.

At Gore-house, where the late Countess of Blessington resided, M. Soyer is arranging to dine all the world,—and no one can do it better, if the world will. The Buildings Act had nearly stopped his temporary erections for the purpose, but the difficulty has been obviated. Some ingenuity, it is said, has been shown in the internal decorations. The effect of the exterior, coloured light green and yellow, is not pleasant. A poet sings sweetly—

"Calm and deep peace, on this high wold,
And on the dews that drench the furze,
And on the silvery gossamers,
That twinkle into green and gold."

On the front of Gore-house, however, these colours are not so satisfactory: their suggestions are bilious.

The painters are everywhere at work: white-lead and zinc-white must be at a premium. All are smartening up, and trying to look clean for as long as London smoke—that costly nuisance—will let them. Some of the shopkeepers say they are decorating to amuse themselves, having literally nothing to do. The number of houses to let is very large, and the demand at present small. The want that will be felt during the Exhibition will be rather for apartments and temporary accommodation than for houses.

In the course of our perambulation we visited the British Museum, and found it literally thronged with visitors: many thousands must have passed through the galleries during the day, gathering knowledge without effort from the silent teachers which line the ways.

The new west wing of the Museum, with its painted ceilings and walls, was, of course, an object of attraction. In our present number we give a view of this gallery, which is built according to the design originally prepared by Sir Robert Smirke: the northern end of it was erected by him about twenty years since: the southern end has just been erected under the superintendence of Mr. Sydney Smirke, under whom, too, the whole of the wing is now being decorated. The general width of the gallery is 41 feet, widening at the centre to 50 feet, and at the south end to 80 feet. The clear height is 31 feet. The length is 282 feet, of which the portion recently built measures 196 feet.*

The whole of this gallery will be occupied by Egyptian and Assyrian antiquities; but the permanent arrangement of the sculpture cannot be made until the side gallery now in course of erection is completed, which will not be the case till next year.

Since our last visit, the walls in part have been painted red, with a black Etruscan border around each space, and look very well.

Westmacott's sculpture for the tympanum of the portico will probably not be completed by the 1st of May, but very soon after. They were hoisting "Mathematics" when we were there,—a sitting figure of seven or eight tons weight. The central statue, standing, is "Astronomy," and is about 12 feet high.

These are all of Portland stone, and are boldly and effectively sculptured.

The enclosure in Great Russell-street, which seems to be of ponderous character (the central piers in particular are immense), will be finished, it is expected, about Midsummer next.

An intelligent looking German asked us, when we were in the Museum, to direct him to the City of London Museum, as he was anxious to see evidences of the early history of the metropolis. It is feared he did not find there all he sought. We would suggest to the Corporation, or to individuals of it, the practicability of getting together, temporarily, a Museum of London Antiquities in some fitting locality for the inspection of our coming visitors. Although the relics are unfortunately scattered, it would not be difficult, we think, with good management, to form a collection of great interest.

We were glad to find that Mr. Bunning had made a commodious entrance to the crypt of Guildhall, so as to enable strangers to view it. We are, therefore, less disposed to think that it is the intention of the Corporation, as stated by some of our contemporaries, not to afford facilities to visitors for seeing such of the few antiquities as the fire of 1666, and the carelessness of later times, have left for London. This crypt was constructed at the commencement of the 15th century, and is a very interesting specimen of its class. It consists of three aisles, four vaults in length, and is in an excellent state of repair.

In the evening of this Easter Monday we happened to be in another apartment in the city,—the Egyptian Hall in the Mansion-house, where the Lord Mayor (Muggrove) entertained with ability and right good feeling a large party of guests, including, we were glad to see, a sprinkling of literary and scientific men. Nothing was said, however, within our province to note, beyond the announcement that the first of the Lord Mayor's proposed *Conversazioni* will be given soon after the opening of the Great Exhibition.

SOME OF THE IMPEDIMENTS TO THE ADVANCEMENT OF ARCHITECTURE.*

WITH regard to the practical development of excellence by the concentration of direction combined with the division of labour, it appears to me that the civil engineers have in this way given evidence of their superiority in practical wisdom to ourselves; and I conceive that their usage assimilates very closely with that of the Freemasons; and, in short, of the artistic class of every nation that has attained eminence in the fine arts.

An engineer is engaged in a variety of localities, upon very different works; but to each he has a principal assistant, whose business it is to carry out the general ideas of his chief—to mature all his details, with the advantage of consulting his senior's experienced judgment upon difficulties. With young engineers it is an object to get upon the staff of one of the eminent in his profession; both as yielding a reasonable remuneration now, and as offering a pretty certain route, by steadily pursuing which, otherwise unaided talent and industry may eventually attain success. And in this profession, which in some respects nearly assimilates to our own, competitions are almost unknown—so unfrequent as barely to constitute an exception.

I see no adequate reason why a similar routine may not be introduced into architecture—why a man who has a real love for the pursuit, but no connections to help him for-

* Touching this building "A Subscriber" writes as follows:—"As it is stated that a commission is to be, or has been, appointed to take into consideration the desirability of erecting a National Gallery, it is to be hoped it will be neither too long deferred, nor the building delayed till not a vestige of the present national collection will be visible to the public from the accumulation of smoke from the immense furnaces, &c. in the rear, combined with the film, dust, and dirt that are gradually destroying and obliterating some of the most valuable of the works of art. How strangely are these things managed in this country? When Government have in their possession and power one of the most desirable sites for erecting a commodious and handsome building, in a great and central locality, and the smoke of the metropolis,—they at once let the opportunity slip out of their hands, and have let the whole of the land formerly forming the Royal Kitchen-garden to speculative builders; and now it is contemplated to encroach on the Royal gardens and palace, which may and will no doubt be required for a portion of the numerous family that is daily springing up. But to the point: if this is the site to be selected (although I have heard it hinted the Regent's Park would be a more convenient locality), let it not be done in a niggardly way, by being afraid of encroaching too much on the gardens: let there be a sufficient plot secured to erect such a building, that it may not be said after, as it has with the present National Gallery, 'What a pity not to have built it sufficiently capacious for the reception of any collection that might hereafter be presented to the country!' Let, Sir, by being built worthy of the occasion and of the country. In erecting such a building, why should not a splendid gallery of sculpture be attached to it of all the great men who have distinguished themselves, removing at once the single statues from St. Paul's and Westminster Abbey, and placing them in such a building where they could be both better seen and better appreciated? Another great point to be considered would be, both the most judicious mode of lighting as well as ventilating,—the latter more especially, as often have I been in the National Gallery being the contended for, and the public, and that the practical experience of practical men may be called into the field ere it is too late, and a job made of the whole concern, as has hitherto been the case with our national undertakings. Let no measure be so bad as to compel myself and others to quit it, and there has been such a film over the paintings that they were scarcely visible. I throw out these few hints, in order that you may, with others, be induced to bring the subject before the public, and that the practical architects for the best, most practical, and effective building for such a purpose, without giving or placing the building in the hands of any certain architect, whose various avocations would not admit of his studying the subject sufficiently."

* See page 257, in our present number.

* See p. 247, ante.

ward, should not be able to ascend, step by step, according to his talent and assiduity may qualify him. I see no adequate reason why clerks should always be joiners and stonemasons, nor why, in every building, the architect should not have his representative frequently or constantly on the spot, who might be one of his own pupils or more advanced assistants, according to the capacity of the clerk and the importance of the work.

Were this done, I apprehend that young practitioners would be better grounded in the principles of their profession than they are now; that architects would fulfil their part of indentures more truly than they do now; that feeling that they were acquiring practical knowledge, getting known and getting forward, young architects would not be quite so impatient of becoming principals; for I believe that they generally feel painfully conscious of the weakness which results from the want of experience. The adoption of this practice would enable an architect to place a deserving pupil in the way of earning some pecuniary advantage, as it would happen that proprietors would consent to the employment of a clerk of the works more frequently, if the charge were, as it might be, materially reduced. During the erection of the carcass of the building I am quite convinced of the absolute necessity of having a superintendent *always* on the spot, in order that the specification may be carried out in all its integrity, and full justice done to the proprietor.

Looking to the functions of an architect in a mercantile spirit—as an agent for the proprietor of the building, and as arbitrator between the proprietor and the contractor—it seems important that he should not be in any degree personally interested in the results of his conduct, of his advice and award, beyond the usual professional charges. He should not only be honest, but above suspicion; and as every one's judgment is liable to be warped by supposed self-interest, he should carefully secure himself against the possible influence of personal advantage. Yet we know that the patentees of various improved articles for building purposes will accompany their prospectuses with gentle intimations that the articles "will be supplied on terms of mutual accommodation;" or that "a liberal commission is allowed to architects who introduce them into their specifications." Now it is reasonable to presume that such proposals would not be made in this barefaced manner, if they were not agreeable to *some parties*; but that the practice reflects no credit upon the profession, I think all its respectable members will admit. I do not know any architect who will publicly defend the custom, and avow that he benefits thereby. So also with contractors: there are some who are willing to allow the architect a commission upon all the work they get through him; and there are architects who insist upon having one. Now, as one part of an architect's duty to the proprietor consists in rejecting bad workmanship and improper materials, he will possibly be brought into collision with the contractor or the patent nostrum vendor; and, consequently, his independence or his retaining fee will be jeopardised. He is thus like an ass between two bundles of hay; and as he occupies the position through his own folly, I consider the resemblance very complete. Of course the architect who is most likely to practise in this way is he who professes to work on a *low* commission from his avowed employer; and as he obtains a high commission from the ironfounder who supplies the grates and kitchen-range; from the cement agent, the paperhanger, the dealer in encaustic tiles, and any and everybody else, we cannot be surprised if he realises a handsome income before the end of the year.

Rather better than such as this is the architect who joins in partnership with a builder; because here the connection is avowed, it is all fair and above board; and if people about to build will employ a gentleman so circumstanced, they do it with their eyes open, and have only themselves to blame for the result. I should not myself anticipate that an architect would reject his partner's bad materials, or

that he would have his defective work taken down; yet we know that every builder must necessarily have materials more or less imperfect, which he is desirous of using up, and that he may have careless or incompetent workmen. But surely when the public see architects forming connections of this kind (which seem to me very like the union of the medical practitioner with the compounder of medicines, or of the attorney with the barrister), they may be excused if they slide into the belief, that after all it is of little importance if they employ an architect or not. In fact, by going to a builder first-hand, they appear to save themselves trouble and the architect's commission also. I cannot but think this is a fearful delusion; but of course it is very natural that I, an architect, should say so.

Again, it is being found generally convenient that bills of quantities should be prepared for every building which is being offered for contract by tender; and in several cases the architect himself prepares these bills of quantities. This, I think, is, legally speaking, very hazardous to the proprietor; for as the architect is his agent, I fear he becomes responsible for the accuracy of the quantities so prepared. Passing over this objection, I think there is danger, in case of any deficiency in the quantities, that the architect will be tempted to enlarge the amount of the extra bill, in order to make things pleasant to the contractor, and to screen his own mistakes. I hold, therefore, that bills of quantities should always be prepared by some third party, in order that the irresponsibility of the proprietor and the impartiality of the architect may be preserved inviolate.

There is one almost universal accompaniment to a building contract which it would be well to abrogate altogether, and yet which seems irremediably united to it, as inseparably as effect to cause. It reminds me of the time-worn conundrum: "What is 'that which comes with a coach, goes with a coach, is of no use to a coach, and yet a coach cannot go without it?'" As *noise* to a coach, so is the bill of extras to the contract. It is clear that if there were no contract there could be no extras; and if there be a contract, it is equally clear that everything ought to be included in it. But from a variety of causes, for some of which the Profession are, and for some they are not, responsible, the extra bill seems ubiquitous. A fruitful source is the ignorance of proprietors, who, being unable to understand drawings, sometimes exclaim, when the work has progressed, "Oh! I never intended this: this will never do: it must be altered;" and straightway the alteration is made, the proprietor fancying that it will cost him nothing, but "is included in the contract." Did he understand drawings, specifications, and contracts, he would have a different opinion; but as respects building, his is a most arcadian simplicity, extremely verdant, and his professional adviser too frequently leaves him unenlightened until the settlement of the accounts:—

"Then comes the reckoning when the banquet's o'er,
The dreadful reckoning, and men smile no more."

For bland courtesy is nowhere, being completely distanced by litigations, disputes, hard words, and bad temper, which "chase all their smiles away."

But whilst great extra expense is, without doubt, occasioned by the ignorance and caprice of principals, it must be admitted, in all frankness, that it is also occasioned by the ignorance, carelessness, or dishonesty of architects. The counts of ignorance and carelessness I do not anticipate will be traversed: that of dishonesty may be. It is twofold: first, there are those who hold that in competitions, as in love and war, all is fair; that is, that every artifice may be practised by which the committee may be beguiled into adopting the design: consequently, in a church to accommodate 1,000 persons, at a cost of 2,500*l.* florid drawings are prepared with details at large of some of the features, such as the east window, the font, the bench ends, and the pulpit; and they are all elaborately worked, and all included in the estimate. Now we

know that such an estimate for such a design must be fallacious; but building committees, as they are not composed of men of the world, but of people who were never on 'change, never speculated in shares, or cotton, or corn, and, consequently, quite ignorant of the little deceits usually deemed allowable by those who have no objection to sail close to the wind, provided they can hedge a loss, or book a gain—of course, these simple-minded men trust most confidently to the author of this very attractive design, "so beautifully drawn," and with "such elaborate details;" and when the contract is closed, they are surprised to find that it has cost 1,500*l.* extra, and that the spire is still incomplete! Now, a case like this illustrates the demoralizing tendency of competitions; as there are architects habitually engaged in the competition business who defend such practices, on the plea that as committees must know that all they require cannot be provided for the money, they are not taken in more than they deserve to be. I need not delay to expose the contemptible sophistry of this excuse; nor to point out the injuriousness of the practice to those competitors who act uprightly, and upon the character of the profession at large.

The other form of dishonesty is akin to this, and is practised when, without the poor excuse derived from the excitement of a competition, the architect deliberately tells his employer that the cost will be one sum, when he knows at the time that it will be very much more. Now, of course, when a gentleman does employ an architect, he expects that his interests will be properly protected; but if he finds that they are not; that, in fact, his confidence is abused, can we wonder if for the future he eschews architects, and advises his friends to do so likewise? And thus many of the profession suffer from the default of one.

But besides the merely agent functions which appertain to an architect, there are others which partake of a more elevated rank and influence. The former might be discharged by any man of business who possessed the requisite practical knowledge; and in fact are sometimes so assumed by estate agents and others, when they find the proceeds of their more proper pursuits declining in value; but the latter are the peculiar functions of the architect, considered as an artist, as him whose province it is to elevate the "human beaver" into a man, and record for posterity the progressive spiritual advance or retrogression of each generation. We have been told that the architect should rank with the poet, the prophet, and the teacher; meaning, I suppose, that as it is the office of these to embody in language those ideas and passions which belong to our race, and while thus enlisting our sympathies, soothing grief, and tempering joy, turn all our thoughts from earth heavenward,—so it belongs to the architect to spiritualize the material necessities of our physical existence, to inspire their outward forms with celestial fire, and to impress upon the mere mechanics of life evidence of a spirit not of time only, but of eternity; that thus we may not only minister to the gratification of the passing hour and refine its more sensuous and commonplace features, but recal for admonition the achievements of the past, and foreshadow in dim, but gigantic outlines, the misty glories of the coming future. Thus each architect becomes a bard in stone, and every building a minstrel lay. So should stray volumes of our standard writers float down the stream of time, and, after many days, be found again: when those who find retrace the course by which these works descended, some evidence may appear in the buildings that remain that the poetic spirit of those writers was shared by their contemporaries. But should such a retrospect be made, what have we now to produce in testimony of any real sympathy between the poets and the age?

Our railways are extremely useful; but except where nature necessitated the deep cutting, the lofty embankment, the mysterious tunnel, there is nothing that claims kindred with spiritual beauty. Nature is ever ready to impress upon all objects tokens that shall speak of something more than mere mate-

rialism; and, therefore, though the engineer may leave the sides of his cutting rude and unfurled, she scatters over them jewels from her casket. Sent by her the lowly lichen tones the discordant surface, and heralds successive stages of vegetation—the moss, the fern, the bramble, and the pendent birch, or stately sycamore; and these, if undisturbed, will grow in luxuriance, and give to these works a beauty all her own. But this is an adornment which speaks not of advanced civilization, of spiritual cultivation: it bears no record but that of gross materialism, satisfied with providing for sensuous wants, and quite unmindful of superior gratification, rebuked by the tender admonitions of the universal Father.

And in works more strictly architectural what do we find? If the two great buildings of our age and country be preserved to posterity, what will they testify? Why that neither for our Palace of Legislation, nor for our Halls of Justice, have we any style of our own; but that we are content to borrow, for the first, from the people who lived in our country some three centuries back; and, in the latter, that we import from Greece, along with the Elgin marbles, the style that there prevailed 2,000 years ago! The latter, indeed, may evidence the universality of our commercial enterprise, and the cosmopolitan spirit it induces; whilst the former, belonging as it does to the era of the Reformation, might be considered to indicate aversion to Romanism, had not its adoption preceded by several years the so-called Papal aggression. Perhaps this borrowing in architecture should be regarded as a counterpart to our national debt; that as we take from the *past* the many styles in which our buildings are erected, so we pledge posterity to pay for our generous philanthropy to the Irish and the negroes, and for our spirited defence of all Europe against Napoleon! Our fathers did so before us, and this is our only justification.

Could architects be induced to acknowledge that our art is in a transition state, some hope might be entertained that it would gradually escape from the swathing bands of conventionalities by which it is now fettered, into a more consistent expression of the age; but whilst they willingly submit to be cramped by the merely literal limitations of any one style, or number of styles, and call that architecture, it is vain to anticipate improvement. Instead of embracing the subject in an earnest and practical spirit, they handle architecture in a dilettante or namby-pamby manner, as though it were a sickly exotic a rude breath might wither, instead of being a hardy native, battling with every disadvantage and every difficulty, stoutly maintaining its ground, and continually progressing to more perfect development. Architects and architectural writers declaim against the want of appreciation on the part of the public, for the favourite object of their studies; but they write, speak, and act as if it were the part of the public to lead them, and not theirs to lead the public. Imbued by a pedantic study of existent remains with immature prejudices in favour of different *passé* and *effete* styles, they are constantly endeavouring to make the requirements of the present day coincide with the forms and expressions of those very different to it. The history of architecture is not a wardrobe of old clothes, from which the young to-day is to borrow the bobwig and small clothes of old yesterday or the other disused garments of its still older forbears to an indefinite remoteness. I apprehend that the work which architects have to perform is other than the procuresian task of increasing, or docking, any building in any of its requirements, in order that it may accord with some supposititious standard of dubious authority; but that they ought to make themselves necessary by studying, and promoting, in the most perfect way, the utilitarian wants of the day; and then, as opportunity and talent offer, breathe into their works Promethean fire, the spark of life. Thus gradually, but certainly, they would induce a more positive and general desire for æsthetic gratification. There is always a yearning for the spiritual from those most trapped in materialism; but at present there

is a general impression that such gratification in architecture is too costly to be frequently indulged. Our business, therefore, should be to remove this erroneous impression, and to show that it may be enjoyed without extra expense.*

A DESCRIPTION OF THE ANTIQUITIES OF POLA, IN ISTRIA.†

On leaving the amphitheatre and returning to the walls of the town, we observe the so-called Porta Gemina, which apparently formed the grand approach from the town to that building. On the exterior of this gate, half columns, 16 feet 6 inches high, support a panelled architrave, on which, without the intervention of any frieze, rests a small remaining portion of an enriched cornice. Though, as the name implies, the remains consist of only two arches, it is considered that the composition, when perfect, consisted of three arched openings—and it may be seen from the drawing, that the entablature was continued on beyond the part where, at present, the panelled architrave is terminated abruptly. The style and construction of this gateway induce the belief, that it was built about the same time, and of the same material, as the neighbouring amphitheatre. In addition to the peculiarities in the entablature which have been noticed, attention may be called to the foliage and composition of the capitals, the columns, and to a groove found within about 1 foot 6 inches of the inner face of the arched heads next the town, which is carried through the entablature and down to the impost mouldings, on which it terminates. Whether this arrangement was connected with the use of a porticulis, or was contrived to annoy an enemy approaching the gates, is a question open to conjecture. Metallic accessories are supposed to have been fixed, by way of ornament, on the keystones of the arches, and in the panelled architrave, where square sinkings now alone remain. We are indebted to Mr. Allason and his companions for the discovery of this gate, in consequence of their observing a portion of the cornice which had become visible, after the walls which enclosed it had been dismantled by the French. Recent excavations have laid open a way, paved in part with ancient slabs, from this gate to the capital or fortress—now the citadel—with a branch road, leading apparently round the hill on which the fortress is placed into the centre of the town. It would be interesting to know, whether the centre of this ancient way corresponds or not with either of the arches of the gate; and it would also be desirable to remove the crumbling mass of wall which now covers, as a mere face-work, the site of the supposed third archway, could the demands made by the owners of the vineyards which occupy this locality be satisfactorily arranged. The road direct to the capital terminates against the upright face of the rock on which that is built, but two gates have been also discovered on the side of this road, from the small courts inside of which, it has been ascertained, in one instance, that steps communicate with the higher level of the fortress; and a like arrangement, it is supposed, would be found to exist on clearing the earth away from the other gate.

Near to the Porta Gemina an arch is to be seen, built into the walls, which is of simple and apparently ancient construction. A head in relief, and the representation of a club, carved on two of the arch stones, have conferred the name of Hercules on this relic. The names of the supreme magistrates, cut in the stones of the arch, are still visible. This arch is interesting on account of its construction being that which is now termed the skew principle—a peculiarity of form which may have been adopted in this instance, in order to afford a view of the amphitheatre from the whole length of the street, of which the arch formed the termination.

The arch of the *Sergii* is situated within the walls of the city, not far from the last-named arch, and immediately adjoining the remains of the Porta Aurea, which gave communica-

tion from the Forum to the Campus Martius. The Porta Aurea is supposed to have been a triple gate, of which the arch of the *Sergii* completed the internal decoration. The drawings convey, better than any words, a clear idea of this arch, which is supposed to be a private monument of affection and esteem, erected by a Roman lady to her husband and members of her own family. Coupled columns of the Corinthian order adorn the piers of the archway on both fronts; and inscriptions still remain on the attic, which is supposed to have been surmounted by figures or trophies placed on the three projections into which it is divided. The propriety of placing the central projection or pedestal over the void of the arch, may perhaps be questioned, especially as there is no keystone to the archivolt, to give an appearance of additional support.

The want of depth in the whole composition on the flank (the extreme dimension in that direction hardly exceeding six feet) will not escape attention, but this peculiarity may have been occasioned by its position as a face work against the more ancient structure, a supposition which the unfinished state of the ornamental details on the back part seem to confirm. Attention may also be invited to some peculiarities in the ornamentation of the panels in the jambs of the archway, the details of which, and of the mouldings, capitals, and enrichment generally, are not equal in merit to those of the temple of Augustus, nor are they executed in so costly a material.

The site of the ancient theatre is still to be traced in the excavation, by which it was formed on the side of the hill, the name of which still retains the remembrance of the building, *Theatron*, in the modern corruption *Zaro*. The four columns which adorn the high altar in the Chiesa della Salute in Venice, are said to have been taken from this building. The drawing conveys a very accurate idea of the view of the town from this hill; the amphitheatre on the right, the walls and square embattled towers built by Theodorico, the citadel, and the other monuments, with the general features of the port and distant landscape.

The remains of the ancient capital, which was of an elliptical form, deserve notice; and, among the churches and religious edifices, both of the town and of the islands in the bay, numerous interesting memorials of classic, Byzantine, and mediæval times are to be recognised; with mementoes of the presence at one period of the Knights Templars; nor could a careful investigation of the walls, the fortress, and of all the buildings, both sacred and profane, fail to bring to light fresh objects worthy of attentive consideration.

The Istrian stone is of fine, close texture, and good colour, and is raised in large masses, without fault or blemish. The quarries on the island Brioni, outside the port, have for centuries been worked to supply the "Stones of Venice;" and from the ancient quarries of Roman Pola on the main land, that immense block was raised, we are told, which still covers the Rotunda in Ravenna, once the sepulchre of Theodorico.

It has been well observed by one author, that the inhabitant of Pola may consider his city rich in antique remains, while within the circuit of a mile, it contains an amphitheatre, two temples, a nymphaeum, an arch, three gates, besides lesser monuments, and those belonging to the Christian era.

The name of Pola, says Stancovich, is known in Europe, only through these superb remains of Roman magnificence: every inhabitant, therefore, should carefully preserve and collect all fragments and antiquities, and transfer them to the temple of Augustus, to form a museum to adorn the town, and to induce the resort of learned travellers. Such a museum is now in course of formation: the time when the ancient monuments could be destroyed with impunity is, we may trust, passed away; and the importance due to its position being now recognised by the Austrian Government, there is reason to hope that Pola, no longer oppressed by the jealousy of its neighbouring rivals, will participate in the advantages, intellectual and commercial, which

* To be continued.

† See p. 246, ante.

arise from the extension of international communication.

At the close of the paper Mr. Scoles communicated some further particulars respecting the buildings. The first remark alluded to the injurious effect of the modern esplanade formed along the sea-shore, which had materially altered the appearance of the amphitheatre, from one of the best points of view shown in one of the drawings. The next note had reference to the excellent preservation of the walls of the amphitheatre, and the remarkably white colour of the stone, of which he had sent specimens for the inspection of the meeting. The four projections for staircases on the exterior of the amphitheatre were more decomposed and discoloured than other parts; and the report on the spot was, that this effect had been produced by fires, which had been made there by the shepherds in former days. The mortar appeared to contain a mixture of very finely pounded brick; and the manner in which the courses of stone had been dovetailed together was clearly to be seen. Piles had been discovered under several of the ancient buildings of Pola, and it had been supposed that, while the modern walls of the town were built upon the ancient foundations, the latter had been erected upon piles. A great number of statues found at Pola had been removed to Venice. Excavations were still in progress, at the expense of the Austrian Government, which had devoted a small sum annually to that object. Along the middle of the arena of the amphitheatre, the lower parts of six columns were still standing. These remains were 4 feet in height, placed about 10 feet apart; and their intended purpose, whether to support a platform for the arena or not, was doubtful. Whether the whole interior of the amphitheatre was of wood was a disputed question; but Mr. Glennie thought the staircases certainly were formed of that material. Mr. Scoles trusted that the paper on "Roman Provincial Architecture," to which allusion had been made, might be looked to as a prelude to an interesting series of essays on that subject, of which the present account and illustration of Pola should form the commencement.

Mr. Penrose (fellow) stated that his visit to Pola had lasted only a few hours, but he had, however, seen enough to enable him to bear witness to the extreme fidelity and admirable precision of Mr. Glennie's drawings, which Mr. Nelson's paper illustrated. Mr. Nelson had pointed out the peculiarity of the site on which the amphitheatre was built. He believed that it was so constantly the case that the theatres of the Greeks were placed on the side of a hill, that an exception to that rule would be remarkable. He remembered that the amphitheatre of Sutri was so built on a recess in a volcanic hill, which some quarrying had probably increased; and much the same was the case at Corinth, though the latter example was evidently a quarry converted into an amphitheatre. Whether the steps or seats at Pola were of stone or wood was not by any means determined. His own impression on the spot, judging from the exceeding lightness of the piers as compared with those in amphitheatres where there were certainly vaults carrying the steps, was that wooden galleries were used to a great extent. Probably the rustic basement and the lower tier of arches might have had vaults, but he imagined all above was of wood, especially as there was a provision for the insertion of timbers of considerable size. As at Pola, the seats of the amphitheatre at Nîmes were divided for the visitors; but, he believed, in the latter case 18 inches instead of 15 were allowed for each individual. Although that limitation of space was so very small, it occurred to him that ten or more adjoining seats might have been appropriated to the head of a family, who, when the shows were not gladiatorial, might have been accompanied by some of the younger members of his establishment, in which case even fifteen inches might have been an average seat. With reference to the employment of skew arches by the Romans, Mr. Penrose referred to a bridge at Rimini, of large span, which crossed the river at a considerable

angle; but there, as in all other Roman examples which he had examined, such arches were not built on the modern principle; and the joints of the voussoirs did not follow the spiral line. The stones were of sufficiently large size to carry a horizontal joint, and therefore the arch was somewhat imperfect, though quite solid enough for the required purpose. In reply to a question from the chairman, Mr. Penrose further stated that he had not particularly examined the four projections for the staircases to the amphitheatre at Pola, so as to form an opinion whether they were parts of the original work or subsequent additions. He believed the periphery of the amphitheatre was a true ellipse, having taken some measurements with a view to ascertain the fact. Generally speaking, the plan of such structures was a false ellipse, formed from several centres. That of the Coliseum at Rome was a false ellipse, having four centres, which was by far the easiest form for construction, because all the lines of the internal divisions which converged could be at once referred to their known centres; but at Pola much greater nicety appeared to have been observed in order to obtain perfection of form. If it should be found to be really a true ellipse, he should consider that conclusive against the supposition that the internal arrangements were of masonry, on account of the greater difficulty of setting out the masonry to suit a curved figure, the centres of which were not known.

THE METROPOLIS OF THE UNITED STATES.

WASHINGTON, THE SEAT OF GOVERNMENT.*

LETTER-WRITING from the capital has become a trade, and a much abused trade, too, I am sorry to say; yet of all the letters from this city, I scarcely remember one that has given the reader any idea of what Washington really is.

In respect to shape, the territory of Washington is quite irregular; being nearer a pentagon than anything else. The capital stands very nearly in the centre of the area; and from this central point some eight or ten wide and noble avenues and streets radiate in different directions. The avenues are named from the different States. Pennsylvania Avenue is by far the finest, being central, and running the entire length of the city, from East to West. Massachusetts Avenue is parallel with it, and quite as long; and Virginia Avenue is also parallel with it, and nearly as long. The streets, which are numbered 1st, 2nd, 3rd, &c. &c., run North and South, and as nearly as possible at right angles with these extended avenues. Shade trees are set out all along the occupied streets and avenues, which must in turn render these in summer beautiful indeed.

The public buildings are scattered over the immense area which is included within the limits of the city, and at most painfully inconvenient distances from the capital and from each other. Vacant lots of land, common, and unfenced fields of vast extent, are to be met with in every direction. So ample indeed are the pastures of the city, that one has but to turn his cows and goats into the streets, and the animals find their own grazing ground at once. Cows, goats, and swine are to be met with in every direction. But with all this amplitude of territory the dwelling-houses of the city are quite contracted in their accommodations. They are generally placed directly on the streets, without so much as a few feet between them and the side walk, and with but a miserable little yard in the rear. And then, the style in which their houses are built, is generally—almost universally—deficient in all the attributes of taste, and affords very few conveniences. They are generally small, inferior little brick and wooden houses, with basement stories, but no cellars, and mean-looking wooden steps and balustrades leading to the front doors. And most of these houses, so far as I have seen or learned, are internally as contracted and inferior in their accommodations as they are cheap and mean in their

exterior appearance. There are, of course, exceptions to this sort of houses, for the spirit of improvement has even reached Washington; but the general impression made on a New Englander by the dwelling-houses of this city is that of inferiority—almost meanness. Why—cabinet ministers here live in houses which master mechanics in Boston would think totally unfit for their families, and which a journeyman mechanic even would regard as only passable.

The hotels of the city are in keeping with the dwelling-houses. There is not one elegant, imposing hotel structure in all Washington. They all have a dingy, dirty, second-rate look. This strikes a stranger the more forcibly, from the fact that so very large a portion of the dwellers in Washington are occupants of hotels. For this reason it might reasonably be expected that no city in the Union should furnish so many good hotels as Washington. It is, however, far otherwise. The best here would scarcely rank higher than second-rate in New York and Boston.

The public buildings are generally imposing structures; but, with perhaps two exceptions, they are built of miserable materials. The General Post Office building furnishes one of these exceptions. This is not only a finely proportioned building, and an elegant piece of architecture, but it is also built of beautiful and durable material—nice white marble. The new wings of the Patent Office are to be of white marble also, but the marble is of a soft and porous nature, which is scarcely suitable for such a structure. The other exception to which I have alluded is furnished by the Smithsonian Institute. The material of this structure is a solid and beautiful free stone; and the whole style of the building is elegant and ornamental. It is yet unfinished, even externally, and will not be completed for some time; but what is finished shows to fine advantage externally, and the two western halls, which are completed internally, are extremely tasteful and beautiful rooms. The style of architecture adopted here is a sort of composite of the Norman and Gothic. When the entire building shall be completed, and the spacious grounds around shall be laid out and ornamented, agreeably to the designs already settled on, the Smithsonian Institute will be one of the most beautiful establishments in Washington, if not in the United States.

Washington is well supplied with all the essentials of life. The water is abundant and excellent. The market for meats, vegetables, and fruits is very good; and generally the prices are low.

FOREIGN ARCHITECTURAL AND ART INTELLIGENCE.

The "Bourdon" Bell of Notre Dame Cathedral, Paris.—This gigantic bell, whose knells have marked many a world-event in modern history, has been mute for some time past, as the belfry was in such a condition, that eighty men were scarcely able to swing the immense brass into tone. In consequence of the general restoration, the architects, Messrs. Delassus and Viollet-Leduc, have devised an apparatus of pulleys, by which six persons will be henceforth capable of the same performance. The "Bourdon" was first cast at the end of the 14th century, at the cost of Jean Montaigu, brother of the then bishop; its weight was then only 15,000 lbs. In 1662 it was re-cast by Florentin Leguay, and augmented to its present weight of 13,000 kilogrammes. Louis XIV. was present at its baptism (!), and gave it the name of Emmanuel. It escaped the general fusion of bells during the revolution, but was taken down in the year 1794, and not elevated again until Easter, 1802, at the celebration of the *Concordat*. The French consider it the largest bell in Christendom, as it is certainly the most *sonorous* of those vibrating musical instruments.

Civic Festivals and Civic Benevolence in France.—Public festivals during Lent have been revived of late in France—tournaments, cavalcades and public masquerades, where, as a matter of course, art cannot, by any means, be put aside and neglected. In Cambray, the

* Condensed from the *Boston Traveller*.

Roi des Ribauds, was represented; at Bauhain, the *Précôt des Etourdiés*; at Douai, the *Fête des Fleurs*, &c. How efficaciously such pageants act on the public mind, may be gathered from the fact, that on the occasion of the festival at Bordeaux, 80,000 francs were collected for the indigent, while at the same time the traditions and history of the city were artistically revived.

Model Barracks for the Custom-House Employés at Havre.—Although the housing of people in barracks is to be considered only as a transitory arrangement, the huge *Caserne-modèle* of Graville, near Havre, deserves notice. It was in the year 1845, that the plan of concentrating the many employés of the above establishment in one building, was first started. The place selected for this huge structure in one of the suburbs of the city, offered the inconvenience of a damp alluvial soil, but this had been successfully overcome, and thus the general salubrity of the district promoted at the same time. Although the expense of the building was nearly one million of francs, it has not cost the public anything, as this whole sum has been borrowed on the security of the salaries and wages of its intended dwellers, and is now paid off by small deductions. The plan is by M. Fortuné Brunet-Debaines, architect of the city and the museum and library of Havre. The building has a rectangular form, with a front of 170 metres, and a depth of 33 metres. It is composed of a ground-floor, *entre-sol*, and three stories, surmounted by an attic, which forms the fourth. It contains five courts, around which the buildings are arranged. The middle is occupied by the lodgings of the bachelors: to the right and left four portals lead to the quarters of the married, which occupy the space around four of the courts, in which there are sixteen bleaching plats. This portion of the building comprises 300 lodgings, classified in four categories, according to size, amount of rent, &c. Four staircases, leading to most spacious corridors, belong to this portion of the *caserne*. The corridors of each story, leading to different classes of lodgings, are separated by gates, which can be opened for the facility of inspection. The centre building is entered by a vestibule, which leads to an immense court, whose angles are flanked by turrets. In this part are the quarters of the officers, the dormitories of the bachelors, a dépôt for the fire-engines (*pompes*), a *salle d'armes* (fencing-room), a laundry, an infirmary, a restaurant, a smoking-room, a tobacco-shop, and a *refectory*, whose vast dimensions remind us of those of ancient monasteries or colleges. Here is also the dispensary and the physician's room, as the administration is very attentive to the health of the numerous inmates. Dr. Lallemand has reported, that in the year 1850, of the 1,600 inmates of the *caserne-modèle*, only twenty persons have died, while sixty births have taken place. To crown these well-meaning attentions of the officers of the establishment, a gratuitous school has been established, where 600 children receive a sound and adequate education. As the commerce of Havre is on the increase, there is already a lack of space and accommodation evident in the *caserne-modèle*, which, however, will be remedied by the construction of two new wings, of which the plan of the building is susceptible. The space surrounding the building is also yet in a state of barrenness and uncultivation, which claims the attention of the direction of this certainly novel and well-meant establishment.

Bahia, Brazil.—*Pictures of the Conquest.*—There have been discovered of late in one of the suburban churches of the city of Bahia *nos todos os Santos*, two oil pictures, which date from the times of the conquest, in the early part of the sixteenth century. They represent some festivals celebrated in honour of the famous Camamoroo, a noble Portuguese, who, by gaining the affection of one of the daughters of a chief of the Reconavo, acquired this large province, which he and his wife subsequently gave to the Crown. The natives in their original dresses are seen dancing in large circles, while the old-fashioned Portuguese

Caretas, who have conveyed the guests, are standing in the background. These oil paintings, probably the "oldest" (albeit frail) documents of American art, are still creditably executed, and especially the landscape part, representing the country then covered with dense forests, only partly cleared, is well rendered. They well deserve the attention of travellers, having been never copied nor engraved. That art had not been quite foreign to these colonists of old, may be also gathered from the fact, that some of the fronts of the churches at Bahia and Rio de Janeiro are made of marble, conveyed thither from Portugal, the mother country.

Discovery of a Mosaic Pavement near Valence.—It was as far back as the year 1840, that some marble cubes had been discovered in a field at Cornillas, but the subject remained in abeyance, until lately that works of greater extent have yielded more important results. The Mosaic pavement laid bare has an extent of 40 metres by 4 metres, and is formed of regular cubes of the size of about 2 centimetres, exhibiting a great variety of colours. The marbles of the Pyrenees are of great diversity, as well as the polished grits (*grés*), bricks of very fine red colour, &c. The small cubes are laid in a bed of cement of about 15 to 20 centimetres thickness, and which seems to consist of pounded brick intimately mixed with lime. The design is composed of tastefully arranged *rosaces*, lilies, leaves of ferns (*fougères*), which latter would be a novel feature of antique ornament. Some circular spaces left unoccupied seem to show that columns might have formerly occupied the same locality.

ON THE GEOMETRICAL PRINCIPLES OF BEAUTY, MORE PARTICULARLY AS APPLIED TO ARCHITECTURE AND THE HUMAN FORM.*

On this subject Mr. Hay has just now published an ingenious volume as a sequel to former works, wherein he endeavours to systematise the elements of symmetrical beauty. He has also read papers on the same subject before the *Architectural Institute of Scotland*, and the *Society of Arts of London*. At the Scottish Institute it was referred to a committee of professional men to investigate.

We will avail ourselves of the paper read at the Society of Arts to give the writer's own views.

The basis of Mr. Hay's theory is this: A figure pleases the eye so far as its fundamental angles bear to each other the same proportion that the vibrations of the different notes in the common chord of music bear to each other.

In showing how he applies this principle of numerical harmonic ratio to forms, he takes the right angle, formed by the meeting of a vertical with a horizontal line, as the fundamental angle, corresponding to the note C, and from this he describes a quadrant of the circle; and from the point where this quadrant meets the horizontal line, he draws another vertical line of indefinite length. Dividing this quadrant by 2, 3, 4, 5, &c., he draws lines from the right angle through these divisions, meeting the indefinite vertical line at greater degrees of altitude and at more acute angles as the parts of the quadrant between its half and its vertical side become smaller. These lines form, with the horizontal and the indefinite vertical line, a series of right-angled triangles, which Mr. Hay employs in the production of geometric beauty in forms as effectively, he maintains, as the harmonics are employed in the production of harmonic beauty in sounds. He shows by diagrams that the most perfect geometric figures—the square, the equilateral triangle, and the pentagon—which constitute the elements of the five regular solids or Platonic bodies, arise from the division of the quadrant, exactly in the same way that the octave to the fundamental note, the dominant, and the mediant, arise from the spontaneous divisions of the monochord.

He next explains his terminology, and shows

* The Geometric Beauty of the Human Figure Defined, to which is prefixed a System of Aesthetic Proportions applicable to Architecture. By D. R. Hay. Blackwood and Sons. 1851.

how every figure, whether rectilinear or curvilinear, has an elementary angle of some portion of a right angle, which, being applied as its name, at once explains its proportions,—thus, the scalene triangle of $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$, &c.; the rectangle of $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$, &c.; the isosceles triangle of $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$, &c.; the ellipse of $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$, &c.; the composite ellipse of $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$, &c.; and he next explains how these figures may be combined agreeably to the angles from which they are named, so as produce beauty to the eye as effectually as the combination of various notes whose frequency of vibrations agree in similar ratios.

Mr. Hay then proceeds to explain the method by which he applies this angular system in the rectilinear formation of an architectural elevation. Here he shows that spaces in which the prominent lines are horizontal and vertical lines, are agreeable to the eye when all the principal parallelograms fulfil the condition, that the diagonals make with the sides angles which are exact sub-multiples of a right angle, agreeably to the harmonic divisions by 2, 3, and 5, and sometimes 7. This he exemplifies by taking a given horizontal line as a base, from one end of which he draws diagonal lines, forming with it $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$, of the right angle, meeting a vertical line at the other end of the base. The rectangles formed upon these diagonals he next divides by angles of $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$, and $\frac{1}{5}$ of the right angle; by which simple means he produces the rectilinear skeleton of an octostyle Doric portico, of the same proportions as those of the portico of the Parthenon or Temple of Minerva at Athens, showing, at the same time, that the composition of this unequalled structure is partly horizontal, partly vertical, and partly oblique, and that its angular elements corresponded exactly to the elements of that beautiful harmony called the chord of the flat seventh.

Mr. Hay next proceeds to show how this system may be employed in imparting true aesthetic proportion to the representation of human figures, such as the ancient Grecians imparted to the statues of their deities. This, he says, must in the first instance be done by applying it to the permanent structure of the bones; because it is in the relative positions, sizes, and forms of the various parts of this internal structure that we find those approximations which Nature makes in every direction to the perfect development of that fundamental law of beauty which we have hitherto felt to exist, although its nature has been involved in mystery. He therefore states his opinion to be, that without a knowledge of the osseous structure it is impossible for the artist truly to represent the external form of the human figure.

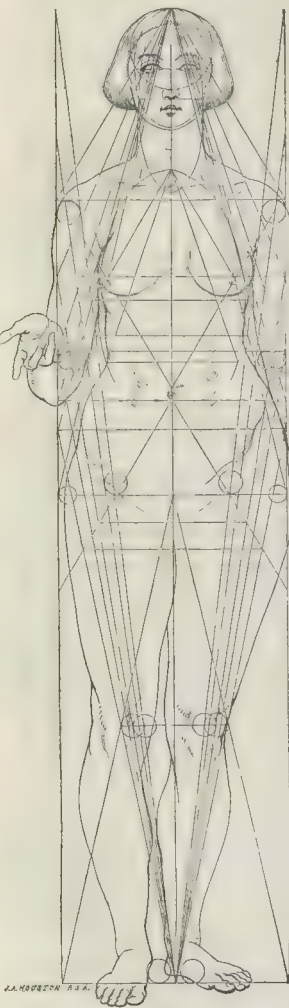
To construct a diagram by which such a skeleton may be formed as will impart to a representation of the human figure such proportions as characterise the ancient Grecian statues of Venus, Mr. Hay adopts the following harmonic angles, $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}, \frac{1}{5}, \frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{3}, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}$, and $\frac{1}{7}$ of the right angle, which he takes as the fundamental angle of this figure only as being the most truly beautiful.

Mr. Hay gives no measurements whatever of length or breadth: he simply adopts a vertical line to represent the full height of the figure, whatever that may be, whether intended to be engraved in miniature upon a precious gem, or sculptured of the most colossal dimensions. The proportions of every part of the skeleton, whether as to relative length, width, or depth, the form of the cranium and face, as well as of the thorax, whether viewed in front or in profile, he determines by the adoption of these eleven angles alone.

After having drawn the given line of supposed height, he draws from its apex five lines, forming with the vertical line angles of $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}, \frac{1}{5}$, and $\frac{1}{4}$, and from its base five lines, forming angles of $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}, \frac{1}{5}$, and $\frac{1}{4}$, of the fundamental or right angle. Through the point where the line of $\frac{1}{2}$ intersects the line of $\frac{1}{2}$ he draws another vertical line, cutting all the lines which were drawn at the above angles from each end of the original line of height. Through the point where this last vertical line cuts the line of $\frac{1}{2}$, he draws a line forming an angle of $\frac{1}{2}$ with the original line of height.

Through this point, and through all the other points of intersection which the indefinite vertical line makes with the other lines, he draws horizontal lines cutting the original line of height. This, with a repetition of the angles $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$, forms the principal part of the diagram, and gives all the required proportions.

This is a diagram of the front view of a figure drawn from nature and tested by the theory.



When a form characterised by that massive strength and masculine power which the ancient Greeks gave to the proportions of their representations of Hercules is to be constructed, all the change Mr. Hay requires to make upon his diagram is the adoption of an angle of $\frac{1}{2}$ the semicircle, instead of a right angle, as his fundamental angle; and this he considers the greatest extreme in this direction, and states that all the numerous varieties of proportion which are exhibited in the statues of ancient Grecian deities will arise from the adoption of one or other of the numerous intermediate angles that lie between 90° and 108° as a fundamental angle.

Without being able to satisfy ourselves as to the value of Mr. Hay's theory, we fully admit the importance of such inquiries, and the thanks that are due to our author for the perseverance and ability with which he is pursuing them.

NOTES IN THE PROVINCES.

AVLESBURY Church, which has been closed upwards of two years, was to be re-opened for divine service on Sunday last, although the fittings are not yet completed. The new clustered columns supporting the tower are of Derbyshire stone, and all the columns supporting the nave are placed in their proper positions. The nave is all new oak, worked according to the original patterns. The corbels represent angels supporting a scroll.—The guardians of the Leicester Union have accepted a tender to light the workhouse with gas for the first time, for ten years, at 2s. 9d. per 1,000 cubic feet.—A gas company is about to be established at Dedington.—Some members of Sir Walter Farquhar's family have caused a memorial window to be placed in the college chapel of Eton, to the memory of Mr. Farquhar, a young man educated at Eton, and killed at Aliwal. The subject of the window is the story of King David. There are five compartments. The window has just been completed by Wailes. An adjoining window to the above, subscribed for by old Etonians, and executed by Connor, has recently been presented to the college. These windows are at the western entrance to the chapel.—The inhabitants of Swindon have resolved to erect a market-house and town-hall at a cost not exceeding 1,200l. to be raised in shares of 5l. each. Shares to the amount of 515l. were at once taken.—Improvements, according to the *Maidstone Gazette*, are about to be made at Folkstone, Hythe, and Sandgate.—The proprietors of the gas-works of Gosport have reduced the price of gas to 6s. 6d. the 1,000 cubic feet, and 6d. for the use of meter.

An organ is being built by Mr. Nicholson, at Worcester, for St. Peter's Church there. Subscriptions, amounting to nearly 300l., were raised for the purpose in two months.—The contract for the pipes for the Wolverhampton Water-works Extension, has been taken by Messrs. Cochrane and Co., of Woodside Iron-works, near Dudley, who have lately supplied the greater portion of the cast-iron work required in the Great Exhibition building. The pipes are to be cast with improved sockets. The contract for the pipelaying has been taken by Mr. F. H. Winwood, of Snowhill, and the contract for the cocks by Mr. Edward Blake-moor, of Wednesbury, brassfounder.—The Bilston Streets and Sewers Committee have recommended to the Improvement Commissioners that the tender of Mr. R. C. Hemberow, of Wolverhampton, be accepted, for the diversion and covering of a nuisance called the Bilston Brook. The contract has been undertaken within the estimate of Mr. Marten, the engineer.—The foundation-stone of the new parish church of St. Luke, at Bilston, was to be laid on Easter Tuesday by Viscount Lewis-ham, M.P.—A rate of a penny in the pound is to be devoted at Monmouth to the formation of a new cemetery near the Monnow Mills.—A sum of 10,000l. is to be devoted to extending and altering the House of Correction at Knutsford, and building a new prison for females.—The plans of Mr. George Latham, of Waterloo, architect, have been accepted for the new chancel about to be erected as an addition to the church at Blackpool. The other competitors were Mr. Coffey, of Manchester, and Mr. C. Reed, of Liverpool.—Besides the new markets lately noticed, a series of other improvements are about to be made at Stockport. Several of the principal streets and the approaches thereto are so narrow, that lives have been sacrificed of late years; but important improvements are on the tapis, including the removal of the *Stockport Advertiser* office. Another improvement is the widening of Cheapside, from the Hillgate. A third is projected, and in part executed, in the widening of the Millgate, by taking down a range of property on the right hand side, and concealing the present disgusting appearance of coffins, &c., in the burial-ground of St. Mary's Church.—The foundation-stone of Greenfield new Independent Chapel, Manningham, was to be laid on Easter Monday.—The extensive additional buildings for the enlargement of the North Riding prison at Northallerton, commenced in 1849, are now

finished, by which 140 additional new cells have been obtained, with a chapel, school-room, work-shops, with apartments for baking, cooking, washing, &c. Many who have seen it compare it to a fortress without, but to a palace within, each cell having both hard and soft water conveyed into it by pipes, and every other convenience. During the erection of the buildings a number of government convicts confined there and prisoners under sentence, were employed as labourers in the interior of the buildings, and, in addition to the prison diet, were supplied with ale, porter, beer, tobacco, &c., according to the nature of the work they had to perform.—Since the last sessions at Hull, the ventilation of the Court has been arranged by Mr. Wm. Clarke, C. E., of the firm of Hann, Clarke, and Mackinson, of London. The vitiated air is withdrawn almost entirely, at the level of the floor, and fresh air admitted at a high level, contrary to the usual practice. Sufficient power, it is said, is obtained, by means of steam jets, to withdraw 4,000 cubic feet of air per minute from below, whilst a regulated quantity escapes through self-acting valves placed above the ceiling. The fresh air is admitted at the tops of the windows through apertures which give it an upward direction so as to avoid the effects of cool currents. The former hot-water pipes are now adapted to steam heating.

The Dock Company at Hull, have decided on the application of steam power to the 30-ton crane, on the west side of the Humber Dock, and an engine is now in course of erection for that purpose. The crane has been almost constantly employed in hoisting loaded coal waggons from the quay, and swinging them over ships' hatches, to be discharged from the waggon in the usual way. The engine is of four-horse power, and is constructed with oscillating cylinder. The crane, it is calculated, will load 600 tons of coal in a day. The engine has been constructed by the Messrs. Erle, of the Junction Foundry, Hull, in conjunction with Mr. Welsh, the engineer of the Dock Company.—It is proposed to convey the water of the river Eske, to the amount of 400,000 gallons daily, from a point above Benson's-bridge, about 9 miles from Whitby, to a reservoir near that town, and thence to distribute it to Whitby, where required. The pipe will be carried across the river at various points, and beneath the harbour at Spring-bridge.—The contract for constructing the tidal channel and the half-tidal basin for the south or sea entrance of Sunderland Dock has been let to Messrs. Pawson and Dyson, of Leeds (Porson and Dyson one authority gives it), late contractors on the Leeds and Thirsk Railway, for 51,500l. The highest tender was 63,000l. The engineer's estimate was 60,000l. The contractors are preparing to commence immediately with the works.—On Thursday week, at Sunderland, a supper was given by Mr. A. J. Moore to the workmen engaged in the erection of "St. Bede's Tower," on the covering in of that building.—According to the *Shield Gazette*, the project for an extensive wet dock of forty acres, or thereabouts, with an entrance at or near the old Poor House, high end of South Shields, is progressing favourably.—A monument is about to be erected at Edinburgh, to the memory of Robert Gilfillan, a poet of the Burns type, well known in that quarter of the country.—Plans for erection of a new hall for St. Andrew's Lodge of Freemasons, Banff, have been decided on—those furnished by Messrs. McKenzie and Matthews, Elgin, have been selected. The building, as designed, will be in the Palladian Italian style. It is to front Castle-street. On each side of the entrance there will be two pilasters of the Roman Doric order, rising, each pair, from one pedestal, and surmounted by an entablature of same order. The windows on the ground floor, of which there will be four, are also to be supported on each side with Doric pilasters. The windows in the second floor, also four in number, will be supported by pilasters of the Ionic order. A row of balusters will appear beneath each of the upper floor windows. The ground floor is to be occupied as shops.—At the Town Hall,

Stroud, on the 4th instant, tenders were received in answer to advertisement, for various works under Mr. F. Niblett, architect, and the two tenders amounting together to the sum of £244, as delivered in by Messrs. Wall and Hook, of Rodborough, Stroud, were accepted.

	For the alterations and additions to the Town Hall.	For re-building Church-yard Wall.
Spiers	£345 0 0	£95 0 0
Blackwell	518 16 0	121 0 0
Berryman	354 0 0	105 0 0
James	359 1 10	75 1 6
Wall, (accepted)	339 0 0	85 0 0
Niblett,	275 0 0	70 0 0
Cowley	287 0 0	26 0 0

FLAT TILED ROOFS.

Your correspondent, "A Working Bricklayer," in the number for 29th ult. seeks information upon flat tiled roofs, and enquires whether those alluded to in my communication in your 3rd vol. page 371, have answered in point of economy and durability. I have great pleasure in bearing testimony to the highly satisfactory result of what was then looked upon as somewhat experimental; and would add two or three suggestions for the assistance of those who are desirous of adopting the like improvements.

The cost was found to be about one-third less than a timber and slated roof, the houses being full-sized third rates, covering nearly six squares; and there has neither been since, nor is there likely to be for many years to come, any cost for repairs. There can be no probability of defect, if the following particulars be observed:—

That the foundations to the external and party walls be good, to prevent irregular settlements.

That the wrought iron joists be stiff, and strutted with smaller iron, to prevent the roof shaking when walked upon, and be bedded upon an iron wall plate, or upon stone corbels, and painted well before fixing.

That the three courses of tiles be laid in fresh cement, neat, by a competent bricklayer, and that the upper (if not the two under courses), both for durability and flatness, be laid with Peake's terro-metallic tiles, closely jointed.

That ventilation space be provided between the ceiling joists of the bed-rooms and the roof, to neutralise the effect of the heat and cold of the weather. Over staircases, &c. it is merely needful to render the underside of the tiling with cement, or gauged stuff.

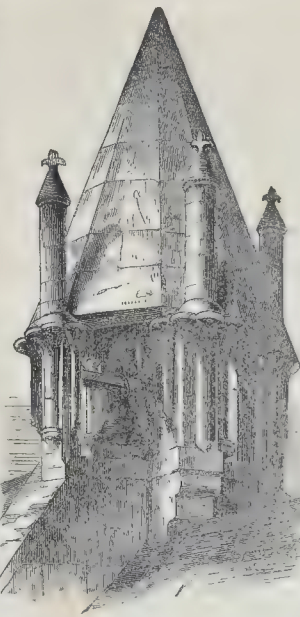
That a good fall be given to the roof (say about 1 in 12), and a skirting be formed with one course of tiles all round same, with a shoot formed to carry off the water into the iron rain-water-pipe head, the back of which should be cut to receive it. The trap-door should simply rest upon a raised stone curb worked into the tiling.

Lastly, that the work be executed in the summer season, to avoid risk of frost.

The very great advantages in point of economy, convenience, and durability of these fire-proof roofs, are manifest from the reduced cost in the outlay, the non-liability to repairs, the non-exposure to robberies of lead gutters, &c., the facilities for views, and their suitability oftentimes to architectural effect, when the sight of the roof is objectionable. C.

PROPOSED EXHIBITION OF MODERN FOREIGN ART.—A large exhibition of pictures, by many of the great painters of the various European schools of art will be shortly opened to the public. The great industrial exhibition not including works of painting, the present enterprise is intended to fill this vacancy, and for that purpose the mansion in St. James's-square, called Litchfield-house, has been taken, and is now being fitted up. The principal living artists of the French, German, Dutch, Belgian, Italian, and Spanish schools, have engaged, we are told, to send their works, and the leading English painters will be invited to contribute to this gathering of pictorial art.

BELL TURRET AT ACTON TURVILLE, GLOUCESTERSHIRE.



The church of Acton Turville consists only of a nave, 32 feet by 19 feet 6 inches, chancel 18 feet by 16, and south porch. It seems to have been built in the early part of the thirteenth century. The north and south doorways of the nave are square headed, under a semi-circular arch, enriched with four-leaved flowers. There are one or two Early English windows in the chancel; but the greater part are insertions of later date. The chancel arch is doubly recessed with hollow chamfers, and supports the bell turret, which is massive and of a picturesque outline: the addition of pinnacles on the cardinal sides serves to strengthen as well as enrich it, and the small shafts attached to the piers, supported by moulded corbels, and blossoming as it were into a capital of foliage, adds greatly to the effect, and renders it on the whole an example worthy of attention, and, in my opinion, second only to that at Leigh-de-la-Mere. The turret, as well as the church, is in a very bad state of repair, and unless something is done this valuable specimen of a class of bell turrets by no means common, will have suffered from that neglect which I am sorry to say is too evident in these parts; for within the last ten or twenty years two churches in the neighbourhood have been almost utterly destroyed. I allude to the interesting old church of Leigh-de-la-Mere, and the picturesque church of St. Peter, at Bidestone. E. W. G.

ARCHITECTS' DETAILS.—I observe you sometimes term parties estimating "blind builders;" this should occasionally be taken to mean builders groping their way in the dark, or, which is much the same thing, making out tenders without detail drawings. The following is an instance:—Some fine coloured plans, from which to make out estimates for rebuilding a church at Cockermouth, were lately sent down from London without a single detail drawing for the masons' work: the parties estimating were of course left to their own imagination to guess the sort of moulding both inside and outside, and the tenders, as might be expected, differed materially, the highest being 5,900l., and the lowest 4,285l. Now, Mr. Editor, if you call your London builders blind, some of your architects are certainly leaders of the blind.—A COUNTRY BUILDER.

WESTMINSTER BRIDGE.

THE inhabitants of this neighbourhood feel they have great cause of complaint at the extraordinary manner in which their interests are considered. A short time since, in answer to an inquiry in the House of Commons, Lord Seymour said he was about to issue a Commission to consider the proper site. In answer to a further inquiry the Chancellor of the Exchequer was understood to say (for by the reporters it does not appear very certain what he really did say) that a Commission had been appointed; but at the present time there had been no result. Now, surely we have a right to be informed who are to be the judges in this (to us) very important point, and also, we might, without too great condescension on the part of Government, be informed what are the points (if any beyond the site) submitted to the commissioners. It must not be lost sight of that committees, year after year, have been sitting and reporting, collecting evidence from the most experienced and talented: what further there is to learn upon the subject we are at a loss to know. Your journal has more than once been the means of suggesting sites and approaches. It is sufficiently disgraceful for us to be compelled to show our foreign visitors our most justly envied highway rendered nearly impassable from the stoppage of three of the principal arches; but to proclaim we are too poor to build a bridge, whilst the people, independent of the Government, are putting forth their giant strength to keep up their name and character, is almost past belief, and can only show that the Government, and not the people, are to blame. The injury that is occurring to this neighbourhood is very great: no one's tenure is secure. We look, therefore, to you for help, and trust by your exertion something will be done this session.

THE INHABITANTS OF BRIDGE-STREET, WESTMINSTER.

PROPOSED FUND FOR THE LATE EDITOR OF THE "LITERARY GAZETTE."

ALL must lament the statements which have recently appeared in the London papers as to the position of the late editor of the *Literary Gazette*, Mr. Jerdan, now in the decline of life. After nearly forty years' devotion to the *Literary Gazette*, and after disseminating through its columns so much sound criticism, judicious commentary, courteous advice, and cheering counsel, to youthful aspirants in literature, art, and science, it cannot fail to excite the regret and sympathy of all real lovers of literature, that such a writer should be reduced to comparative poverty, at a time when he ought to be enjoying the rewards of his long and arduous exertions.

At its first appearance the *Literary Gazette* was a novelty; and the kindly tone of its criticisms, the tact with which the matter was selected, and the ability displayed in its diversified contents, attracted much attention. The daily press was then almost entirely engrossed by politics and party feeling. Its matter was small in quantity, and neither potent, nor much varied in quality. The drama and the fine arts were occasionally noticed, but rarely with sound and impartial judgment, or with that nice discrimination which has since distinguished the London press.

The *Examiner* may be referred to as having taught the reading public to require an improved system of criticism, in politics, in literature, and in art; but the writers in that journal were young, and devoid of that coolness of temper and judgment which secures the confidence of the discreet and cautious reader.

At such a time Mr. Jerdan started the *Literary Gazette*, and introduced into its pages so much amusing and well written matter, on current literature, science, the arts, and the drama, and their respective professors, that the public warmly hailed and promptly encouraged the work. The first volume was published in the year 1817, and from that time to the end of 1850, the same editor has continued to fill his weekly sheet with a succession of essays from his own pen, and those of able coadjutors, which have gratified and interested

a very wide circle of readers. Like all other literary property, this publication has been subjected to fluctuations, in which its editor has been necessarily involved. For some years it was pre-eminent amongst many rivals, and was then a valuable property to the partners who possessed it, and to whose trading connections and influence much of its celebrity was owing. At the time referred to Messrs. Longman and Co. had one-third share, Mr. Colburn another, and the editor the remainder; and their profits were very great, arising from the extensive sale of the work and the high charges for advertisements. Many of the rivals it created were short-lived, and failed to affect its popularity; but one became powerful by its low price, and the daring expenditure and energy of its proprietor. Hence that acquired a large circulation, whilst the *Literary Gazette* gradually lost ground. The two great publishing establishments resigned their shares, but the original editor continued for many years to struggle against increasing difficulties. At the close of last year he was compelled to leave it, and is consequently deprived of the income on which he and his family have so long depended.

The thirty-three volumes of the *Literary Gazette* will be found to embrace an able and comprehensive review of the progress and characteristics of literature during an eventful period in the annals of our country. Its reviews of science, the fine arts, and the drama are copious and discriminating, whilst its biographical accounts of numerous eminent persons are written with great liberality and good feeling. It can scarcely be necessary to say more, to urge upon all readers the claims of Mr. Jerdan as the editor of this periodical.

J. B.

NEW SCHOOL-ROOMS, WOBBURN, BUCKS.

THESE new schools were opened on the 16th inst. They are built of flint, with Bath stone dressings, are of Tudor character, and include a porch and bell turret. The rooms are lofty; and at the height of 12 feet from the floor a broad border runs on each side the entire length of the building, and in each compartment (between the beams) is painted, in large red and blue letters of old English, a short text. In these, some few of the letters being very slightly modified (not so as to be observed without being pointed out), they can be read at once by the youngest children. In a deep oak recess or frame, at one end of the building, there is a cartoon of large size, of Murillo's "Good Shepherd." The rooms are 60 feet long by 21 feet wide, and accommodate 200 children. They are divided by a drugget curtain, on each side of which is a blind, which rolls up from the bottom by a very simple process. These blinds are paper mounted on canvass: they are covered with useful maps and diagrams, and extend over the entire surface, and come close to the walls, where they are boxed up, so that they roll up in a groove: they completely divide the rooms, and appear as a wall adorned with maps, &c. The sound is stopped effectually by this, and it is easily opened to form one room. Above the centre beam the interstices are cased on each side with wood, and the interval filled with sawdust. Here, in the centre panel, the royal arms are emblazoned. There is a roomy porch, which is divided permanently by a wooden partition 6 feet high. The girls enter on one side, and the boys on the other. It is well supplied with hooks for caps, bonnets, and cloaks. The playground is divided by a railing, and all round the building and the boundaries of the ground there is a garden border, subdivided with rustic flints for the children.

At one of the gable ends of the building there is a large shield, on which is the anchor of Hope, pastoral staff, and a lamb gathered at the foot of the cross. Above is the dove descending, and underneath, supporting the shield, a large Bible. A scroll runs at the base—"THROUGH HIM we both have an access by one SPIRIT unto the FATHER." In front of the porch, under the date stone, is a large trefoil, bearing the inscription "Feed my

Lambs." Inside the porch, above the doors leading to the rooms, and over the partition, "Come, ye children, hearken unto me, and I will teach you the fear of the Lord," is cut in stone. Over each door entering the porch, and in the arches over the windows, inside the rooms, there are mottoes and texts.

The Rev. C. J. Goodhart, of Reading, preached in the parish church close by on the occasion. Prayer was offered up in the schools by the Vicar, the Rev. F. B. Ashley.

For the teachers' residence two cottages have been given, which belonged to the vicarage. These are to be altered, and are not completed. The plan of the schools was made (our informant states) by the Vicar. Mr. Baughurst, of Bourne End, was the builder; and Mr. Wm. Bond, architect, superintended the works.

MONTS DE PIÉTÉ FOR THE POOR.

SOME plaintive reflections on the above subject have appeared in *THE BUILDER*, as directed by "Bardi" against two articles published by me. Other journals and periodicals, particularly the *Pawnbrokers' Gazette*, have taken up the theme in the spirit of anger and the letter of reproach.

Woe unto him who unmasks abuses: if it be Smithfield, he is baited by the corporation and the butchers; if it be the drugging of beer, then are the publicans up: all are ready to do battle for the prescriptive interests of their craft.

For having suggested in the columns of *THE BUILDER* the expediency of founding a thoroughly charitable institution, to be supported partly by speculative investment of capital, and partly by voluntary contributions of an eleemosynary kind, and for having proposed that relief be given at a nominal rate of 5 per cent. interest (but, including charges, probably at 7 per cent.), I am called the "visionary theorist of impracticable nostrums, and ignorant of the system of pawnbroking," together with the impeachment of making the columns of *THE BUILDER* a vehicle for "drivelling abuse."

"Bardi" appears to be well acquainted with the rules of the trade, and cites, as an example, to show the facility of founding any establishment on a similar basis, "the disastrous experiment made by the Loan Fund Board in Ireland, whereby, out of a capital of 26,833*l.*, a net loss of 7,006*l.* was incurred on the winding up of eight companies." He also refers to the evidence of Sir Matthew Barrington, as given before the House of Commons, having given that worthy baronet all the credit he so well deserved as the liberal founder of the Limerick Mont de Piété, and winds up with the intelligence that in Paris these establishments charge 9 per cent., and even allow 3 per cent. more to be charged by the district establishments.

All these details were given to prove that 1 per cent. on the capital would be insufficient (together with the charge for tickets and interest of the broker's month, about one per cent. more) to defray the expenses of such establishments, and with the benevolent intention of guarding the public, "lest they should be induced to seek such an investment for their capital," it results from the manifesto that the legal charge in France is 9 per cent., whereas here it is 20; and that the experiment failed in IRELAND.

The *Pawnbrokers' Gazette* goes further and says that "charitable pawnbroking has proved most disastrous for the public," for that out of a capital of 400,000*l.* all but 50,000*l.* was dissipated, and then goes on to allege "that the officers of the corporation sought to recover their losses by gigantic gambling on the Stock Exchange!"

Where these figures are obtained we are not informed, but it is obvious that speculation, mismanagement, and failure in one establishment does not necessitate the same fatal issue in another. Bankers enjoying the best credit have become bankrupts, but the extravagance or reckless speculation of one firm hinders not that another under prudent government should succeed.

It is not usual for individuals to be versed

in the details and mysteries of a trade they do not follow, but most people are aware that 20 per cent. per annum, or 4*s.* in the pound, is the *ostensible* charge in England; and therefore that 2*d.* would be the interest on an advance of 10*s.* for one month: to this is added 1*d.* for the ticket, and the common report has it that if the month be lapsed but one day another month's interest is charged; for although it is alleged that interest is calculated to a fortnight no person familiar with pawnshops, whom I can discover, is aware of the month splitting or calculating to a fortnight any more than of the moderating check to extortion by rivalry in the trade.

As to Ireland—poor, squalid, heartbroken Ireland—the failure of any commercial enterprise there should hardly be held as an argument against speculation here. The highly respectable and liberal baronet whose evidence has been cited is also known to me, having had the honour of his acquaintance thirty years back; and had the opponents of eleemosynary pawnbroking inquired of him they might have learned that the funds dedicated for the use of the Mont de Piété were positively made away with (as has been so often the case in that island) by officials.

What I complain of in the present system is the certitude of confiscation after the lapse of a year; the difficulty in the way of poverty to redeem, with an usance of 20 per cent. (if no more) superadded; and that in the abundance of wealth a poor man should pay 20 when a rich man can borrow at 5 per cent., and that on credit, and without any deposit.

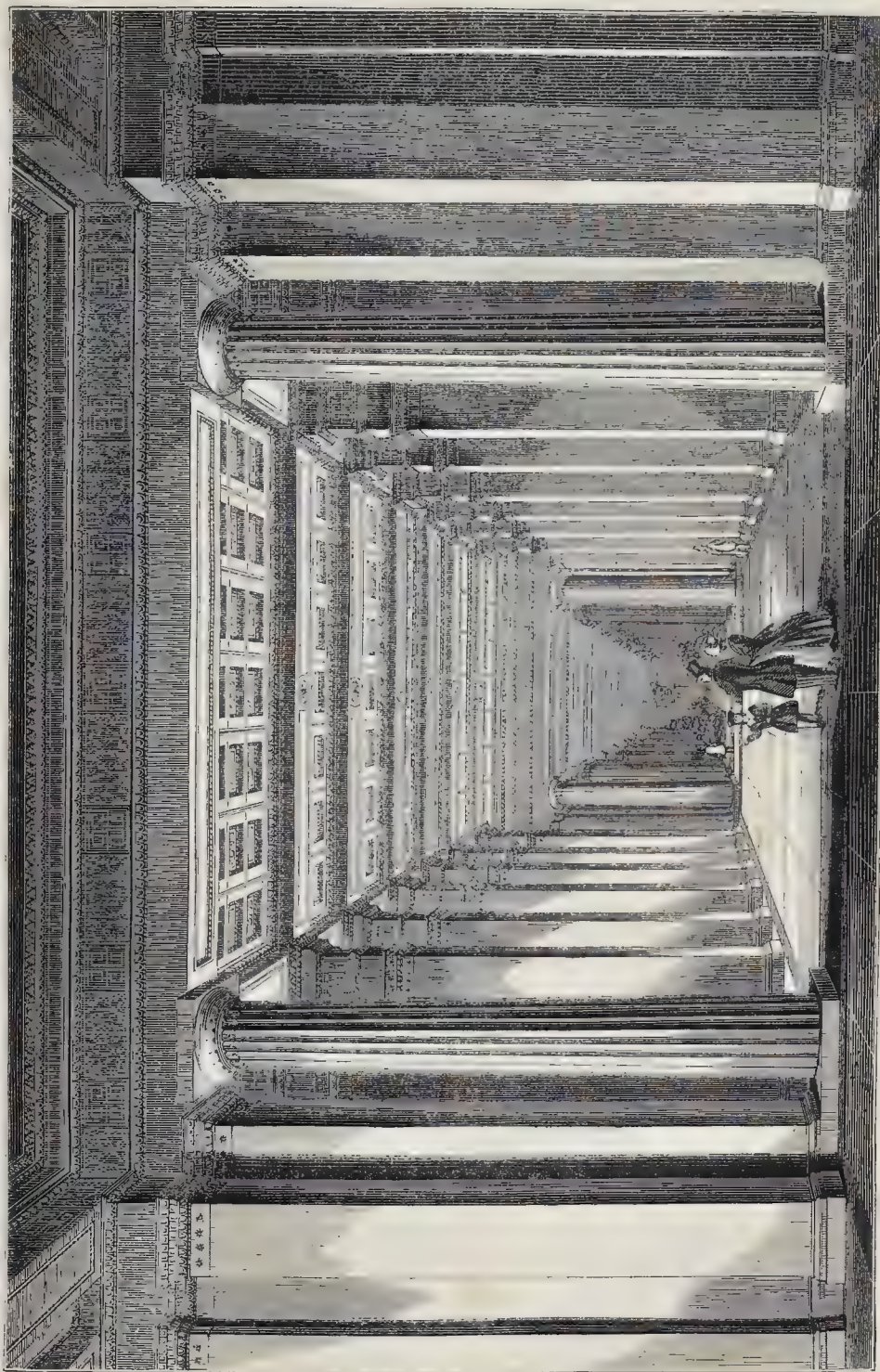
Usurers, called bill-brokers, do charge 5 per cent. per month, often more, but never less, yet this enormity qualifies not the mulet imposed on the poor.

The pawnbrokers are a rich, influential, and respectable body: like the publicans, they have their journal, and their almshouses and asylums; notwithstanding the establishment of *monts de piété*, enough of the better sort of trade would remain to them: let them not then oppose the vocations of charity and mercy. Fireproof buildings would make better depositories for the used and inflammable habiliments of the denuded labourer, whilst they may find security for their funds in mortmain on the jewels, plate, and watches of the rich.

QUONDAM.

CHURCHES FOR THE RAGGED.—There are schools for the ragged, but we see no churches for the thousands of ill-clad people you observe standing at the public-house doors during the hours of divine service. We that have suffered want know that if our apparel is not such as we could wish, we feel diffidence in approaching the church or chapel, where none but well-clad people are to be found. Now we believe that there are many wearing fustian on the Sabbath-day who would be glad to attend public worship if the churches were free altogether, indeed, expressly constructed for the neighbourhoods where required, and for the class of people living in them. Let us set the warmth, comfort, and godliness of the church against the glare and false stimulus of the public-house. Let not many thousands of the present generation go out of existence without the sound of the Gospel. The model lodging-houses provide for the comfort of their bodies; forget not their immortal souls.—C. R.

EXAMPLES OF IRONWORK.—A work on iron, as an architectural adjunct, is much wanted. Amongst all the architectural works none has dealt with iron, except very badly, or cursorily. Pugin's designs are not only very bad, but are all of one (perpendicular) period, and very foreign in style: moreover, they are all for cast-iron, a thing that architecture can have nothing to do with, except in its own peculiar style. We want a work with designs for crosses, gates, candlesticks (central), communion rails, &c. Parker has only half-a-dozen iron crosses, if so many. There is a German work on cast-iron, but, as usual, the designs contained in it are imitations of wrought-iron, which even the ecclesiastical commissioners could not endure.—A RUSTY FELLOW.



INTERIOR OF WEST WING, BRITISH MUSEUM.—SIR ROBERT SMIRKE, AND MR. SYDNEY SMIRKE, ARCHITECTS.

[See page 239 in our present Number.

THEATRES AND DIORAMAS.

We had intended noticing now the scenery which *Euseb* has produced in various quarters, but are forced to postpone the intention for a week: some of it is especially good. At the *Royal Italian Opera House*, Covent-garden, we grieved the other night, when listening to *Massaniello*, that such scenery as we now often have cannot be preserved. The opening scene for this opera is a fine picture. *Fidelio* is announced here, and will afford us something new to admire.

At *Burford's Panorama*, Leicester-square, there are two new views, the Falls of Niagara, and the City of Jerusalem, both beautifully painted and full of interest. The Niagara Falls are beyond representation, but certainly what Mr. Burford has now given the public affords a better idea of their effect than anything before done. The View of Jerusalem has a fine atmosphere and sky.

To the Diorama of the *Oerland Route to India* some very interesting views of the Taj Mahal, erected as the tomb of Mum Taza Zamanie, on the river Jumna, have been added. The views show both the interior and the exterior of this wonder of the barbaric world.

The beautiful Diorama of *The Holy Land*, removed from the Gallery in Pall-mall because of the coming Water Colour Exhibition there, is now at the Egyptian Hall, Piccadilly.

Mr. Marshall's moving Diorama, *The Tour through Europe*, has also been removed from its first locality, and is now in the large hall in Leicester-square, known as the Linwood Gallery.

COPENHAGEN.

THE new route to the north of Europe, by Lowestoft, appears to be giving great satisfaction, and already a stir in trade has been excited abroad as well as at home by the rapid communication with London thus created. Various tourists have been giving accounts in the newspapers of what they have seen during recent trips from Lowestoft, and from these we glean a few particulars.

Copenhagen, it seems, does not (now) justify Murray's description of it, for a more stately city can scarcely be imagined. The streets, wide and long, filled with spacious and lofty houses of unspotted whiteness, and built with great regularity, remind one somewhat of Bath, but that the ground is level; many of them all but equal, in breadth, to the Irishman's test of street architecture—Sackville-street, Dublin. But large squares break up their continuous lines, and the eye rests on statues, palaces, and buildings devoted to the arts, to amusement, to justice, or to the purposes of religion in every quarter of the city. Copenhagen is but a creation of the last century, and, after a little time spent there, a large portion of it gives the idea that it was built, all of a sudden, by some Danish Grissell and Peto, according to contract. Surrounded by a deep foss, by ramparts and intrenchments, defended by formidable forts and batteries, filled with the halls of kings, with churches, museums, and castles, it combines the appearance of a new cit made by the Royal Commissioners through some old London rookery with the air of an old feudal town. The paving is of the style which may be called Titanic, and was never intended for any foot garb less defensive than a *sabot* or a *caliga*. The drainage is superficial. As to the lights, they are widely apart, and as yet gas is not used. In the Theatre Royal, as well as other Danish theatres, the light during the performance is almost confined to the stage, the audience being left in comparative darkness. Experiments in this country of a similar kind were, some years since, described in our columns. The greatest feature in the public amusements are the museums and collections, on certain days accessible gratuitously. The Thorwaldsen Museum deserves especial notice: it contains about three hundred of this great native sculptor's works, which are exhibited in a building attached to the Charlottenborg Palace. The edifice forms a parallelogram, having a spacious courtyard in the midst of it, in the centre of which is a mausoleum to

the memory of the immortal artist. At one end of the building is the Hall of Christ, which contains casts of all the statues erected by Thorwaldsen, in the Frue Kirk, and here the statue of Christ can be best contemplated. There are many other museums, as the collection of Northern Antiquities, the Royal Museum of Natural History, and various others, together with several galleries of paintings, all open to the public. The churches contain many interesting objects, more particularly Von Frue Kirke, which is enriched with several of the finest works of Thorwaldsen.

One of the lions of Copenhagen is the marble church, commenced many years since, but from the enormous expense attending its erection, and the empty condition of the coffers of the Danish treasury, all intention of its completion has been abandoned, and at the present day the marble is being gradually removed and sold, so that in a few years no remains of it will be visible.

COCKERMOUTH CHURCH.

SOME very odd proceedings have been taking place at Cockermouth, with reference to the designs for rebuilding the parish church. After the destruction of the old church by fire in November last, 3,000*l.* were almost at once subscribed for the rebuilding, and 2,000*l.* more were realised from the insurance against fire. A competition was then called for, and some thirty-seven designs were given in, out of which six were selected, and Mr. Atkinson, of York, as referee, accorded the first premium (50*l.*) to Mr. Hay, of Liverpool, and the second (25*l.*) to Messrs. Cole and Co. Subsequently, although a written agreement had been entered into with Mr. Hay, his design was rejected. The next best, however, was not then reverted to. A new design was ordered from Mr. Joseph Clarke, of London, and adopted by the committee, who called a vestry meeting for Friday last, at which both Mr. Hay and Mr. Clarke were present, and addressed the meeting in favour of their respective designs. Some curious scenes took place, and the lie was bandied about and retracted rather freely. After a three hours' stormy discussion, the meeting rejected Mr. Clarke's design by a large majority (mostly of "dirty hands," according to a Carlisle paper), and resolved, "That the church be re-erected upon the old site, and upon the same plan as the former one, and with the tower at the west end thereof."

It is believed that the subscribers of the money, as a body, will not homologate this resolution, so far as they are concerned, and that a rate will be called for, which the majority itself is unwilling to pay.

CHURCH OF ST. MARY THE VIRGIN, LITTLE GOMERSAL, NEAR LEEDS.

THIS church, which was consecrated by the Lord Bishop of Ripon on Tuesday, the 25th ult., is in the flowing Decorated Style, from the design of Mr. J. Dobson, architect, of Leeds. The plan of the church consists of a nave with aisles, tower at the west end of north aisle, chancel with sacristy or vestry at the north side abutting upon the north aisle; and a south entrance porch placed in the second bay from the west. The nave consists of five bays: the aisles are separated from the nave by equilateral arches of two orders, resting upon moulded capitals and octagonal piers. The chancel arch has moulded piers and capitals, having carved on them, on the north side, emblems of the passion; and on the south side, angels carrying musical instruments. The north-west pier of the nave is constructive, and differs from the rest, being designed to carry a portion of the tower. The roof of the nave consists of curved braces, which rest upon carved corbels, and support a collar beam, with curved braces above: the intermediate bindings consist of framed collars and curved braces, which rest upon hammer-pieces level with the wall-plate. The roof of the chancel is formed by framed principals with angle ties, resting upon the walls, and small hammers below.

The woodwork is of deal, and stained:

the pulpit and reading-desk are of oak, richly carved: the font and *reareds* are of Caen stone, and executed by Mr. Mawer, of Leeds. The west window of nave is filled in with stained glass, *the gift of the artisans, teachers, and scholars of this church*; and the south-east window of the chancel is filled with the same material, *the gift of the architect*. The east window is to be filled in with stained glass, by Mr. Wailes. The church is lighted by two *coronae*, emblazoned in gold and colours. The *reareds* contains five compartments, within which will be emblazoned tables of commandments, &c. The dimensions of the church are as follow:—tower, 18 ft. square, height, 73 ft. 10 in.; nave 63 ft. in length, breadth, 21 ft.; aisles, length, 63 ft., breadth, 12 ft.; chancel, length, 30 ft., breadth, 19 ft. The church provides accommodation for 466 persons, principally free; and the total cost, including land, &c., was, according to our informant, about 2,250*l.*

DRAINAGE PLANS FOR LONDON.

PRAY call attention to the subject of the drainage of London, and the claim of the *competitors* for consideration and reward, where due.

I was one of those who, on the faith of some tangible acknowledgment being awarded to the successful competitors, devoted some weeks to the development of what I deemed—and what has been proved to be—a practicable design, and I did this at a sacrifice of time which my professional duties could hardly spare. What has been my reward? The commissioners paid me the *compliment* of placing me *high* on the list of competitors worthy attention. And now I find the received plan for the Northern Drainage so similar to mine in principle and design, that I am surprised at the similarity: it is so easy to imbine an idea, and to found a design upon the cursory observation of the suggestions of others; and as it is stated that Mr. F. Forster never troubled himself to look at the 100 proposals the Court had sought, and that therefore any similarity is an accidental coincidence, I cannot help urging you to give your "heart and voice" to resist so unjust a principle as is to be implied from this statement. It is probable that there are other designs even more like Mr. Forster's than mine, and I think, after all the trouble and expense incurred by competitors, those which assimilate nearest to the *adopted plan* in main objects and points, should be substantially rewarded or signalled.

A SURVEYOR.

ART IN MUNICH.

Sculpture.—The Royal Library has been enriched by two statues of life size, which have been placed at the upper entrance, opposite the large staircase. The first is Albrecht V. of Bavaria, who founded this book-collection; on the whole, a patron of art and science. He is represented in armour undress (if we may say so), the bared head looking upwards, his right hand placed upon the chin, as if merged in thought. The second statue is that of King Ludwig, holding in his right the plan of the building, whose founder he is. Both are works of the late Schwanthaler, and exhibit his usual force and freedom of execution.

The specimens of Porcelain.—sent from the royal manufactory to London comprise vases and *poceles* of Greek, Roman, and modern shapes, after designs of Neureuther. Amongst them is a very ornamented *pocele*, with views of Hoheneschwangen, plates with Roman scenery, and others with paintings from Kaubach's *Reinecke Fuchs*. Besides the originality of form and the fine paintings, some new sorts of material have been called into aid; as, for instance, the so-called *Kapsel-masse* (Parian china), of which some of the statuettos have been formed: it offers by its utter indestructibility a very appropriate substance for architectural ornaments. The use of platinum also, as well as the particular colouring of the biscuit mass, will attract notice.

Picture by Hess.—The "Last Supper," in

the Refectory of the new Basilica, by Heinrich Hess, is one where ancient simplicity is combined with great effect. It cannot be doubted that Leonardo da Vinci's work had somewhat guided the German artist: still, these figures also are noble and beautiful, although of northern physiognomy and aspect. The strength and harmony of colour are remarkable, and surpass even that of many frescoes of the Bavarian art-metropolis. It is now seen, that the internal decoration of the Basilica detracts, by its gorgeousness, from the effect which the fine pictures placed in it would have otherwise produced. *Omne nimum nocet.*

The New Cemetery.—This place will soon become the chief receptacle of monumental works of plastic art. Those in memory of Schwanthaler and Gärtner have been previously executed, and will now be followed by a colossal statue of Walther, the physician. M. Halbig will adorn the cemetery with a colossal crucifix, which will be placed in its centre, with two basins at each end.

RAILWAY JOTTINGS.

THE 18th of June next has been fixed for opening the portion of the South Wales line from Chepstow to Gloucester, in order to complete the communication by rail between Gloucester and Swansea. The bridge over the Wye at Chepstow is in a forward state, and exertions are being made to complete the heavy tunnel at Cwmwrlia, to the west of Swansea, where a large number of excavators have been employed. The works in Pembrokehire are being pushed forward, and strenuous exertions are being made to complete the Vale of Neath line, so as to be opened simultaneously with the South Wales. —The directors of the York, Newcastle, and Berwick have agreed to erect a large and commodious goods station at the south side of Monkwearmouth station. The roof is to be formed on the same principle as that of the International Exhibition Building. —The committee of shipowners of the port of Sunderland have had the impudence to memorialise the Board of Trade to impose some restriction on the Great Northern in the conveyance of coal to the London markets. The Board of Trade have expressed their inability to interfere in this particular instance, urging that the subject was applicable to all railways. —Great excursion trains, at reduced fares, have begun for the season to run on all the railways. On Thursday in last week a monster train left the Paddington station for Oxford; another, the South-Western, for Windsor; and on the Eastern Counties, for Cambridge; the Brighton excursion train, however, conveyed the greatest number, between 800 and 900 individuals going by it. More than 4,000 persons left the metropolis by these excursion trains; the rate of travelling averaging three miles for one penny. —The concession of the Norwegian railway, of which Messrs. R. Stephenson and Bidder are the engineers, has been given by the government of Norway, says Herapath, to Mr. John Lewis Ricardo and Messrs. Lewis and Brassey. Its length is 50 miles, and it is to run from Lake Meuson to Christiania. The amount of the contract entered into with these gentlemen is 450,000*l.*, which includes the supply of locomotive plant and other rolling stock. The government take one-half of the shares—private individuals the other half. The line is to be opened for traffic in May, 1853. As the great bulk of the produce of the interior of Norway for export to England and other parts of the world, aggregates at Christiania, and as the same remark applies to the import trade, a very large traffic is anticipated over this railway, assisted, as it will probably be, by a new line of first-class steamers from this country.

—The Piedmont correspondent of the *Times* informs us that a commercial congress is now sitting at Rome, under Austrian inspiration, for the development of railways in Northern and Central Italy. The imperial cabinet seeks to combine the Lombard-Veneto line, with branches through Parma and Modena, to Bologna, Ancona, Florence, and Leghorn. For this she has assembled deputies from

Parma, Modena, and Tuscany, at Rome, there to discuss with Cardinal Antonelli and the Austrian minister the best means of making this great combination.

THE GUILD OF LITERATURE AND ART.

THE proposal of Mr. Dickens and Sir E. Lytton Bulwer to establish a new institution for struggling authors and artists, has now assumed a definite and hopeful form. The first performance of Sir Edward's play for the benefit of the institution is to take place at Devonshire House on 16th of May, in presence of her Majesty and Prince Albert. The society or guild will embrace the several objects which the members of a profession may be most disposed to secure—such as life insurances, annuities, pensions, &c. An institute will also be established, with certain duties, salaries, and free residences, consistent with the habits and comforts of gentlemen. There will be a warden, with a salary of 200*l.* a-year and a house; members with 170*l.* and a house, or 200*l.* without; and associates with 100*l.* a-year. There are men more of scientific than of literary pursuits—men who cannot properly be described as either literary men or artists, but who have sacrificed worldly prosperity for the love of science in some one or other of its various branches, whom it would be well to assist by a similar institution, since they cannot, properly speaking, hope to benefit by a foundation devoted to literature and art. We hope, ere long, to see both of these desirable institutes and guilds well established.

AMERICAN PATENTS CONCERNING BUILDING.

Improvement in Planing Machines for dressing the Edges of Boards.—According to the *Journal of the Franklin Institute*, Mr. E. Cornell, of Boston, has taken out a patent for this and thus describes it:—"The first part relates to the method of gearing the top and bottom feed rollers, so that they shall move together, and remain in gear, to whatever extent they may be separated by varying thicknesses of plank; and this part of my invention consists in communicating motion from one roller to the other by means of a cog pinion on the arbor of each, connected by a cog wheel with an outer and inner range of cogs, the inner range engaging the cogs of the pinion on the arbor of the lower roller, and the outer range engaging the cogs of the pinion on the arbor of the upper roller; the arbor of the cog wheel being hung and connected by a link or links with the arbor of the lower roller, and by another link or links with the arbor of the upper roller, so that as the rollers are drawn nearer together or separated, the cog wheel will, by reason of these links, vibrate between the two pinions, and remain in gear with them.

The second part of my invention relates to the method of operating one of the cutter wheels, for either edging, or tonguing, or grooving the tapering edge of plank; and this part of my invention consists in operating the machinery which causes the cutter wheel gradually to approach towards, or recede from, the line of motion of the plank, by the passage of the plank over, and in contact with, one or more cog or spur wheels, so that this motion shall be received from, and correspond with the motion of the plank.

And this part of my invention also consists in interposing, at some point in the gearing between the wheel or wheels operated by the plank, and the sliding frame or carriage which carries the cutter wheel, a reversing gear, for the purpose of setting the machine to work from the narrow towards the wide end, or from the wide towards the narrow end, and, if suspended, will edge the plank parallel to the other edge.

Claim.—What I claim, therefore, as my invention, is the method substantially as described, of communicating motion from the bottom to the top roller, by the two pinions combined with the wheel having the inner and outer rim of cogs, by means of the joint links, substantially as described, and for the purpose specified.

I also claim operating the machinery for carrying the cutter wheel towards or from the line of motion of the plank, by the passage of the plank over, and in contact with, a spur wheel or wheels, substantially as described, whereby the motion of the cutter wheel, for edging tapering planks, will be made to correspond with the motion of the plank itself, as described.

I also claim interposing between the wheel or wheels actuated by the plank and the carriage of the cutter wheel, a running motion substantially as described, by means of which the machine can be made to act on the plank from the narrow to the wide end, or *vice versa*, or, by suspending its operation, edge the plank with parallel sides, as described."

For an Improved Arrangement of Arches in Bridge Trusses. Mr. C. M. Pennington, Rome, Georgia, says:—"The nature of my invention consists in a certain combination and arrangement of upright and inverted arches, by which all thrust against the abutments or piers is prevented, and at the same time securing a permanent structure.

Claim.—Having thus fully described my invention, what I claim therein as new is the method herein described of combining and arranging the several arches of a bridge, so as to make each arch, alternately, the upright and inverted arch, as it passes from one span of the bridge to the other, and *vice versa*, when one set of said arches have their remotest distance from each other, and their greatest sustaining points directly over and under the points, when the other set of arches are changing from upright or inverted arches, or *vice versa*.

For an Improved Method of Loosening Metallic Cores from Hollow Castings. Mr. John C. Parry, Pittsburg, Pennsylvania, says:—"It is a well-known fact that iron shrinks as it cools, and a kettle of the kind I am describing will shrink one-eighth of an inch to every foot in diameter.

Claim.—What I claim as my invention in the above described mode of casting, is the application of cold water to the core or inner metallic flask of a hollow casting when the metal begins to cool, so as to loosen the core (by the contraction caused by the action of the water), sufficiently to remove it without injury to the casting."

TREVES AND MAYENCE.*

IN reviewing the vast and varied monuments of ancient days which that remarkable city, Treves, presents, the visitor who has entered its walls in the spirit of antiquarian inquiry, cannot fail to be impressed with a mournful conviction that the destruction of the great works of ancient art which once so profusely covered the soil, has been effected by the slow and callous hands of ignorance and indifference,—engines more pernicious than the effects of time or the revolutions of nations. A feeling of veneration for the monuments of antiquity was in the middle ages so uncommon, that we fail to discern a trace of it. It is therefore a pleasing tribute to quote an exception in the lamentation of a poet of the fifteenth century, and especially since it was penned over the ruins of Treves.

Mr. J. W. Burgon has happily transferred the sentiment of this beautiful elegy to his English version:—

"How much of power—how much of pride
And beauty, which should longer brave
The might of Time's resistless tide,
Lies wreck'd around you, men of Treves,
Who live beside the blue Moselle,
And quaff the stream ye love so well.

When gazing on your fallen state,
Methought I gazed on mighty Rome:
The tottering wall—the ruined gate—
The wreck of many a regal dome—
All that at Rome I sigh'd to see,
I saw again, old Treves, in thee.

I spied amid thy yellow corn
A thousand signs of sure decay:
The shrub had sprung where, bleak and worn,
Still proudly rose thy turrets grey;
And flowers of sweetest breath and hue
Along thy broken arches grew.

* From "Collectanea Antiqua," by O. Roach Smith, F.S.A., J. R. Smith, Conington-street, London.

The statues of thy gods lay there,
Profaned, and prostrate at my feet;
While here an altar, there a prayer,
Or votive sculpture, strew'd the street,
Spreading its shining fragments o'er
The soil it sanctified before.

And there were tombs, unknown to fame,
Their classic epitaphs defaced;
And gravestones, breathing still the name
Which Love's own faithful hand had traced;
Now lying in some desert spot,
Half hid, uncared for, and forgot.
What may withstand the stream of Time?
It laid those giant columns low,
Which Hercules once rear'd sublime,
That earth and sea their bounds might know;
And shall we alter Time's decrees
For relics fair and frail as these?"

MAYENCE, unlike Treves, is well known to English tourists. It is a large town, of imposing appearance, situated on the left bank of the Rhine near the junction of the Maine.* It occupies the site of the Maguntiacum of the Romans, one of the most important of their stations on the Rhine, and the scene of many bloody contests under the Roman domination, as well as in the middle ages and down to our own times. The history of Mayence is a long story of invasions and massacres, war and rapine. At the present day the town is so strongly garrisoned, that it is difficult, when in it, to believe that you are not in some condemned place, under military surveillance: soldiers meet you everywhere, in-doors and out, and you may walk for miles before you feel free from guard-rooms and outposts. All the great monuments of antiquity have been swept away, or, what bombshells and fire have spared, peaceful selfishness and ignorance have seized upon; so that, between these calamitous scourges, Mayence has none of the grander monuments of ancient days, such as we see at Treves, left, to give a notion of her former grandeur. In the citadel is a mass of masonry, called the Tower of Drusus (which we did not see, as strangers are not admitted), and at Zahlbach, about a mile from the town, are the remains of an aqueduct; and these are all the Roman antiquities that meet the eye. It is in the public museum we must look for the ancient monuments of the city.

There, some idea may be formed of the importance of Maguntiacum; for, although the museum is comparatively of recent foundation, its spacious rooms are filled with local antiquities, such as we can form no conception of from any museum in our own country. In the Mayence collection one does not see the monuments of Egypt and of Nineveh, or reliques of art of all ages and countries in friendly alliance with each other; but the antiquary views instead the antiquities of Mayence.†

While most of the remains of ancient Treves indicate the refinements of peace and the flourishing condition of a great city abounding in the luxuries of life, the monuments of Mayence, on the contrary, partake largely of the military character of the place. The number of sepulchral inscriptions relating to soldiers of various legions and cohorts stationed at Maguntiacum, is very considerable. They are chiefly of the fourth legion, surnamed *Macedonica*; the fourteenth, surnamed *Gemina*, *Martia*, *Victrix*; the sixteenth and the twenty-second, surnamed *Primigenia*. The first and the last of these are by far the most numerous. One formula seems to have been closely adhered to in these epitaphs. It comprises the name, parentage, and family of the deceased, the native town and country, the name of the legion or of the auxiliary body to which he belonged, his age, and the term of his military servitude; concluding, usually, with the expression, *heres possuit*, or *heredes possuerunt*, or some analogous expression, as *frater possuit*, or, simply, *hic situs est*. Many of these were discovered at Zahlbach, now a

Mayence is usually approached by the Rhine, the steamers which daily ply to and from Cologne affording a quick and easy mode of transit; while, at the same time, the river scenery affords an incessant succession of views, which keep the voyager excited with wonder and delight. A day would be expended in reaching Coblenz from Treves, either by the Moselle or by land. Should the traveller, however, be inclined to visit Mayence from Treves by land, he may accomplish the journey easily in two days. The route would be by Birkenfeld and Kreuznach.

† In our British Museum, at London, there is not one room, nor, I believe, a portion of a room, devoted to the antiquities of London!

small village near Mayence, on the sides of the high road, and upwards of a dozen have been set up near the spot where they were disinterred. The letters are well cut, and the upper part of the stones, which appear to be of volcanic origin, is generally pointed and ornamented.

An Archaeological Society was established a few years ago at Mayence. To the present year it has published 238 pages octavo, and 33 pages quarto, with some well-executed engravings. The chief contributors are, Dr. Emele, Herrn Kehrein, Hennes, Klein, Külb, W. and L. Lindenschmidt, Becker, Barfus, Kaufmann, and Dr. Keuscher; and the papers are chiefly confined to the Roman and Frankish antiquities of Mayence and its vicinity.

Opposite Mayence, and connected with it by a bridge of boats, is Castel, the site of a Roman *castellum*, round which appears to have grown up a town of some extent; for altars and inscriptions referring to temples and buildings have been found there, as well as an immense quantity of miscellaneous antiquities, some of which have found their way into the museums of Mayence, Wiesbaden, and Berlin, but others have been caught up and carried off by dealers and curiosity hunters. A railway connects Castel with Wiesbaden, which can thus be visited without loss of time; and under any circumstances, the antiquary should inspect the museum, as it contains many objects found at Mayence and in its vicinity. The name of Wiesbaden is so commonly associated with pursuits so far removed from the sphere of science, that of all places it will be the last to be suspected of supporting a museum of antiquities rivaling that of Mayence itself. The town is the Cheltenham or Leamington of the Rhine, and has much of the aspect of those places; dull and languid, with the set forms and gyrations of fashion, and an under-current of gambling and other vicious pleasures, upon which the idle and profligate contrive to exist. The museum seems but little known to, and is certainly not appreciated by, the people of the place. We tried at all the booksellers' shops to obtain some catalogue of its contents, or some work to direct us to the local antiquities of the place, but in vain. Neither did we succeed better at the institution. It is true the objects in the different rooms are labelled, but the writing is frequently illegible and always too brief, except for the loungers of the place who saunter through the apartments to wile away the time. The antiquary of France or England should not attempt to visit the Wiesbaden museum, without first calling upon the liberal and intelligent director, Herr Habel, of Schierstein, near Biberich, to whose munificent disposition, I have been informed, we are indebted for the establishment of the museum. Too much praise cannot be awarded to the system of classification adopted in this institution. All that is wanted by the foreigner is some catalogue to which he could refer for the history of the various objects, to know if an account has been published, and if so, where.

One of the largest and most striking monuments is the bas-relief of Mithraic groups found at Haddenheim, near Frankfurt. Exclusive of the usual representations of Mithras and his symbols, it contains several subsidiary figures not commonly met with. The stone is elaborately sculptured on both sides, and is in fair preservation. It may be compared with the analogous remains found on the site of the Roman station at Housesteads, on the Roman wall extending from the Tyne to the Solway.* A bronze door or gate, dug up a short time since at Mayence, claims notice. It is of large size and ornamented with a trellis pattern, but unfortunately it was broken up by the excavators and sold for old metal.

AN OLD CLERK OF WORKS. — Died on the 14th inst., at Windsor, in the 79th year of his age, Mr. Thomas Jenkins. He was principal clerk of the works during the restoration of Windsor Castle in the reigns of George the Fourth and William the Fourth, under the direction of the late Sir Jeffery Wyatville.

* See Hodgson's "Roman Wall and South Island," p. 190, and Bruce's "Roman Wall," p. 404.

LIVERPOOL BATHS AND WASHHOUSES.

THE Cornwallis-street model establishment, the first of the three new ones sanctioned by the Council when the imperfect erections reared in the outset were found to be self-supporting, is now on the eve of being opened. The building exteriorly is in the Italian style, and of red bricks, with massive stone quoins and dressings of a light red. The front, to Cornwallis-street, has two loggias, one on each side of the centre, under arcades. In each loggia there are two entrance doors, one for males, the other for females. Two glass doors admit to the second-class private baths, and, by a wide staircase, to the first-class on the upper floor. The first-class plunge baths have an area of upwards of 1,000 feet of water space. There are two tepid swimming baths. On the margin of the baths are pillars, which carry arches, making an arcaded walk around. On the top of this arcade the private baths are arranged: they project about 4 feet, forming something like a blind gallery, leaving the space above the plunge bath open to the roof. It is 40 feet in height. The roof is of corrugated iron, and the whole of the centre space being formed of rough plate glass, ground on one side, a mellow light is diffused into the apartment. The trottoir around the baths is of asphalt, and there are twenty-seven dressing-rooms. The baths, when filled, will have a varying depth, according to the incline, from 2 feet 6 inches at the upper end to 5 feet 9 inches below. Fault being found with the usual tile lining of the floors of previous plunge baths, the present are floored, as an experiment, with Portland cement. In the private baths, which run around the gallerie there are in all forty-three bath-rooms, ten being first-class, seventeen second, and sixteen third class. The baths are of polished zinc. The washhouses, at the western end of the building are two stories high,—the upper but half a story supported on an arcade, leaving the central area open to the roof. If completely fitted up, there will be room for ninety washerwomen in the establishment at once. Each stall is perfectly partitioned off, and furnished with two tubs; but twenty-five of the stalls are made larger than others, and have in addition a third tub, or "dolly." In the engine-room there are two very large boilers, on the Cornish principle,—one for hot water, the other for steam. From one end of the hot water boiler a pipe, 8 inches in diameter, proceeds, and circulates around the whole of the pipe-gallery, letting off jets to warm the various rooms, the water returning to the boiler, which it enters in front. By this means the water is kept continually in circulation, at a temperature of 120 degrees. The steam-boiler furnishes steam for the washing-tubs, for driving the steam-engine, and heating the upper and plunge baths. The baths were commenced in November, 1849. Their estimated cost, exclusive of the site, with fixtures, furniture, and apparatus, is 8,800*l*. It is believed that the establishment will not only be self-supporting, but will yield a surplus revenue.

"A VOICE FROM THE CROWD" OF ARCHITECTS' ASSISTANTS.

As a member of the profession, though a subordinate one, I often find my thoughts wandering into the vista of futurity, and in that dim perspective of the prospects of the Profession, I am puzzled to discover what will become of us, the architects' assistants, among all the full-blown and budding talent with which the rather weedy garden of architecture is besprinkled. "What will become of us?" is the question that continually thrusts itself upon my attention; "and Echo answers" "What?" Even during the comparatively speaking, short time that I have been one of "the small fry" of the Profession, great changes have taken place, unhappily not for the better; and day by day the prospect becomes more circumscribed and darkened, and the chance of emancipation more remote. When I take up the papers, and see in the pages devoted to advertisements the numbers who are desirous of entering into the Profes-

sion, and the number of architects having "vacancies" in their offices for articulated pupils (and I fear me "*sub rosa*" in their pockets for the premiums), I cannot help exclaiming, "What! will the line stretch out till the crack of doom?"

Surely things cannot be so very prosperous in the world architectural as to demand this constant increase in its future members, when we find architects in the same breath advertising for assistants who must possess almost all the qualifications for architects and artists too, at a remuneration of from thirty shillings to two pounds per week, or otherwise principals want to keep all the "loaves and fishes" to themselves.

To me, Mr. Editor, it appears that the profession is already *overstocked*: the late railway mania has been a powerful auxiliary in bringing this about. Every parent or guardian who had a son or ward he did not know what else to do with, articulated him either to an architect or engineer, because he anticipated that there was "a good time coming" for that "sort of thing," and the result has been, is, and will continue to be, that there are numberless young men who have spent small fortunes in the study of their profession, either totally unoccupied, or compelled by dire necessity to accept such remuneration as a London mason or joiner would indignantly refuse; and why is this, Mr. Editor? Because the profession is overstocked. These "latter day" pupils appear before us of the *ancien régime* as Banquo's ghost did to Macbeth,

"And push us from our stools."

"Our pupils can do what we have to do, and we cannot afford to keep paid clerks," say some architects: and why, gentlemen, I would ask you, can you not afford to keep paid clerks? Because you take too many pupils, and for too short periods: and what is the after result? Why that those among them who happen to be born with "silver spoons" in their mouths commence practising (?) for themselves, and the patronage of these degenerate days (little though it be, God wot!) becomes distributed among so many, that there is not only scarce a crust left for us poor paid clerks, but the architect himself gets very indifferent cheese to his.

Under such circumstances, who can wonder at the present state of public competition? Pupils are but half educated, and consequently become only *half-bred* architects, possessing none of the finer feelings for the profession that should exist. Who can wonder, then, that they truckle to the call of some liberal-minded committeemen, who, in the fulness of their hearts, ostentatiously offer a paltry five or ten pounds to the lucky competitor who shall furnish them with a design for some public structure, whose cost will probably be some seven or eight thousand pounds?

"Oh! shame, where is thy blush?"

AN ARCHITECT'S ASSISTANT.

Books.

Catalogue of the Library of the Institution of Civil Engineers. Corrected to December 31, 1850. London: Clowes and Sons. 1851.

THE principles on which this catalogue is framed are somewhat novel. The plan which has been most generally adopted by scientific societies, is a classified catalogue, or one having a number of distinct sections, one for each important subject, having the authors alphabetically arranged in each section, thus forming a number of distinct catalogues. Another plan, sometimes followed, was to have two distinct catalogues, one of authors' names arranged alphabetically, and the other of subjects also alphabetically, in both cases the full titles of the works being given. The first plan involved great uncertainty and inconvenience, was anything but precise, and in almost all cases a universal alphabetical arrangement of the authors' names had eventually to be resorted to, and printed as an appendix, or index to the body of the work.

The Catalogue under consideration differs

entirely from both of these. It is, in fact, a catalogue of names, and an index of matters, interpolated together into one universal alphabetical arrangement, so that unity which is of such unquestionable convenience in a work of this kind, is preserved throughout. The principal entry is the author's name, under which head a complete transcript of the title page is given. The chief subject, or subjects, treated of, are then taken out, for the index of matters, and cross referenced to the different authors, so that all the authors on any particular subject may be seen at a glance, by simply referring to the subject entry.

The work has been executed by Mr. James Forrest, under the direction of Mr. Manbey, the secretary, and they have produced what cannot fail to be of service to the engineering student, who will find in this library most of the best works on his profession. It contains 3,000 volumes and 1,500 tracts, and we hope that this publication may lead to its further enrichment by the members and their friends.

The Hand-Book to the County Courts. By D. E. COLOMBINE, Solicitor. Simpkin, Marshall, and Co. London, 1851.

SINCE the extension of County Court practice it has become much more necessary than before that the public generally should obtain a knowledge of the various proceedings to be adopted by plaintiffs and defendants. We have here, accordingly, the whole familiarly explained by a member of the Profession, whose name is very well known, and will doubtless itself constitute a recommendation to readers and to all who have the misfortune to have anything to do with law either as plaintiffs or defendants.

Miscellaneous.

STATE OF EGYPTIAN MONUMENTS.—A correspondent of the *Athenæum*, speaking of the damage which is being done to the relics of old Egypt, says,—"It would be no easy task to collect in what way the spoliation are to be explained. In one place certainly we know the Turks have been at work,—in another, the antiquaries; but in others, it is quite a puzzle to think how so much destruction can have been performed without apparent notice of any kind. However, so it is:—and really, while there still remains something worth preserving, I cannot help suggesting that much of this is owing to the supineness of that very large class of persons who profess to take an interest in Egyptian antiquities. The proper plan, I think, would be, to direct whatever influence could be brought to bear to such a useful end to the formation of a committee, consisting of the principal consuls and residents in Egypt, charged with watching over the preservation of the monuments of the country, and supplied of course with funds to pay for guardians and inspectors. If such a committee were formed, with of course the sanction of the Government,—some considerable good might be done; and I believe there are many Europeans who would not be sorry to relieve the somewhat monotonous life of Egypt by making themselves busy on this subject. Some of them would be going up the country every year. They would be in communication with all travellers; and with ease to themselves—and surely profit to the world—would perform their self-imposed duty. It may be said—Why do they not spontaneously organize such a committee? The answer is,—because the courage required would be too great. One of the first things they would have to do, would be to interfere with travellers, who would go home and write books full of terrible denunciations against them. Yet it is obvious, that if we wish to make the natives respect the monuments, we must begin by respecting them ourselves. If we undertake to prevent the Arabs from drawing quaint boats and caricatures on the walls, for example, of the tomb of Beni Hassan, we must interdict celebrated engineers and others from covering half a ceiling with their names in gigantic letters scrawled with a tar-brush, and deny ourselves the pleasure of meeting the

record of the presence of a pleasant practical member of Parliament in a modern mis-shapen cartouche on the columns of Carnac. Again, how can we, with any chance of being attended to, forbid the Turk to demolish a propylon for the purpose of making powder-works, if we cannot prevent other barbarians from smashing a whole chamber in order to carry off a historical record which derives its whole value and authenticity from its existence in that chamber? To save the monuments of Egypt at this time of day, it is necessary to surround them with a kind of superstitious respect; and this cannot be done by a body which has not the sanction of the whole corps of *savans* in Europe, and the support of the European governments.

FURNITURE IN THE OLD TIME.—It was not usual, in the Middle Ages, to possess much furniture, for in those times of insecurity, any thing movable, which could not easily be concealed, was never safe from plunderers. Benches, on which several persons could sit together, and a stool or a chair for a guest of more consideration, were the only seats. A bed was a usual article of furniture in the bower or chamber; though there were, no doubt, in large mansions, chambers set apart as bedrooms, as well as chambers in which there was no bed, or in which a bed could be made for the occasion. The bed seems usually to have consisted merely of a sack filled with straw, and laid on a bench or board. Hence words used commonly to signify the bed itself were "bench," and "straw;" and even in King Alfred's translation of Bede, the statement, "he ordered to prepare a bed for him," is expressed in Anglo-Saxon literally by, "he ordered to prepare straw for him." All, in fact, that had to be done when a bed was wanted, was to take the bed-sack out of the cyst, or chest, fill it with fresh straw, and lay it on the bench. In ordinary houses it is probable that the bench for the bed was placed in a recess at the side of the room; in the manner we still see in Scotland.—*Art Journal.*

OPENING THE INTERNATIONAL EXHIBITION.—We rejoice to hear that the opening of the Great Exhibition is to be one worthy of the unparalleled occasion. Her Majesty is to open the Exhibition in State on May-day at mid-day, in the midst of anthems and music, trumpets, cannon, and other display of a formal and official as well as imposing order. Prince Albert, the presiding genius of international union and peace, will, at the head of the Royal Commission, read a brief report of proceedings to her Majesty while seated in a chair of state to the north of the transept centre, and a procession will afterwards parade the aisles to the sound of martial music—no longer in the devil's service, but in that of the Prince of Peace, and played by the great organs of the Exhibition.—The attention of the proper authorities ought to be given to the neglected state of the Park in the immediate vicinity of the building. Several correspondents have taken the present opportunity of complaining to us of the state of things there, and we are glad to see that the *Times* has also drawn attention to it.

NOVELTY IN LETTER-PRESS PRINTING.—Among the various designs recently got up in Edinburgh for the Great Exhibition, we may mention a curious specimen of typography, executed by Mr. Robert Ramsay (of the *North British Advertiser* office). It represents a front view of the Free Church College, and is executed so as to have the appearance of an engraving or woodcut. It is composed entirely of moveable types, amounting in number to upwards of twelve thousand five hundred, independent of upwards of eighty feet of brass rule.

PEEL MONUMENT FOR PRESTON.—Mr. Duckett's model of a statue has been approved of by the committee, with liberty to the artist to alter the portrait as he may see fit after visiting the International Exhibition, where numerous busts of Sir Robert, it is said, will be exhibited. The model of a pedestal, by the same artist was also selected, and a great block of limestone has been bespoken. The site has been fixed at the end of Cross-street.

BURY, LANCASHIRE.—A church has just been commenced at Holcombe, near Bury, Lancashire, from the designs of Mr. T. Holmes, architect, of Bury, to contain about 500 sittings. It is in the Early Decorated style, and consists of a nave, 60 feet by 21 feet 6 inches; north aisle, 40 feet by 12 feet 3 inches; south ditto, 60 feet 4 inches by 12 feet 3 inches; transept on north side, 25 feet by 19 feet 3 inches; chancel, 23 feet 9 inches by 15 feet, and north vestry, 14 feet by 12 feet; western tower, 11 feet 6 inches inside; the entire cost to be about 2,250*l*. The situation is one of the most romantic and imposing in Lancashire. The present contract does not include a spire; but it is intended to erect one at a future time. The height of the tower is about 70 feet: the spire will be about the same. Mr. Haworth, of Helmsore, is the mason, and Mr. John Wild, of Ramsbottom, does the remainder of the work.—The same architect has just commenced a parsonage, to be built in connection with St. Paul's Church, Bury, in the Perpendicular style of architecture. The entire cost will be about 1,050*l*. The Earl of Derby has shown his good wishes towards the neighbourhood by granting 23 acres of ground for the above. The contractors are Messrs. J. and T. Crossleys, of Bury.

BOILER EXPLOSIONS.—The manner in which many of these explosions occur is thus described by the *North British Mail*:—"We had occasion to visit an extensive work last week, where a number of steam-boilers were at work, one of them high-pressure, which had been recently fitted with an apparatus, which, actuated by a float inside the boiler, indicated when the water was too high or too low, by blowing an alarm whistle. Whether the tender in charge did not like to have the whistle always indicating his inattention, or whether it was by accident, at all events, the float was removed, and the wheel at top being fixed by a nail, the apparatus was inoperative, and worse than useless, because it led to a misplaced confidence in a very excellent contrivance." A diagram has been exhibited in the Exchange, says the *Manchester Spectator*, of an absolute safety-valve, which has been registered by Mr. James Nasmyth, of the Bridgewater Foundry. Its construction, although simple, is very ingenious, and the objections to the valves now in use are effectually removed. It is free from all external or internal spindles and contrivances intended to act as guide rods, which often corrode, and render the valve no indicator of the variations of pressure. It has no external lever or weight, therefore cannot be tampered with by being overloaded; but, as the inventor states on the diagram, "the chief feature of novelty in this safety-valve consists in the manner in which the swaying backward and forward motion of the water in the boiler is employed to keep the valve free, and so remove all tendency to become fast in its seat, whether from mud or any other cause. The valve and seat being portions of a sphere, they fit in all positions." The adoption of some such valve as this must be a great means of safety; but it will not obviate the very serious, because very common danger, arising from the employment of men as engineers so ignorant as to believe that boilers "can stand any amount of pressure," or so reckless as to tie down or fix their valves, and to leave them while they are off drinking or otherwise neglecting their work.

THE BRITISH LION AT BUCKINGHAM PALACE.—Having read with some interest the remarks which you have made from time to time on the works at Buckingham Palace, I revealed myself of the fine weather on Saturday to inspect what are called the recent improvements. It would occupy too much of your valuable space and my time to attempt a critique on the whole affair, but there are on the two side piers of the entrance such a libel on the supporters of the royal arms, as well as on the artistic talent of the country, that I cannot refrain from again calling attention to the matter, in the hope that some means might be devised to remove those caricatures of the lion and unicorn which have been placed on the top of the piers: not only is the good taste of every

mind capable of forming the slightest opinion as to how the thing should have been executed, done violence to, in the deformities committed on the animals themselves, but every vulgar mind will ridicule and laugh at their indecency, and every feeling mind be moved to pity from their tortuous position: should the beast loose his grasp of the shield for a moment's rest, there is no alternative but an ignominious fall. Do pray, Mr. Editor, use your pen to effect the removal of these monstrosities before the world shall assemble in town to witness and ridicule our royal sculptures.—A LOOKER ON.

COUNTRY AND LAMBETH DRAINAGE PIPES.—As the contractors for the supply of the pipes for the drainage of the town of Rugby, we will thank you to insert the following remarks, in reply to a letter in your last week's number, signed "Thomas Smith." Mr. Smith insinuates that the pipes made at our country establishment, and which are intended to be supplied at Rugby, are of inferior quality to those made at Lambeth. The only pipes manufactured by us are of glazed stoneware, and those made at our country works are quite equal in quality, and by many are considered superior, to those made by us, or any other parties, at Lambeth. It so happens, that the test recommended by Mr. Smith, that the pipes should be broken and the body scrutinised, was applied in the Rugby case with unusual strictness, and we are authorised by the engineer to state that, judged by this test, the pipes selected by him, and which were of our country manufacture, were at least fully equal to any sample of Lambeth pipes submitted, and we think that Mr. Smith will fail to convince your readers that the quality of an article is always to be determined by the locality where it is manufactured.—HENRY DOULTON AND CO.*

ESCAPE FROM FIRE.—The Royal Society for the Protection of Life from Fire, merits support. Besides the mere personal advantage of supporting the fire-escape station of the district, subscriptions and donations ought to flow into it on the grounds of humanity generally. It is the only national means for rewarding brave exertions in saving life from fire, and expends, it appears, a considerable amount annually in cases deserving such public testimony throughout the kingdom. In its sphere of usefulness generally it depends on voluntary support. During the past year, by the exertions of the society's men, the lives of thirty-six persons were rescued from houses on fire in London; and the gradual decrease of fatal fires during the few years the society has been in active operation is said to be matter of general acknowledgment. Additional good might be effected by augmenting the number of its fire-escape stations, but that of course depends on the exertions of the public in its favour, not on those of the society, who are anxious to have fire-escapes over the whole of London.

THE LIVERPOOL JOINERS' PROGRESSIVE ASSOCIATION.—A meeting of the members and friends of this association was held on Wednesday in last week, at the rooms in Back Bold-street. Amongst those on the platform were Mr. Councillor Picton, Mr. H. T. Atkinson, and Mr. Myers. The chair was occupied by Mr. Robinson. There were a good number of operative joiners present. Mr. Chuck moved the first resolution, which was to the effect that, having had one year's experience of the benefits arising from the association, both morally and intellectually, the meeting pledged itself, individually and collectively, to extend its influence as far as possible, in order that their fellow workmen may all unite in one compact and public association. Mr. Picton seconded the resolution, and referred to the present state of the association. It appeared that, during the year, the numbers had increased from thirty members to three hundred. Their financial position was also exceedingly favourable: they had not only paid all expenses, but there was an encourage-

* We have received other letters on the subject, but are unable to give them insertion. Of our own knowledge, we can state that some of the country-made pipes are very bad.—Ed.

ing balance in hand. They had also the room in which they were then met, which was fitted up as a reading and assembly-room. A drawing school had been established for the younger members of their trade, and they had a small library of books presented by the late Mr. Edward Rushton. This and other appropriate resolutions were unanimously passed.

HOUSE TAX ON WORKMEN'S DWELLINGS.—The declared object of Sir Charles Wood is to procure cheap and wholesome dwellings for the working classes. It is to be hoped, therefore, that he will well consider the effect of his proposed house tax on compound dwellings, such as not only those named model lodging-houses, but others anything but a model in construction, as well as those of a medium order, which exist in great numbers in such towns as Edinburgh, Glasgow, Liverpool, or Birkenhead, &c. Mr. William Laird, who, along with others, built a number of these, of an improved description, at Birkenhead, as dwellings for the working classes, draws attention to this subject in the *Times*, and suggests that such houses, being in fact made up of separate and distinct dwellings, should be exempt, unless where each separate dwelling is of greater annual value than 20*l*. If not exempted, this tax will assuredly constitute just such a hindrance to the improvement of dwellings for the working classes as the window-tax itself has been; for it is by the erection of such houses alone that these dwellings in towns such as London can ever be improved.

NEW INDEPENDENT CHAPEL, GLOUCESTER.—The style of the building is decorated. The foundation stone was laid on the 17th of May, 1850. The chapel is 74 feet in length, 51 feet in width, and 56 feet high from the ground floor to the ridge of the centre roof, and will accommodate about 1,000 adults. It is divided into three aisles. The centre compartment is carried up higher than the other parts, with clerestory windows over the arches, and at each end of the building is a five-light window, 26 feet high, and 12 feet wide: the heads are filled with tracery of different designs. The window at the further end of the chapel is enriched with stained glass, by Rogers, of Worcester. To prevent any obstruction of light from the window over the principal entrance the organ has been divided into two parts, one on each side of the window, the pipes being connected with cranks and levers underneath the floor, and the keys placed at one of the compartments. The organ was built by Nicholson, of Worcester. There are two side galleries, supported by moulded corbels from the columns. The external walls are built of Bath stone. The stone carving has been executed by Frith, of Birmingham. The arrangements of the public and private vestries, behind the chapel, are very complete. The works have been executed by Mr. Wingate, builder, under the direction of Mr. Medland, architect.

KING'S COLLEGE HOSPITAL COMPETITION.—The council of King's College Hospital desiring plans for a new building, invited a competition from a limited number of architects (five), under conditions different from those usually prescribed. The designs have been sent in, and we shall next week refer to them. The council were assisted in their arrangements by Professor Hosking.

EXTRAORDINARY FEAT.—Mr. James Duncan Wright, otherwise called "Steeple Jack," has been engaged at the Bristol Alkali Works for a few days, making arrangements for repairing the tall chimney outside without stopping the works a moment. At twenty minutes past two on Thursday, seeing that the wind would suit him, he flew his kite, and by twenty-five minutes past three he had a chain over the top, with proper tackle attached for ascending. In another half-hour he took his seat on a bit of board, 18 by 9 inches, and 1 inch thick, and went to the top (200 feet) in half a minute! In three minutes he had placed the chain in a secure position, exactly across the top (which it was not before), and in another half-minute was shaking hands with his friends below. This is only one of the many feats for which "Steeple Jack" is celebrated.—*Bristol Gazette*.

The Builder.

No. CCCCXX.

SATURDAY, MAY 3, 1851.



THE Industrial Exhibition of all Nations has been opened, under the happiest circumstances, and without the occurrence, so far as we have heard, of a single accident. The sun shone gloriously, as it usually does when our Queen intends coming out, and thousands and hundreds of thousands of persons lined the roads to see her Majesty pass. The scene inside the extraordinary building which has been prepared for the occasion was beyond description, and will not speedily be forgotten by those who had the good fortune to be present. A double row of seats on each side of the nave and transept, and others in the galleries, were filled with elegantly dressed women (equal to competition with the world), backed up by crowds of male visitors, and in the centre were other masses, forming two passages, one on each side of the nave, along which the procession passed. The dais and canopy were on the north side of the nave, at the junction with the transept. The braying of the trumpets, the swelling organs, the national anthem from a thousand throats, the declaration that the Exhibition was opened, and the universal hubbub and congratulation after this, are all still in our ears, and prevent us from doing anything now beyond noting the event. We shall, of course, pay many visits to the collection, and notwithstanding its numerous special recorders, shall doubtless find new matter for our readers' information. Sincerely glad are we that no untoward event, not even a dark cloud, occurred to lessen the success of the day, and we earnestly trust that the results of the event may be good, universal, and lasting. And having said thus much, we will end our brief memorandum of what will be a world-famous event, with one of the quotations happily selected for the official catalogue by the Prince, commending to all the truth it teaches:—"The progress of the human race, resulting from the common labour of all men, ought to be the final object of the exertion of each individual. In promoting this end, we are carrying out the will of the great and blessed God."

ANNUAL MEETING OF THE ART-UNION OF LONDON.

ACCORDING to our custom we record the proceedings at the annual general meeting of this important corporation. It was held on Tuesday, the 28th, in the Theatre Royal Lyceum, which was filled with visitors.

The Right Hon. Lord Montagu took the chair, and

Mr. G. Godwin, F.R.S. then read the following

REPORT.

The Art-Union of London has now been in operation fifteen years, and during that time has expended, in the dissemination of works of art and the encouragement of artists, more than one hundred and fifty thousand pounds.

In the first year of its establishment 489. were raised with difficulty. The rapid increase of the subscription list gave most satisfactory evidence of the public appreciation of the objects of the Institution, and since

the second year the annual receipts have been reckoned by thousands. About two hundred thousand engravings, many thousand etchings and wood-cuts, and a large number of paintings by living artists, statuettes, bronzes, medals, and other works of art, have been distributed far and wide. The effect of the association (it is not too much to say), in inducing a love of art, and interesting the mass of the people in the progress of art, is traceable all over the kingdom, and throughout the British dependencies abroad.

The subscriptions for the present year, interfered with in a degree by the pre-occupation of the public mind by the great event of the times, amount to the sum of 11,470*l.* 4*s.*, the proposed appropriation of which will be presently stated.

Every subscriber is entitled (as you are aware), to receive one of two line engravings, "The Villa of Lucullus," or "The Burial of Harold," together with an illustrated edition of Goldsmith's "Traveller." Impressions of the first-named engraving have been distributed to those who gave that the preference. "The Burial of Harold" and the "Traveller," will be ready for distribution in a few weeks.

The Council have added to the series of illustrations of "The Traveller," a portrait of Goldsmith, and have reason to believe that the volume will be found very satisfactory. They owe thanks to Mr. Stanfield, R.A., for the presentation of the two original drawings from which his illustrations for the work were made on the wood.

The engraving of "The Entry into Jerusalem," due to the subscribers of 1849, and the designs illustrating "The Seven Ages," due to the subscribers of 1850, have been delivered to them since the date of the last report.

"The Piper," engraved by Mr. Edward Goodall, is finished and ready for press. "Richard Cœur de Lion" is approaching completion, in the hands of Mr. Shenton. The plate of "Queen Philippa interceding for the Burgesses of Calais" has been greatly delayed by the ill-health of the engraver. The Council adopt all the measures in their power to obtain the prompt execution of the engravings determined on, and to prevent disappointment, but are unable, without the co-operation of the artists employed, always to ensure the desired result.

The plate of "The Crucifixion," which was intrusted to Mr. W. Finden, should have been delivered to the Council, according to agreement, in December, 1849. To prevent disappointment to the subscribers, it would be desirable not to appropriate impressions from engravings until they are actually ready for delivery; but this course would involve an amount of responsibility of which the subscribers generally are scarcely aware. For example, in the case of the four engravings last mentioned,—by the time these plates are finished, and before beginning to print, an expenditure of 3,670*l.* will have been made, of which, of course, if the prints are reserved for future years, not one shilling is as yet subscribed. The members, in justice to the Council, should bear this fact in mind, that the whole of the amount subscribed each year, with the exception of the small percentage required by the charter to be set aside for the provision of a gallery hereafter, is divided amongst the members of that year.

The bronzes in *basso relievo*, "The Death of Boadicea," have been delivered to the prize-holders. The engraved design "The Entry into Jerusalem," by Mr. Hancock, will be produced in bronze in similar style for some future year. The same artist has prepared for the Council a second design in *basso relievo*, "Christ led to Crucifixion." A *fac simile* engraving of this will be made for subscribers of a future year, and will serve as a companion to "The Entry into Jerusalem."

For the ensuing year the Council have fortunately succeeded in obtaining a fine plate, engraved by Mr. Holl, after the picture by Mr. W. P. Frith, A.R.A., called "An English Merry-making a Hundred Years ago." This is a large and costly work, thoroughly national in its character, is ready to go to press, and

will, it is hoped, prove acceptable to the subscribers generally.

The Flaxman Medal, undertaken by Mr. Wyon, R.A., on the failure of the artist to whom it was first entrusted, and the Inigo Jones Medal, in the hands of Mr. Carter, have been delayed by the other engagements of the artists.

For the contemplated Iron Tazza, a subject modelled in low relief by Mr. Edward W. Wyon, from a Greek design, has been produced in metal, and will be placed in the hands of the eager forthwith. Twenty examples of this will form part of the present distribution.

With the sum set apart in the year 1850 for the purchase of works of art by the prize-holders themselves, 109 paintings and drawings were obtained, ranging in cost from 400*l.* to 10*l.*

The Council have again to note with regret that sculpture was not selected by any prizeholder.

In connection with this branch of art, to the importance of an extended encouragement of which the Council have often directed attention, an advertisement was issued in September last, offering, on the part of the Corporation, premiums of 100*l.* and 50*l.* respectively, for the first and second best model in plaster of a single figure, fitted to be afterwards produced in bronze. In reply to this, forty statuettes were sent in. By arrangement with the Executive Committee for the management of the Industrial Exhibition, a selection from these, twenty-four in number, have been deposited in the Great Building in Hyde-park. The Council believing that many unwise and unjust decisions in artistic competitions would have been prevented if the works submitted had been publicly shown previously to the award being made, have resolved to suspend their decision in this case until after the opening of the great Exhibition.

It wants but a few hours to this great event,—to the realisation of the idea put forth by the Consort of our gracious Queen, which will have the effect of bringing nations together, and showing under one roof the industrial arts of the greater part of the civilised world. From this peaceful battle-field it may be reasonably expected all will retire gainers. The general level of the national mind will be raised by it: the comfort, intelligence, and well-being of all will be advanced.

Amongst the minor but still valuable results of the Exhibition, will be the striking illustration it will afford of the importance, even in a pecuniary point of view, of making a knowledge of art general. For many years, as a reference to past Reports will show, the Council of the Art-Union of London have strenuously endeavoured to impress this truth; and should England appear to less disadvantage in matters of design, as compared with our continental neighbours, than some expect, we may with justice claim for the Association the merit of having contributed to that result.

The death of his Royal Highness the late Duke of Cambridge, president, is a loss that will be deplored by every member of this corporation, and especially by those who know best the kind readiness with which his Royal Highness ever strove to further its interests,—and never more so, or with more effect, than when its existence was threatened. The Council have a grateful sense of the assistance which was at all times afforded them by his Royal Highness, and deeply lament the loss that has been sustained.

Death has deprived the Art-Union of another early, earnest, and distinguished friend,—the late Marquis of Northampton, a vice-president of the corporation, who was ever ready to assist by his presence and advice.

The present Marquis of Northampton, who, as a member of the Council when Lord Compton, rendered efficient service to the Corporation, has been transferred, with his lordship's approval, to the list of vice-presidents.

The retiring members of council are C. R. Beauchamp, Esq., W. Leaf, Esq., and the Rt. Hon. Thomas Wyse. To fill the vacancies thus caused, and by the removal of Lord Northampton, the Rt. Hon. the Lord Londesborough,

secretaries also made honourable mention of the exertions of Mr. T. S. Watson, B.A., the assistant secretary.

Capt. Shea and Mr. Walters having consented to act as scrutineers, and Miss Jessie Cantwell and Miss 'Lotta' Roney to draw the prizes, the distribution was made, and the whole passed off with the greatest unanimity and the best feeling. At the close, thanks were voted by acclamation to the young ladies, to the scrutineers, and to Lord Montagu, who said he hoped the press, which had provided them with a report of their proceedings before the meeting had closed, would convey to our brethren in America expressions of the pleasure with which the members had seen a large proportion of the prizes fall to subscribers on the other side of the wide Atlantic.

The following is a correct

LIST OF THE PRIZEHOLDERS:—

Entitled to a Work of Art of the Value of Two Hundred Pounds.
Woodward, C. H., Peckham.

Entitled each to a Work of Art of the Value of One Hundred and Fifty Pounds.
Hutton, C., Reading
Larion, P. A., Gibraltar.

Entitled each to a Work of Art of the Value of One Hundred Pounds.
Roberts, A., New York
Thatcher, James, Welton, Bath.

Entitled each to a Work of Art of the Value of Eighty Pounds.
Clark, T., Ordnance-office
Stevens, F. P., Port Fairy
Hayward, G., Boston, U.S.
Manning, Rev. S., Frome

Entitled each to a Work of Art of the Value of Seventy Pounds.
Harris, A., Middleboro
Reidley, R., Brentwood Villa
Macgregor, Mrs. W., Liverpool
Reid, J. L., Downham-mkt. pool

Entitled each to a Work of Art of the Value of Sixty Pounds.
Brown, R. J., Cirencester
Butcher, H. J., Devizes
Lavers, W. J., Plymouth

Entitled each to a Work of Art of the Value of Fifty Pounds.
Anstwyll, S., Edgeware-road
Binning, J. N., Glasgow
Brook, T., Pen-craig-court
Carr, Ed., New Ross

Entitled each to a Work of Art of the Value of Forty Pounds.
Bax, T. J., Bishopgate-street
Broomfield, —, Norwood
Campbell, C., Jamaica
Chadwick, Capt., Chelsea
Colvin, Col., Ludlow
Cox, W., Bath
Dent, J., Worcester

Entitled each to a Work of Art of the Value of Twenty-five Pounds.
Ash, Dr., Jun., Coxwold
Cassell, J. W., Styal
Codman, B., Boston, U.S.
Danford, F., Wisbech
Dodge, —, Bideford
Eccles, C., Edgeware-road
Hopkins, R., Hobart Town

Entitled each to a Work of Art of the Value of Twenty Pounds.
Chandler, L., Smithfield
Dance, W. R., Bunker-hill
Davis, J. P., Boston, U.S.
George, —, per Bigg, Con-
dul-street
Hopkins, Mrs. T., Con-
naught-terrace
Jennings, I. B., Cheapside

Entitled each to a Work of Art of the Value of Fifteen Pounds.
Allen, G., Herne-hill
Bacon, W., Mornington-
place
Bennett, —, Jun., Pall-mall
Bradshaw, Job., Notting-
ham
Carey, Rev. P., Guernsey
Clark, R. P., Bunker-hill
Fernandez, M., Hawkstone
Fogarty, Jos., Limerick
Goodyear, Thos., Liver-
pool
How, J. N., Boston, U.S.
Langton, G., Antigua
Lemon, H. J., Brentwood

Entitled each to a Work of Art of the Value of Ten Pounds.
Adey, Mrs., Poole
Brown, M., Cambridge
Challis, Alderman, W.,
Smithfield
Dale, James, Newcastle
Davis, Dr. J., Warring-
ton
Doyle, Col., Limerick
Ebbins, W., Guildford
Farbes, Capt., Exeter
Hickcock, W., Homerton
Hornidge, M., Barnes
Howling, T. C., Poplar

Entitled to Statuette in Alabaster "The Dancing Girl"
Newton, W. E., Chancery-lane.

Entitled to Statuette in Wax "Michael and Satan,"
Harker, J. W., Islington.

Entitled each to a Bronze bas-relief of "The Death of Boadicea."

Collage, —, Rugby
Ellington, J. F., Cambridge
Gregson, T., Hawkhurst
Hall, G. C., Alfreton

Entitled each to a Bust in Bronze of "The Queen."
Anstwyll, W. J., Doldington
Byres, General, Alderbury
Hampson, James, Knutsford
Higginbottom, H., Saddle-
worth

Entitled each to a Tazza in Iron modelled from a Greek Design.

Abeon, C., Guernsey
Bethune, W. A., Hobart
Town
Bowen, J. H.
Brown, C., Cambridge
Bushby, Robt., Littlechamp-
ton
Day, M., Southampton
Gill, Richard, Islington
Green, G. F., Wellington
Klein, W., Reckling, Surrey
Low, James, Holloway
Markis, R. W., New Brompton

Entitled each to a Porcelain Statuette of "The Dancing Girl reposing."

Adley, H. M., Old Bond-st.
Bailey, Masterworthy
Barrow, Geo., Hall
Brand, T., Scarborough
Brown, Dr., Brighton
Burch, T. L., Canterbury
Butler, Rev. W., Nottingham
Caldwell, W., Jun., Boston,
U.S.
Cooper, A. R. F., Boston,
U.S.
Cooper, H., East Dereham
Davie, W., Long-acre
De Wint, Mrs., Upper
Gower-street
Fell, Miss, Cartwell
Eidler, Dr., Whitehaven
Francis, J. G., Holistown
Fulton, T., Kilmarlock
Graves, F., Haverstock-hill
Green, Ed., Philadelphia
Gutterell, J. R., Winchester
Gwinnett, W. H., Cheltenham
Hall, H., Ashton-under-lyne
Hay, John, Strewood
Higgett, T., Rolleston
Hicks, J., Willehall
Hook, Henry, Sidmouth
Horsley, T., Derby
Ingersoll, H., Philadelphia
Jeffrey, W., Hampstead-rd.
Jones, W., Llanfyllen
Jones, R., Union-street,
Borough
Knox, W., Leadenhall-st.
Lamb, Jessie, Liverpool
Londesborough, Earl of,
Piccadilly
Loring, B., Boston
Malcolmson, Jas., King Wil-
liam street
Marsh, Rev. Geo., Chippen-
ham
Martin, James, Banff
Mason, J. J., Upper Holloway
Matteo Betti, Leghorn

SOME OF THE IMPEDIMENTS TO THE ADVANCEMENT OF ARCHITECTURE.*

LET it not be hastily assumed that I propose to make utility the standard of beauty in architecture: not so, but it is the basis: it is the skeleton framework upon which beauty is to be moulded. Though the mere intellect be exhausted in perfecting mechanical contrivance, constructive detail, or convenient arrangement, a want will still be felt unless there be a manifestation, or rather attempted manifestation of the ideal. The most finished efforts of the poet or artist are ever deficient; but they may be suggestive of the bright vision floating before his gaze, which he eagerly sought to imprint upon his cartoon, and now sighs to think how miserably the representation falls short of the ideal. I am not of those who would elevate the intellect beyond the other features of this our mixed human nature; but think, rather, that as the subject, man, is composed of two parts; and as the material body ministers to the wants and volitions of the immaterial mind,—so this mind itself is of dual character; that is, not only reason which inquires, collects, and digests the items of intellectual worth—gathering upon the altar of the heart the first fruits of research and deep thought, and being the minor priest of the tabernacle,—but also the inner soul, the warm feeling, the yearning aspiration, and the deep devotion, which is the high priest of the temple, to whose earnest supplication is granted the fire from heaven to kindle the

acceptable sacrifice, and consecrate it to the reverential sympathy of every age.

But the material development of the day outgrows and depresses the spiritual: we want something more than mechanical improvement, however perfect,—something better than the diffusion of knowledge, however universal: our energies are so engrossed with earthly realities, the ideal is almost wholly overlooked. And yet, in this material development, what scope is there not for spiritual expansion!

We prate of the Freemasons and of their works—of the Italians and what they did—of the Greeks and their remains; but had some sage or prophet of any of these people foretold the scientific marvels of our time, would they not have thought us gods?

Had some bard of ancient time dreamed of a people who should measure the stars in the firmament, and learn their seasons of arrival and departure,—who should analyze and recombine the components of all materials,—not excepting the supposed primary elements,—who should scatter to all parts of the earth, and in every tongue, records of the noblest actions and the highest thoughts of the greatest men,—who should make for themselves a highway, not over hitherto trackless wilds and through tangled forests, but through the earth itself, or at a lofty altitude across wide armlets of the sea, and be conveyed over roads thus made by the agency of the air we breathe, or by the assistance of Heliotic vapour,—that not only should the wide expanse of these unknown and dreaded oceans be familiar to this people as beaten tracks of land, but that the force of the raging elements was so subdued by this same vaporous agent, that frequent and regular communication could be maintained across 3,000 miles,—that the name of that river where Alexander wept, because he could find no more nations to sacrifice to his insatiable lust for conquest, should be to them a household word—its banks the homes and graves of many of their sons,—and if, in addition to all these, and countless other wonders that you know of, they could interchange thought not only with the rapidity of lightning, but by the agency of that same awful force, of which his contemporaries knew nothing, save its sometimes direful effects,—what glorious anticipations would he not have formed of a nation thus composed of the sons of the gods; who rivalled "cloud-compelling Jove," nay, excelled him; for with him the lightnings were but messengers of wrath,—with this people, missionaries of civilization! How would he scorn a race who, thus blest and glorious, contrast the artistical achievements of their time with those of the poets, and seek to excuse their melancholy deficiencies by the deceitful reflection—"Ah, there were giants in those days!"

"Lives of great men all remind us
We can make our lives sublime,
And, departing, leave behind us
Footsteps on the sands of time;
Footprints, that perhaps another,
Sailing o'er life's solemn main,
A forlorn and shipwrecked brother,
Seeing, may take heart again."

Instead of adapting themselves to the circumstances of the time, stooping mayhap to conquer, and giving to material civilization that inward soul, by which alone it may be matured and preserved, architects are apt to sneer at constructive excellence as being quite too mechanical and utilitarian for them. "The tubular bridge at the Menai, and the Crystal Palace in London, are truly wonderful examples of constructive ingenuity, but they are not architecture: we utterly repudiate the idea of having any connection with such works: the engineers made them, and the engineers are welcome to the credit of them: we will have naught to do or say to them."

I apprehend that architects in past time thought and acted differently,—that that series of men who, by successive efforts, developed the wooden hut into the Grecian temple, would view the Crystal Palace as the root of new beauty; and that those who clanged Roman architecture into the different phases of the Gothic and Italian styles, would be able to

* A third edition of the *Morning Post*, containing a report of the proceedings, was circulated in the theatre before the meeting broke up.

give to the Britannia-bridge or the Palace of Industry some esthetic expression, which should redeem them from simple materialism. It would be very different if architects acknowledged in all humility that they do not now possess the talent to refine, or to originate and recombine in an original manner, as did the professors of the various architectural schools: this would be very different from sneering at the intractability of the material, or of the constructive form, and to condemn them as anti-esthetical, merely because they do not readily adapt themselves to any acknowledged or conventional form of beauty. I believe that the present zealous adherence to existing styles springs either from a blind and implicit reverence for authority, or from a desire to avoid study and labour, but still more to earn the pecuniary results of practice with the least labour possible; and therefore men set up as their standard of excellence the work of men; and the more nearly their productions approach to *fac similes*, and may be mistaken for genuine remains of the old masters, the more nearly do they fancy they attain to perfection. But in thus removing architecture from the arts of necessity to the rank of fine or imitative arts *only*, we are as much in error as those who reverse this process, and reduce architecture to mere building surveying: it is by uniting the two classes of art that it most faithfully discharges its proper functions, knitting together the material and the ideal, and rising from an imitative to a creative art; and human intelligence "doth then show likest God's."

The truth of these remarks will perhaps be admitted; "but keep," it will be said, "at all events, keep to the simplicity of nature." Now, what is meant by the *simplicity of nature*? Surely not the absence of parts, for in that case is the egg more beautiful than the bird—the caterpillar than the butterfly—the seed than the fruit or flower? I apprehend that nature most generally shows her simplicity in giving to every part, however numerous, its own proper function: she has no superfluous parts, or when she has we see no beauty in them. Although we may be unable to trace the utility of every object we admire, I think it will be found that we assume that it has a purpose, though beyond our ken: let it be positively known that the object is an excrescence, perfectly useless, nay, impeding the proper action of the useful, and our pleasure is greatly alloyed, if not altogether dissipated. Nobody admires two thumbs upon one hand, nor any similar excrescence; and if any limb be paralysed we are uneasy at the uselessness of the appendage. But let it be apparent at first sight or upon examination that every part has its legitimate use, and we then acknowledge that Nature is indeed simple in her beauty, however multitudinous those parts may be.

So in architecture: the Doric column has more parts than the simple post, but no one thinks it less beautiful: the Ionic is again more complex than the Doric, the Corinthian than either; but I do not remember to have heard the increase of parts alleged to be detrimental to their beauty. The Italian façade is more varied than the Grecian portico, but is it on that account less beautiful? Trace the various developments of northern architecture through its several stages, and I think it will be found that the increase of parts, consequent upon improvements and refinements in construction, add to, rather than detract from, the beauty of each style. Provided the change be not a mere matter of whim, but dictated by the wish to secure some adequate practical advantage, we have no reluctance to admit its beauty. Now the engineers, in their tubular bridges, their railway sheds, and other gigantic utilitarian works, have very successfully simplified the essentials of construction: why should not the architect now step in, and refine this material excellence into esthetic beauty? I think if they neglect to do this, if they will persist in being too fine for their work, and shut themselves out from the sympathies of men in general, they will find that "their occupation's gone;" that men of practical com-

mon sense will prefer utilitarian convenience without beauty, to beauty, however theoretically excellent, which has no practical goodness to recommend it.

But I believe there is a brighter prospect before us. No nation enjoyed success for any lengthened period without growing in refinement, and acquiring a love for art, and promoting its advancement; but any improvement which results from such a very material cause *alone*, will not be very elevated or lasting. No one, however, can be unobservant of the fact, that the dormant spiritualism of the age is fermenting for expression in a higher form: there is much going and coming, much passing to and fro; some seeking, in the exploded forms of early superstition, some in the refined speculations of ultra-rationalism, for that religious expression which society has long wanted, and now seeks to regain. That we may interpret the clouds that gloom the aspect of the day into shadows of a coming change, I think, all will admit; and that such a change will terminate in a more earnest spirit of religious devotion seems to be generally anticipated. Accompanying this change must be an improvement in artistic and poetic expression; for poetry and art in their highest development are inseparably united with that of religion. And as a strong enthusiasm for the pure and right winks at no deviations from the true and simple, tramples on mere conventional excellence as a thing of seeming and of outside show, the architects of such a people, partaking of this lofty feeling, will rise superior to the use of merely formal beauty, borrowed from nations of very different circumstance and civilization, and will construct a style, beautiful and appropriate, in which to express the spirit of the age they are born to; so that their works, like those others now so blindly adored, shall proclaim themselves the earnest deeds of earnest men. Our forefathers did so before us, and why should not we?

JOSEPH BOULT.

COMPETITION DESIGNS FOR KING'S COLLEGE HOSPITAL, LONDON.

THE committee for re-building King's College Hospital, when they had determined on obtaining plans in competition, took the advice of Professor Hosking, the architect attached to the college, and agreed to name a limited number of architects, and pay a certain *honorarium* to each of them.

From the instructions and conditions issued to the competing architects we make the following extracts:—

"The cost of the building, exclusive of earth-work and foundations, and not including the chapel, must not exceed 25,000*l*."

All the plans, sections, and elevations must be drawn on double-elephant drawing-paper, at a scale of 1-8th of an inch to a foot. Elevations, or other drawings exhibiting external parts of the building, may be in outline, without tint or shade; but if any such drawings are tinted, and shaded, it must be with sepia or Indian-ink—not with colour. Plans and sections must be tinted with colour, or with sepia. The plans must not be blacked in.

All the enclosing walls of the building to be of stock brickwork, faced in the parts exposed to view—as in the external elevations—with facing bricks, the colour and description of which are open to suggestion; but any facing bricks proposed must be of durable quality, and of a size to course and bond with stocks. Stone may be employed with discretion in, and in connection with, the structure of the walls, for structural and for decorative purposes—that is to say, as quoins, string-courses, blocking-courses, sills, plinths, bases, corbices, columns, pilasters, entablatures, external door and window dressings, &c. All stone applied externally must be either Portland stone or granite; and all stone applied internally for the above stated purposes must be Caen stone, or other stone of like character and quality. The outer steps and landings, and the internal stairs and landings throughout all the public parts of the hospital must be of Portland stone, Craigleith stone, granite, or other stone of appropriate character and fitting quality, York stone being permissible only in the basement story, and as templates and corbels in the walls in aid of the internal constructions.

All the wards and other principal apartments must be separated from one another, and from the halls, corridors, and staircases, by brick walls as

partitions; and there must be no merely lathed and plastered, or other hollow partitions in any part of the building.

The floors of all the halls and corridors throughout must be absolutely fire-proof, and the floors of the wards and of the building generally must be so composed as to be unsusceptible of fire to the greatest extent attainable in floors of which the structure may be timber, and the flooring-boarded upon joists. Cast-iron girders may not be employed in the structure of the floors, unless they be so disposed as it regards the bearing, or so checked by the use of wrought-iron tie-bars, or otherwise, as to remove the uncertainty which attaches itself to naked iron castings of the length and form required for girders.

Appropriate plastering will be required to the walls and ceilings of all the apartments; and the plastering to the walls of the wards at the least should be of a kind that will bear washing without injury, and without absorbing moisture.

Each design must be accompanied by an estimate in the form of priced-out bills of quantities of all the works proper to the building, or buildings, except as to the chapel, the estimate for which is to be given separately; and except as to the earth-work, and any artificial foundations below the level of the footings as to any of the buildings. * * *

The bills of quantities must moreover be sufficiently precise, and must contain enough of description to develop the intention of the architect without a specification; but they need not include the minor details required in an estimate when a tender is to be made; the main object of the special requirements of the condition being to obtain the means of fairly comparing one design with another, as regards the relative costliness and economy of each in execution, and the efficiency of the provisions in each.

Prices to be calculated at 15 per cent. below Laxton's last published prices.

Each design, and every drawing and other document connected with the design must be distinguished by some letter, word, or motto, having no relation to, and being in no wise indicative of, the name, or of any characteristic of its author; and the ordinary handwriting of the author must not appear in or upon any drawing or other document submitted or sent with his design, except as to the sealed inclosure of his name.

Upon receipt of the designs they will be submitted to investigation on the part of the committee by an architect, who cannot under any circumstances become the architect of the building. The investigation will have especial regard to the conformity of each design with the foregoing instructions and conditions, and to the fulfilment of the requirements communicated herewith; for by these the merits of the designs will be eventually determined. The investigation will have regard also to the propriety and sufficiency, or otherwise, of the constructions proposed and indicated, as well as to the absence of proper indications in that respect.

After investigation, the drawings to be exhibited for one week. Immediately after, the sub-committee to select the design which shall appear to them best to fulfil the intentions of the committee as set forth in the statement of requirements.

And if such selected design be approved by the building committee, it will be adopted, and the author of the design will be appointed architect to the hospital on the usual terms of 5 per cent. commission on the estimated cost of the building. The architect so appointed will, however, be expected to revise and amend his design as to any matter which the building committee may desire to be otherwise than he had contemplated, without charge in addition to his commission upon the estimated works. It is to be distinctly understood, nevertheless, that the committee do not engage to adopt any of the designs if no one of them should be, in their judgment, fully adapted to their purpose; and that the adoption of any design, and the consequent appointment of its author to be architect to the building, will be void, if it be found or appear at any time subsequently that the works required in the fulfilment of such design, have been as to any of the more important items under-estimated.

An honorarium of 80*l*. will be paid to each competitor, upon condition as to each, however, that the drawings and explanatory documents of his design remain the property of the committee, to be employed or applied as they may think proper. Any competitor will be at liberty, however, to decline this condition, upon the understanding that by doing so he relinquishes his claim to the honorarium. If the selected design be approved, as the author will be thereupon appointed architect to the hospital, and (no important defect appearing in his estimate) employed to carry his design, or some modification of it, into execution, the amount of the honorarium in his case will be charged in abatement of his commission upon the building."

Further, a very precise statement of requirements was drawn out by the committee and supplied to the competitors. Five designs were submitted in consequence, and have been publicly exhibited for a week. These are figured A. B. C. D. and E. and are marked by their authors, keeping the same order, "*Auxilium informis, sepulchris quies*;" "*Prodesse quam conspice*;" monogram K. C. H.; a cross in a circle; and Δ. A very full report, we understand, has been made by Mr. Hosking on each design, as to its compliance or otherwise with the requirements, but the selection will rest wholly with the committee.

It would require a much more lengthened examination than we could give them to discriminate justly the preponderance of merits in plans prepared under such circumstances. We shall therefore not attempt it. Whichever is selected, it will be necessary for the architect, after personal communication with the medical officers, to revise the design. It is not possible for any architect to devise a structure such as this should be, without consultation with the managers of the various departments.*

A is an adaptation of Gothic architecture to the purpose, and has the merit of unity externally, wanting in some of the others, which have the front a little smart and the flanks and sides of very mean character. The ornamentation of the step gables is not successful. The chapel is in the geometrical pointed style.

B seems, on superficial view, to be a very complete plan, but the elevations are not worthy of the purpose. The chapel is Byzantine.

The plan of C. seems wanting in regularity. D. is Elizabethan in style, and has an open colonnade in front of the main building. The chapel is perpendicular.

The plan of E. seems to have much merit. The chapel, which is in the pointed style, with spire, does not assimilate with the main building, and preponderates too greatly.

The new building and grounds, we may say, will be bounded on the four sides by Carey-street, Grange-court, Portugal-street, and Clement's-lane. The site is irregular, and some portion of it has been consecrated for the dead

"COUNTRY SURVEYORS."

In some previous numbers of your valuable journal, there have been many severe remarks made by some of your correspondents, on a class of men who, having been clerks of works, &c. are now in business on their own account as surveyors; and all the odium attached to the practice of working for less than professional charges is endeavoured to be laid on their shoulders.

I trust, from your known impartiality, a space will be found for the following in the pages of your next journal.

At the County Court held on the 28th ult. in Rocklington, Yorkshire, a case was tried before his honour Mr. Raines. The plaintiff, a "country surveyor," and ex-clerk of works, sued the defendant for 14l. 4s. 6d., being the amount of 2½ per cent. for drawings and specification for a dwelling-house, the amount of tenders for the works being 569l. 6s.

The evidence was, as usual in such cases, very conflicting, the defendant positively swearing that he limited the plaintiff to 300l. outlay; the plaintiff, on the contrary, averring that from the commencement he assured the defendant he could not have a house built containing the accommodation he required for less than 500l.; that the first design he gave him (the defendant) he estimated to cost from 420l. to 450l.; that the defendant instructed him to alter the plans four times, each time increasing the number and size of the rooms, or adding other accommodation to the house, against the advice and remonstrance of the plaintiff.

Mr. G. Andrews, architect, of York, on the part of the defendant, said, that for a set of plain drawings and specification for a house of this description, five pounds was ample remuneration;

that the custom of the profession was to include a particular estimate of the whole of the works, with the drawings and specification, for the charge of 2½ per cent. for large buildings; but that for small buildings a considerably less charge was made.

The plaintiff, on the contrary, urged that 2½ per cent. was the general professional charge for drawings and specification when the work was not executed, and, with the permission of his Honour, read a paragraph from Vol. III. p. 23, of *THE BUILDER*, in proof thereof. Plaintiff also stated, that it was customary to charge five per cent. when the work was superintended; and that the five per cent. was thus divided: one-fourth for the drawings, one-fourth for the specification, one-fourth for the estimate, and one-fourth for the superintendence; also that the custom of the profession was to charge a higher per centage for small buildings than for large ones.

His Honour decided—verdict for the plaintiff, 2½ per cent. on 300l.—7l. 10s.; costs to be paid by the defendant, thus rejecting Mr. Andrews' dictum, and acknowledging the custom of charging 2½ per cent. for drawings and specification.

There exists a very vindictive feeling on the part of many of the "regulars" of the profession, against those who have passed their earlier years in practical working, instead of kicking their heels under an office desk; but, Mr. Editor, has there not been (and is it not possible there may again be) a host of men who have risen to eminence, who passed their probation at the carpenter's bench, the mason's shed, and the forge or lathe of the machinist, many of whose names and fame will be remembered long after even that of — is forgotten?

I have reason to know that the ill-feeling mentioned does not prevail with many of the most eminent of the profession, and I think if it did not exist at all it would not tend to lessen the respectability thereof; the road has ever been a thoroughfare, why should it not continue to be one?

AN OLD SUBSCRIBER.

FOREIGN ART NEWS.

Art in Nuremberg.—The tendency towards a more intimate relationship between art and the trades, is especially manifest in this city, where young Diirer returning from peregrination was obliged to produce first his masterpiece, before he could be received in the guild of painters, and where the famous sculptor, Adam Kraft, was inscribed on the rolls of the stone-cutters. Accordingly, Professor Heideloff has established here an association of arts and trades, called the German Building Tent (*Deutsche Bau Hütte*), which has already published some engravings of patterns, for imparting even to the objects used by the humbler classes more tasteful and agreeable forms. Professor Heideloff intends, moreover, to obtain the deserted convent of the Carthusians for the grand central building, to contain halls of exhibition, lecture rooms, &c. If we consider what Nuremberg has been once, the execution of such ideas becomes, at least, plausible. The rich merchant, Herr Hertel, has made the city of Nuremberg the heir of his most valuable collection—pictures, drawings, mathematical and physical instruments, but especially 30,000 engravings, of ancient and modern times!! It is hoped that the civic authorities will worthily respond to such a worthy bequest, by erecting (as long contemplated) a central suitable building for its reception, as well as that of the city library, &c. In the atelier of Frederic Wagner is to be seen a copper plate engraving after a Madonna of Raffaele, the original of which belongs to M. Wuyts, at Anvers. Although, now-a-days, those methods of engraving are mostly resorted to which save most time, M. Wagner, on the contrary, constantly adheres to the sterling and substantial method of the *burin*, striving to reproduce such deep wrought pictures as those of the great urbate.

Unique Work of Sculpture.—It is well known to musicians that Madame Malibran (Maria Garcia) was married in her widowhood to M.

de Beriot, the great violinist composer. Death, however, in his blind fury, soon dissolved this union. Beriot, disconsolate, as he well might be, at such a loss, resolved to make himself a sculptor, for rendering the traits of one whom he loved so much. A life-size bust of the departed great cantatrice was the result, which none possessed of feeling can view with indifference. Because, if it is said, that all great men have something of the demoniac about them, here nature seems to have striven hard to produce the angelic. The comparison also is interesting, that as Michelangelo was a musician, Beriot could make such a bust.

Melancholy Death of M. Travalza, the Sculptor.—This eminent Roman artist died last week in the *bagne* (hulks) of Toulon, having been found guilty of the death of a priest during the late revolution in Rome. He had been tried twice, and during his temporary liberation began the statue of the Madonna, which he intended for the exhibition of Paris.

Monument to Hahnemann.—A monument to this reformer of medicine has been willed by a subscription collected in the whole of Germany. It consists of a statue somewhat above life size, Hahnemann being represented in a seated position, the look and whole physiognomy pointing forward. It has been modelled at Rome by Steinhauser, and then executed in bronze by galvanoplastic process. The committee have selected Leipsig as the locality where the monument is to be erected. On the 10th of August the inauguration will take place, and thus that cycle of monuments increased, which grace the great *promenade-park* round the city of Leipsig, first projected by the lord mayor Muller, a friend and youth-companion of Goethe.

Statistics of French Theatres.—According to official returns lately made, there are at present 320 theatres in the whole of France, twenty-three of which are at Paris. Until the year 1600 there was only one such place in Paris, the theatre of the *Confères de la Passion*, the locality of which was afterwards the famous *Hôtel de Bourgoigne*. Somewhat later the Theatre de Marais was established. In 1653 came the theatres des Italiens, and in 1659 Molière founded a playhouse, which, in succession of time, became the *Théâtre Français*. Under Louis XV. there were six theatres in Paris, Opéra Comique, Gâté, Ambigu Comique, &c., and under Louis XVI. the minor theatres began to emulate the great ones. In 1791 the liberty of the stage was enacted, and the number of Paris playhouses reached then forty-five.

Berlin.—Electro-magnetic Clocks.—This discovery has been patented by M. Siemens, lieutenant of engineers, who has associated himself with the astronomical watchmaker M. Tiede for that purpose. As there exist already at Berlin electro-telegraphic wires for signaling fires, the same apparatus will also be used for the clocks. There will be established several leading clocks in the different parts of the town, which, being connected with the wires, will indicate the time on *simple dials*. The cost of such a clock and wires will be twenty-eight thalers, the subsequent yearly expense only four thalers. Such apparatus can be applied at any private house, and an additional advantage would be, that all these watches would keep an uniform and exact time.

The Sepulchre of Mahomed.—There novation of this sacred shrine of Islamism seemed so important of late, that the emperor himself was present at the meeting of the council of state convened for that purpose, whose proceedings are reported in the *Turkish States Gazette*. As the sepulchre at Medina, on the one hand, threatens complete ruin, and as the constant influx of pilgrims precludes any extensive and lengthy works, it was decided that only the most urgent repairs should now be effected, but that the sultan's architect be ordered to construct a faithful model of the structure, where also the places endangered should be marked, for guiding the Government in its further plans for the preservation of this venerable monument to the Arab prophet.

* A respectable correspondent writes us that one of these plans has been prepared in conjunction with a medical officer of the establishment, but we trust he is misinformed, and so reserve his statement.

GEOMETRIC CURVES AND CURVED CONIC SECTIONS.

In the course of a paper on this subject, read recently at the Society of Arts, Mr. Jopling explained some of his recent discoveries in reference to curved conic sections. He considers all the curves in the Septenary System to be projections, in some way, of either plane or curved sections of cones. They are also all producible by rolling curves on each other, the forms of which can be ascertained by the motions included in the Septenary System.

By means of a hollow cone and diagrams, he showed how the conic surface has the property of changing lines applied to it into varying curves. For example, circular lines on the development, when applied to the conic surface were so changed as to give, by appearance, or radial projection, and orthographical projection, cuspidated, nodated, and inflected cardioids, together with numerous other curves, in gradual connection, but which are yet without distinguishing names. He exhibited examples of parallel spiral lines of several revolutions, varying in curvature throughout, which were produced by applying to the cone lines which on the developed surface were simply concentric circles. By applying eccentric circular lines, tapering spirals were obtained. A simple right line on the developed surface was shown to be changed into a curve, all the projections of which are probably contained in the Septenary System. In a similar way he showed that by other lines on the developed surface, as the ellipse, hyperbola, and parabola, when applied to the cone, great varieties of lines can be exhibited to the eye and projected on planes in any position. The appearances of a hollow cone cut to the line of a circular disc applied to its surface, showed that a great variety of forms can be obtained from one curved section.

Other varieties of curves were shown by hollow metal cones cut to the lines produced by their intersection with a cylinder and a sphere; and projections of the latter line were shown to be the cuspidated, nodated, inflected, and oblate forms of the cardioid known to mathematicians.

All these varieties can be obtained from cones of different angles by varying the diameters of the intersecting spheres.

In developing on a diagram such an intersected cone, drawn with rays at equal angles, the lengths of the rays, either on the plane of development, the surface of the cone, or any plane on which the intersection may be projected, are obtained by the use of a scale of sines.* The peculiar cardioids just spoken of are produced by orthographical projections on the plane of the base.

The following is a table of cardioids produced by applying to the interior or exterior surface of a cone the known plane conic sections:—

I. By the application of the plane conic sections, as cloaks or linings to the cone.

1st. The circle.

2nd. The ellipse, prolate, oblate, and dissymmetrical.

3rd. The parabola, } infinite cardioids.

4th. The hyperbola, }

II. By making the profile of a curved section of a cone a plane conic section.

1st. A circular line, as an intersection with a cylinder.

2nd. An elliptical line, prolate, oblate, and dissymmetrical, as an intersection with an elliptical prism.

3rd. A parabola, as an intersection by a parabolic prism, which gives the cardioid known to mathematicians.

4th. A hyperbola.

III. By making the profile of a curved section of a cone an intersection of a solid.

1st. The intersection of a sphere.

2nd. A spheroid, prolate, oblate, or dissymmetrical.

* Whatever may be the nature of the conic section, a scale may be formed from the rays which, on the elevation, are cut by the section; by which points may be obtained in the corresponding rays on the base, and a projection of the curve constructed, and this for any projection or development. In some cases the scale on the base may be a scale of equal parts, in others a scale of chords, of sines, tangents, secants, &c., deduced from the circle.

3rd. A paraboloid; ditto; ditto.
4th. A hyperboloid; ditto; ditto.

Mr. Jopling said.—The field for experiment and observation in producing curves is most extensive, and there is plenty of room for others to advance and distinguish themselves by discoveries, both within and beyond the bounds defined by the Septenary System; but it is submitted that a knowledge of the more simple and practical principles which it embraces will materially assist in the discovery and thorough understanding of all relative subjects.

There is very little doubt that much of the mathematical knowledge possessed by the Greeks, as well as their method of reducing it to practice, is now lost to us, from the imperfect means of recording it which they had at their command. It is certain that the eminence to which they attained in practical art of all kinds is due to their geometrical knowledge; and it therefore appears as certain that by a revival of such knowledge a great impulse would be given to art among us. The great features in civil and naval architecture may be varied and improved; the beauty and elegance of form in ancient vases may be equalled, and perhaps surpassed in variety and character; and in the outline and general arrangement of architectural and artistic design, in the accuracy of the most delicately varying curves, and in the minutest details, the utmost perfection may be obtained by the study of true lines.

No one can have been properly educated in 'perception' of form who cannot see the existence of the various points of change that occur in curved lines, or with the points and lines of change that compose curved surfaces; and these cannot be explained or properly comprehended without studying a variety of the most correct examples of curves, and first on a large scale.

EGYPT AND EGYPTIAN ANTIQUITIES.

Dr. J. V. C. SMITH, the editor of the *Boston Medical Journal*, U.S., has been travelling in Egypt, and has addressed a series of letters on the subject to the *Boston Traveller*. From these we condense the following notes and observations:—

Abbas Pasha, the present ruler of Egypt, a grandson of Mahommed Ali, appears to care for nothing beyond the multiplication of palaces, which he is rearing in singular places at enormous cost, at the expense too of his hard-worked subjects. One is going up outside the northern wall of Cairo; another has been finished in the desert towards Suez; and a third is rising rapidly for the enlargement of his mother's residence near the border of a garden on the Boulac side of the city. Mechanics are compelled to labour, being brought from the towns and villages, whether they are willing to go or not, at a compensation of about ten cents a day, rarely twenty-five, payable half in bread, daily, at his own price: for the remainder, an order on the treasury is given, that they are obliged, from necessity, to sell at any price to speculators, so that they are virtually cheated out of the whole. The machinery of Government in respect to the grain and cotton monopoly remains precisely as he found it. He adds nothing, improves nothing that is defective, has suspended public works that were judiciously commenced, and assesses whatever sums he chooses, which the people must pay.

Grand Cairo, the capital, is made up of a singular mass of odd-looking and more oddly contrived half stone, half brick and mud houses. Some rather fine edifices are met with, however, but they are novelties. The streets rarely exceed 5 feet in width. In the thickest of the town, the dwellings by jutting-out stories as they ascend, touch at the top, 'almost to the exclusion of the sun's rays.' Whatever is new there, is fabricated out of something old. Thus a new house is made of stone, brick, and mortar that may have figured a hundred times before. Wherever there has been a town in Egypt, however remote the epoch of its existence, there is from one to several mounds of enormous size, varying from 10 to 150 feet in

height, which appear to be wholly formed of broken bricks, pieces of dressed and other kinds of stone, fragments of pillars, cornices, and smashed red earthen vessels. Whoever wishes to erect an edifice has only to tap one of these anomalous piles of rubbish to procure materials. Thus the walls of a modern stable may once have been walls in the palace of Menes; the first king; next in Shishak's; and by and by they will be liberated from their present ignoble duration to take a new position in a future cycle. Hundreds of small boys and girls are employed in carrying trays of mortar on their heads, marshalled by overseers, who direct their movements with a stick. They pour down the contents on the top of the uprising work. A mason plumps a stone into it with his hands, trowels rarely being in requisition in ordinary undertakings. Women are seen mixing mortar with their hands in sufficient quantity to keep the workmen liberally supplied.

One straight street had been commenced in Cairo before Mahommed Ali's death: no one knows when it will be finished. Alexandria was re-laid out by the same master spirit, and from its excellent harbour, fine commercial advantages, and the only seaport worth having in Egypt, I imagine it will again become the capital; as it once was, to the neglect of Cairo, which is in a waning old age.

Some of the guide-books speak in terms of admiration of the public fountains, and they either wilfully or ignorantly misrepresent them. All the water in Egypt raised above the level of the Nile is in earthen pots on the rim of a wheel, or by a pole and bucket. Thus elevated, there are troughs in mosks, rarely anywhere else, to which it is conducted—unless the skias near the gardens are reckoned as fountains. Water is poured out of skins into tanks within very many of the mosks, with which two small tubes communicate that jut out through the wall. Poor people apply their mouths and suck up the water. These contrivances are the gift of pious Mahommedans, who look for favours in return from the Prophet for such charities on earth.

Roman Catholics—mostly Italian residents—are pretty numerous, especially in Alexandria, where they have a very large, beautiful church, the bell of which is the only one, perhaps, in the country. A fine episcopal church edifice has been half finished on the Consular square, from stone brought from Malta a long while ago. Some disagreement among the proprietors interrupted the progress of the enterprise. The society is rather a feeble one, quite thrown into the shade by their neighbours the Papists.

Before bringing these observations to a finale, it may be acceptable to know something of the present condition of the antiquities of Egypt—those most prominent. Nearly all the temples, large and small, are covered up with sand, while the interiors are filled with broken bricks, stones, dust, bones, and a mixture of nameless stuff, with the exception of the magnificent, unequalled remains at Karnak and Thebes. Those at Luxor are partly hidden by accumulations of mud and filth,—while the apartments, the loftiest, grandest imaginable, that surpass the noblest specimens of architecture to be found on the globe, are occupied by beggarly Arabs, for themselves, their donkeys, goats, turkeys, and dogs. On the roof of the beautiful temple of Dendara, from which the French during their sway wrenched the unique planisphere, the gem of the Bibliothèque in Paris, there are the foundations of large brick dwellings that may have been inhabited for centuries; and the occupants quite ignorant of the beautiful columns, the rich sculptures, and splendid adytum below their feet. At Edfou there is a great structure—glorious,—altogether so: to imitate it in our day, with all the appliances of modern art, would exhaust the resources of a nation, if an attempt were made to copy minutely the finish of thousands upon thousands of hieroglyphical figures in relief. Covered up as it is by a mountain of rubbish, it would not be a very costly affair to clear it all away, and the missing stones of the great prostyle, a gateway well nigh one hundred feet high, might be tolerably well imitated

to restore the propotions. It would be an epoch and a praise to be sounded abroad, if the Government would open it to the gaze and admiration of travellers. Think of a statue that weighs 887 tons 550 pounds! At the corner of one of the Theban temples are the fractured remains of that enormous thing, of red polished granite, which was mutilated by the malicious hatred of Cambyases, the Persian invader. It is supposed to be the one referred to by the historian, which required the combined force of 2,000 men for three years to transport it from the quarry to its present position. How it could be broken across the hips, knees, and in other places, is a perfect mystery, since neither wedges, fire, nor an explosive mixture were applied. In Trajan's forum at Rome, huge granite columns stud the area, broken off at different lengths, apparently by the same process, which induces me to suspect an art is lost in stone masonry, by which the ancients were enabled to get the mastery of those monstrous obelisks, standing like needles before their sacred edifices.

A day is certainly coming when extraordinary developments will result from uncovering these buried architectural treasures. While passing from one once secret labyrinth to another, in some of these very surprising convolutions of three and four thousand years ago, I felt a conviction, as I still do, that discoveries which will unravel many mysteries, and throw a strong light on the early history of our race, will yet be made in these places. Those apartments known as the king's and queen's chambers in the interior of the pyramid of Cheops, are just nothing at all. They were designed originally, in my humble opinion, to deceive those who might in after times get access to them—to divert them from the search of the more important, and in the estimation of those for whom it was raised, sacred objects, which are deposited somewhere in that astonishing monument. While groping along the obscure passages, and examining the ingenuity of the mechanics which is displayed in the adjustment of one stone to another, and the consummate skill with which they intended to conceal parts already laid open, I felt an almost irresistible desire to commence a new series of explorations.

IRISH BUILDING WORKS.

A new Roman Catholic church is to be erected at Irishtown, County Dublin, from the designs of Mr. McCarthy, architect. The style will be Gothic, of the fourteenth century. The plan comprises nave, north and south aisles, chancel, with a chapel of the Blessed Sacrament at the east end of the north aisle, and a chapel dedicated to the Blessed Virgin, to correspond at the south side. There will be a bell tower on the south-west angle. At the north side a spacious sacristy is provided. The nave and aisles will be roofed with separate gables. The nave will be separated from the aisles by arcades of eight bays, supported on cut stone piers, with moulded capitals and bases. The chancel and side chapels will be separated from each other by parcloes, and from the nave and aisles by screens of light design. The timbers of the roof are to be exposed, stained and varnished. It is not intended to erect the bell tower at present, as funds do not permit. The total dimensions of the church are 130 feet by 57 feet.

A new conservatory is to be erected at Glenary. The dimensions are 58 feet in length by 15 feet in width. On the south elevation is a semicircular transept 24 feet by 15 feet. Upright posts of cast-iron with consoles at heads, supporting cornice which forms gutter, are placed at intervals of 3 feet 4 inches from centre to centre: these rest on walls 14 inches thick, with granite facing. The roof is of elliptical form: it is formed with wrought-iron ribs connected by a wire running the entire length. The total cost will be 1,000l. The Irish Engineering Company are the contractors. Mr. Alfred G. Jones is the architect.

The Poor-law Commissioners have determined upon erecting a new union workhouse at Glennamady, and are receiving tenders for

the execution of the works according to the plans of their architect.

A new church at Tramore was consecrated on the 25th March, by the Bishop of Cashel.

The directors of the Dublin and Belfast Junction Railway intend erecting a new station and store at Madden Bridge, in the County of Anmagh.

An almshouse is to be erected in the town of Aughnacloy, according to the drawings of Mr. S. Symes, architect.

The Dublin and Kingstown Railway Company intend erecting a new and permanent bridge of malleable iron over the river Dodder. Messrs. Fairbairn, Brothers, and Co., are the contractors.

Two new Roman Catholic churches are to be erected in Wexford.

A new custom-house, with portion of the building to be appropriated to post-office purposes, is to be erected at Belfast.

The corporation of Kilkenny have determined upon extending St. John's Quay along the river for the entire of Cormack Island.

The committee of natural history of the Royal Dublin Society intend erecting a new museum in connection with the present buildings, and have advertised to give a premium of 10l. for the best plan: the cost will be 2,500l. Liberal committee!

Upwards of 1,500 men have been employed during the winter months on the extension line to Galway. Nearly all the minor bridges are completed. A new goods depot has been constructed at Mullingar on a commodious scale, and a new engine house is building at the Dublin terminus: twenty-seven miles of permanent way through Westmeath portion are nearly complete. In county Galway twenty-five miles are laid down.

The great swivel bridge at Lough Athalia is nearly finished: a weight of 200 tons is constructed to be moved with ease by a simple hand-gearing. Messrs. Dargan are the contractors for the masonry, Messrs. Fairbairn for the iron work. The length of the bridge over the Shannon will be 600 feet, consisting of iron girder openings 165 feet span, with a swivel-bridge for navigation in the centre, the structure to rest on two cast-iron cylinders sunk in river and filled with masonry. Messrs. Fox and Henderson are the contractors. The bridge over the river Luck is in a forward state. The stations along the whole line are in progress, except that at Athlone, which will be commenced immediately. Messrs. Gockburn and Son, of Dublin, are erecting them. Mr. G. W. Hemans, engineer in chief.

The board of guardians of the Rathdrum Union intend erecting additions to the workhouse, and also to add a fever hospital: the drawings for same have been furnished by the Poor Law Commissioners' architect.

The first stone of the entrance lock to the tidal basin or Corrib docks of the new canal now in progress in connection with the navigation and drainage of Lough Corrib and Mask was laid down on the 9th April. Mr. Saml. W. Roberts, district engineer.

TURN-OUT OF BRICKMAKERS' LABOURERS.

—In consequence of the duty being taken off bricks, some of the masters in the neighbourhood of Altrincham have had their moulds made of a larger size than others, continuing to pay the same wages to their labourers, who, in consequence, have turned out. About fifty or sixty of them visited the yard of Mr. James Hardy, of Hale, whom they intimidated. The number afterwards increased to ninety men at least. Mr. Hardy's work has been at a stand since that day. He knew four of the turn-outs, who were taken before the magistrates at Altrincham, and ordered to enter into sureties, themselves in 10l. and two sureties in 5l. each, to keep the peace for three months. The bail was given and they were discharged.

EDINBURGH. PHILOSOPHICAL INSTITUTION.—Mr. A. Christie, director of the School of Design at Edinburgh, has recently delivered two lectures at this institution, "On the Art of Design as applied to Manufactures." A large collection of specimens and drawings was exhibited in illustration.

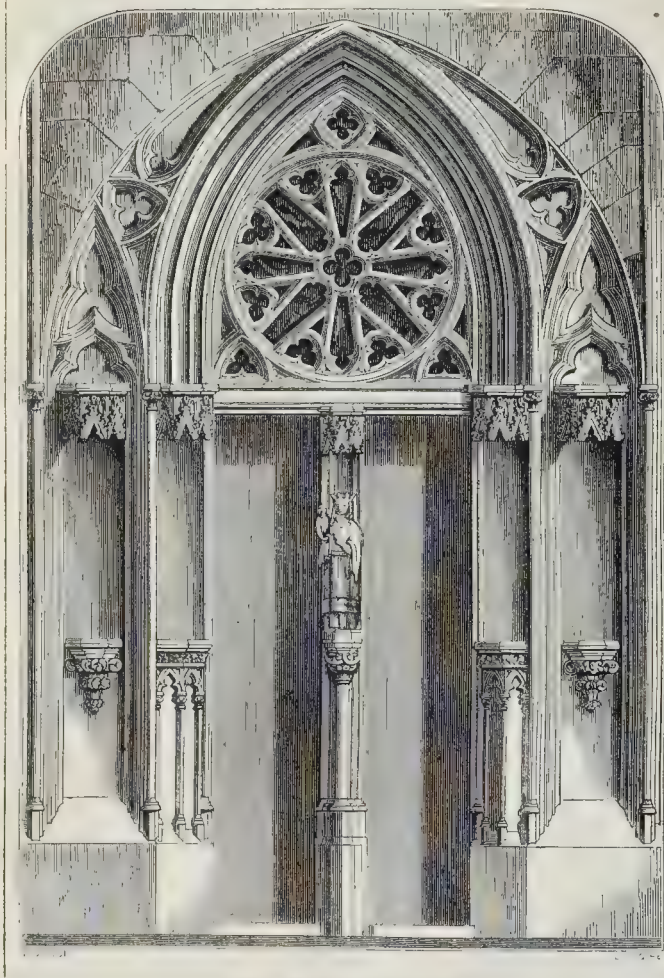
EXCURSIONS BY RAIL.

THE various railway companies have lost no time in starting excursion trains for the present season, and they are already profiting largely by the venture. On Sunday in last week the Great Western started their first cheap trip from London to Bath and Bristol; fare, 5s. The number of passengers who visited the two cities was about 700. On the Monday following a cheap train left Bristol, calling at Bath, Chippenham, and Swindon, and conveyed about the same number of passengers to the metropolis. On Monday, about 400 persons from London visited Oxford. On Tuesday, about 500 from that city and Banbury availed themselves of the excursion train to visit London. Another train was then announced for the opening of the Great Exhibition.—On Easter Monday, too, the Cambridge public availed themselves, in very large numbers, of the excursion trains on the Eastern Counties line to London. The Colchester line train arrived at a quarter past twelve, bringing nearly 1,000 passengers, and the train from the Cambridge district, consisting of thirty-eight carriages, at two o'clock, brought about 1,500. Last year there were no holiday trains at Easter, greatly to the regret of the inhabitants of the Eastern district, and equally detrimental to the pecuniary interests of the company, for the working expenses of these trips are found to be but a small percentage on the aggregate receipts.—The South-Western directory, also profiting by the experience of the past, commenced their excursion trains in good time this year. On Monday in last week a train left Southampton with 250 passengers, and took in at Bishopstoke from Winchester and Salisbury about 150 more. If the day had been fine the numbers would doubtless have been quadrupled, but unfortunately the weather was miserably wet.—In Ireland, too, the excursion system is already taking root. Pleasure trips to and from Dublin and Kilkenny were given on Easter Monday, when a large number of persons availed themselves of the opportunity of enjoying the excursions. The number leaving Kilkenny, according to the local *Moderator*, was upwards of 400, and this was so largely augmented at the various stations along the route, that there was not sufficient engine power at length to draw them. Those who took the trip from Dublin were more fortunate: they arrived in due time, to the number of about 300, and spent the day in visiting the Cathedral, Castle, and other local lions.

SOUTHAMPTON WATER SUPPLY.—A report (printed by Marshall, of Southampton) has been made by Mr. Ranger, consulting engineer to the local board of health, Southampton, on the various sources of water supply available to that town. The conclusions are, that, with regard to the artesian well on the common, any additional outlay upon a work where success is so much more than doubtful should be stopped,—that with reference to the existing works, as their system is defective they should be, but temporarily used till a new supply is ready,—and that as Professor Way states, that "there could be no hesitation in recommending the waters of the Itchen, as fit and proper waters for the supply of a town in the absence of other sources," and as considerations of expense preclude resort to any others, the waters for the supply of the town should be derived from the river Itchen, either above or below the tail of the Mansbridge Lock, as more definite plans, surveys, or valuations may decide.

STOURBRIDGE CLAY.—Articles of any form it appears can now be produced in the fire clay of Stourbridge, with an enamel equal to that of the best China, and in imitation of the various marbles. Baths of every variety, some weighing when burnt upwards of 7 cwt. and looking like a single block of excavated marble, have been successfully made ever since the Isis Gold Medal of the Society of Arts was given to Messrs. Rufford, Finch, and Masson, as a prize, offered at Prince Albert's suggestion, in order to assist the movement for peoples' baths and washhouses.

SOUTH PORCH OF THE CHURCH OF NOTRE DAME, AT
OBERWESEL, ON THE RHINE.



THE CHURCH OF "OUR LADY" AT
OBERWESEL, ON THE RHINE.

If the visitors' book kept in the Rhenish Hotel may be taken as any guide, but few English tourists visit Oberwesel; and yet there is not a more beautiful spot to be found on the banks of that "exulting and abounding river"—the Rhine: the first view of the place from the Rhine is really enchanting: in the foreground stands a fine old gateway and the church; behind these one of those "castled crags" which here meet the eye at every turn; and in the extreme distance a glorious range of hills terminates the view: nor is any of the charm lost on a nearer approach. Close on the bank of the river stands the Church of "Our Lady," of which we give a south-east view. This church was consecrated in 1331, and there is perhaps no better specimen of German Gothic to be found upon the Rhine: nearly the whole of the detail is well preserved: the window tracery, of which there is a great variety, is curious, and of forms but rarely seen: the south porch has lately been partially restored: it is so excellent a specimen, and its detail so delicate, that we have thought it right to make it the subject of a separate illustration. The upper part of this porch has been destroyed, and is now finished by a flat pediment. On

the northern side of the church are some good cloisters, in which are several effigies of knights, prelates, and ladies "in their habits as they lived." The interior of the church has some portions of great excellence: the choir is simple, but of fine proportions—its height is 80 feet: the rood screen of stone it would be difficult to equal, and in the chancel is an altar screen of oak made to fold up: this is covered with the most elaborate ornament, consisting of rich niches, with small and delicately carved statues. We hope at some future time to make our readers better acquainted with these: in the meantime, we would strongly advise any of them who may propose to visit the Rhine, to devote at least one day to Oberwesel. There is enough to interest for a week any one who can enjoy the quiet of a German village. Besides the church, now briefly described, there is another at the opposite end of the place, of great merit: to say nothing of smaller matters, there are,—a good old gateway and a fine round tower, from the summit of which a glorious view may be obtained: a scramble up the crag on which stands the castle, to be amply repaid by a view down one of the most charming of valleys; and last, though not least, the homely comfort of the small hotel, which is worth re-

membering. At the time of our visit it presented a good picture of German life, made up with a sprinkling of students; some German ladies, whose quiet unaffected manners are their great charm; and, as the evening approached, some few of the more humble villagers. Again, we say to all who may visit the Rhine, give at least one day to Oberwesel.

SCENERY AND DIORAMAS.

At the *Lyceum* the scenery in Mr. Planche's new Easter piece, "The Queen of the Frogs," is scarcely so striking as for some former productions of the same class; but then, on the other hand, the writing is even more witty and sparkling than usual. The quicksilver lake and rocks, the royal gardens, and the marsh, which precede the last scene, are nevertheless charmingly painted. The piece as a whole is deservedly very successful.

The scenery in the new piece at *The Princess's Theatre*, called "The Alhambra," has not received from our contemporaries the commendation it deserves. We would especially mention a diorama from London to Spain, moving from the ceiling to the stage: the bird's-eye view of the Exhibition Building at starting, Dover, and Paris, are capital. "Brompton-square by Moonlight" will be recognised by all who know that pleasant (once) suburban district; and the last scene, "The Port of Cadiz," does great credit to Messrs. Gordon and Lloyds, by whom the whole is painted.

DILAPIDATIONS.

ESSEX v. GRAY.

THIS was an action brought by Mr. Baron Alderson to recover compensation in damages for the non-performance of an agreement to repair certain premises.

It appeared that the defendant, who is a builder, had taken the assignment of the lease of the house No. 13, Duke-street, St. James's, and it was now alleged that the house in question had been let out in lodgings, and also that the premises themselves had been permitted, by neglect, to fall into a wretched state of dilapidation. It was for the cost of the reparation of that dilapidation that the present action was brought, the sum claimed being 231*l.*

Mr. E. James, for the defendant, commented upon the effect of the testimony which had been produced in support of the plaintiff's case, which he contended had not gone to establish what was the state of the premises at the period when the defendant had taken possession of them in the year 1830—a fact of the utmost importance when the question was as to how much of the dilapidations a defendant was to be held liable for.

Mr. Baron Alderson having left the case to the jury, they returned a verdict for the plaintiff—damages 100*l.*

CARRYING WATER LONG DISTANCES BY SYPHON.—A correspondent, Mr. B. Sargent, of Doctor-street, Walworth-common, who expresses a needless fear of being overlooked by us because he is a working bricklayer, suggests that water may be transferred, say to a distance of 800 feet, from a pond to a tank, by means of a syphon pipe, which might be filled with water, in the first place, through an opening or branch pipe at its highest level while stop-cocks at the two extremities were turned so as to prevent its egress until the orifice by which it entered was closed: the air might then be allowed to pass off at each extremity, and the pipe be again filled up, when water from the pond would pass through the syphon in a stream, once let on, into the tank—sunk, of course, to a lower level than that of the water in the pond; and would only cease to do so when the water in both receptacles reached the same level, after which its action would be resumed whenever water was withdrawn from the tank by means of a common suction pump, as this would destroy the equilibrium; thus, in effect, constituting the tank a full well so long as the pond would supply it.

CHURCH OF NOTRE DAME, AT OBERWESEL, ON THE RHINE.



THE OLD SOCIETY OF PAINTERS IN WATER COLOURS.

The Society of Painters in Water Colours had its private view on Saturday last, and the exhibition is now open to the public. The collection is a good one, though, perhaps, not above the usual degree of merit. Cattermole and John Lewis do not exhibit, and are missed. The two pictures of largest size and pretensions are 69, "Highland Smugglers leaving the Hills with their Whiskey," by F. W. Topham; and, 129, "Fête Champêtre in the Time of Charles II.," by Fred. Taylor. Mr. Topham's picture is full of fine feeling and expression, but has fewer claims as a composition: the action is disjointed, and the occupation of the principal figure at first sight scarcely discoverable. Notwithstanding this, however, and the fact that the figures are all old friends, there is the "touch of nature" in it which makes "the whole world kin," and forces the admiration of all who look at it.

Mr. Taylor's picture, on the contrary, has some very high qualities, but is wanting in expression. It is a very elaborate work, full of figures, and maintains the artist's position as a colourist.

Mr. Duncan is strong this year: we would especially mention (90) "Boats preparing for the Herring Fishery, off Lowestoft." The same place has furnished him with several other subjects.

Mr. Copley Fielding has, as usual, a large number of charming landscapes: (107) "The Cliffs of Dover," and some from Cumberland, may be especially noted.

Mr. Hunt's drawings of fruit are quite perfect, of their class: (249) "Plums," is better than nature.

Mr. Mackenzie's "Lincoln Minster" (197) is a very fine view of that glorious structure.

We must content ourselves with mentioning a few of the works that pleased us most. (29) "Fishing Boats pushing off," by Bentley; (37) "Tour on the Vrydag's Markt, Ghent," by Callow; all the pictures by Prout; (42) "Old Windmill near Walton," by Branwhite; (44) "A Gossip over the Wedding Dress"—the face over the chair is worth any thing, by J. J. Jenkins; (111) "Gipsy Encampment," by D. Cox (a singularly fine work); "Como," by T. M. Richardson; and even more especially his 182; (189) Carl Haag's "Schoene Brunnen, at Nuremberg," and, (185) "Thor's House, Tor," by Geo. Frupp which is singularly fresh and true.

THE NEW SOCIETY OF PAINTERS IN WATER COLOURS.

The two societies opened their rooms together on the same day, and the result was, as it seemed to us, a smaller attendance of visitors at each. The exhibition of the New Society is highly creditable to the members, and may be safely pointed out to foreign visitors for inspection.

Mr. Warren's principal work is a contribution in fresco (233) "The Women at the foot of the Cross;" it has high qualities, but will not be so popular as some of his previous pictures. (123) "The Death of the Firstborn," by the same artist, is a clever example of his style.

Mr. Haghe has but one small picture (49), "The Interior of St. Gomar, Belgium," so beautifully painted as to heighten regret for the circumstance.

Mr. Corbould exhibits his great scene from "Le Prophète," painted by command of Prince Albert for the Queen (84), and "Salome dancing before Herod" (205). Both are remarkable drawings; but we prefer the second.

Mr. Wehnert's largest contribution (62), "Sir Thomas Gresham's promise to the City of London" (the last result of which was Mr. Cite's building in Cornhill), is painted with great force. (282) "Columbus at the Convent of La Rabida," is, nevertheless, to our mind, the more beautiful picture.

Mr. Vaecher has continued his illustrations of Italy, and contributes several very excellent pictures: (158), "The Piazzetta, Venice," (261) "The Doge going in Procession from the Palace to the Bucintaur," and others.

Mr. Cromek has some clever architectural subjects.

In No. 55, "The Stranger," by Fanny Corboux, the children are beautiful portrayed.

Mr. Mole's (118) "The Fisherman's Life," is a clever picture.

Mr. Absolon, notwithstanding his dioramic engagements, has contributed several charming bits.

The finest landscape in the room is Mr. Aaron Penley's "Trifaen, North Wales," (242); we have seen nothing better for some time past.

Mr. Bennett's landscapes are exceedingly good, and we must further mention with commendation, the works of Mr. Davidson, Mr. Robins, Mr. Carrick, Mr. Weigall, Mr. W. N. Hardwick, Mr. Howse, Mr. Fahey, Mr. Rowbotham ("A View of Heidelberg"), Mr. Pen-son, Mr. Lee, and Mr. Kearney, whose (270) "King James decides on commencing Whitehall" has an especial claim on us as introducing Inigo Jones.

METROPOLITAN WATER SUPPLY.

The Metropolitan Sanitary Association have memorialised the Government on the subject of public agency, or trading companies, in regulating the water supply for the metropolis. They include in their memorial, which has been published by Gadsby, of Fleet-street, a correspondence with Mr. Mill, the political economist, on the subject, in which the latter, in speaking of those who contend that the supply of water is no more a fit subject for Government interference than the supply of food, and should be left, as that is, to the ordinary operations of industry, says that the maxim, "That the supply of the physical wants of the community should be left to private agency is, like other general maxims, liable to mislead, if applied without consideration of the reasons on which it is grounded. The policy of depending on individuals for the supply of the markets assumes the existence of competition. If the supply be in the hands of an individual secured against competition, he will best promote his interest and his ease by making the article dear and bad; and there will be no escape from these influences but by laying on him a legal obligation, that is, by making him a public functionary. Now, in the case of water-supply, there is virtually no competition. Even the possibility of it is limited to a very small number of individuals or companies, whose interest prompts them, except during occasional short periods, not to compete, but to combine. In such a case, the system of private supply loses all that, in other cases, forms its recommendation. The article being one of indispensable necessity, the arrangement between the companies and the consumer is as much compulsory as if the rate were imposed by Government; and the only security for the efficient performance by the companies of what they undertake, is public opinion, a check which would operate much more effectually on a public board.

The principle, therefore, of Government regulations, I conceive to be indisputable. But it remains to be considered whether the Government may best discharge this function by itself undertaking the operations for the supply of water, or by controlling the operations of others."

Mr. Mill is of opinion that, for the present, "the authority to which the work may most fittingly be entrusted is a commissioner, appointed by the Government, and responsible to Parliament like the Commissioners of Poor Laws. Whether this officer should reform the water system of London by the formation of new arrangements, or by employing, under a rigid system of control, the existing water companies, is a question, not of principle, but of practical expediency."

SAMUEL JOHNSON'S PEW.—A brass tablet, with suitable inscription, has been erected in pew 18 of the north gallery of St. Clements Danes' Church, ascertained to be the seat occupied for many years by Dr. Samuel Johnson.

NOTES IN THE PROVINCES.

A MEMORIAL has been presented to the Norwich council by the young men of that city, praying for the establishment of a free library and museum.—A memorial, it seems, has been numerously signed at Dudley, and presented to Lord Ward, in favour of the lease of Dudley Castle and grounds to the South Staffordshire Railway Company.—On Wednesday in last week the new grammar school at Wimborne was opened. The new building is erected on the site of the old at the back of the Minster. The style is transitional, and intended to convey the impression of its being built at different periods with an interim of about fifty years. The earliest portion, containing the school-rooms, is in the style which prevailed in the latter part of the reign of Henry VII., and immediately after the foundation of the charity by his mother. The principal front, facing the west, is 135 feet long, and is divided into three portions. The centre consists of a large gable pierced on the ground-floor for the chief entrance to the school, and above it is a four-light traceried window. On each side is a turret 50 feet high, the lower parts of which form entrance vestibule to the masters' houses. The wings on each side of the centre are terminated with projecting gables with large bay windows covered with deep stone weatherings, and the intermediate portions have stone cornices and two tiers of mullioned windows. The north point is 78 feet long, and consists of a receding centre and two projecting gables, one of which has an oriel window. The south and east fronts are comparatively plain, and, owing to the ground, somewhat irregular. The walls are built of bright red bricks, with Caen stone dressings: dark bricks have been worked in to form a variety of patterns, and the roofs are covered with tiles, finished at the top with ornamental ridges. The whole has been carried out from designs and under the superintendence of Messrs. Morris and Eason, of London, architects: Mr. J. G. Smither, clerk of the works. The contractors were Mr. John Score, Mr. James Knott, Mr. John Bugden, and Mr. Henry Hall, all of Wimborne.—Taunton, on the 25th March, was "brilliantly illuminated" with gas from peat or turf—a substance abounding in the eastern part of Devon. The Taunton Courier states that the jet was of unusual brightness, and left no doubt of its decided claim to preference over the ordinary gaseous supply.—A model of Plymouth Breakwater, nearly 13 feet in length, has been constructed by Mr. Stuart, the superintendent of the work, and is intended for the International Exhibition. The stones are all on scale, and the shape of each stone is delineated on the superficial structure. To heighten the effect, Mr. Stuart obtained the services of Mr. N. M. Condy, marine painter, in conjunction with Mr. Harris, to form the sea for the model in alto relievo. The effect of storm, according to the *Devonport and Plymouth Telegraph*, is well carried out. At the back of the model is a description in three languages, giving the length, breadth, depth, number of tons of stone used, and also the time, labour, and expense incurred in this great undertaking.—The citizens of Hereford, according to the local *Times*, have been considering the best mode of establishing cheap public baths in that city.—The new baths and washhouses at Birmingham were visited, in three days after their opening for inspection, by no less than 80,000 persons. Besides the architect, Mr. D. R. Hill, the professional men chiefly engaged in the construction of these baths were, Mr. John Cresswell, builder, and Messrs. Haden, of Trowbridge, engineers. The local *Journal* complains of the want of a second swimming bath. The opening for use takes place on 12th inst.—On 21st ult., the first stone of the General Institution for the Blind, at Birmingham, was laid by Mr. T. Goodman, the treasurer, to whose exertions the success that has hitherto attended this valuable charity is mainly ascribed. A description of the building has already appeared in our pages, and we need therefore merely mention that the style selected by the successful competitors, Messrs. Coe and Goodwin, is the Eliza-

the organ gallery. The design is of the geometric decorated period. The church will contain 310 seats, exclusive of the organ gallery.—The new church in Sackville street, Everton, has been consecrated by the bishop of the diocese.—The tenders for Chesterton Church have been opened, and that of Messrs. Holme, builders, of Liverpool, being the lowest, has been accepted as an amount considerably less than the architects' (Messrs. Ward's) estimate: the works will be commenced forthwith.

THE EARTH'S ROTATION MANIFESTED.

THE discovery made by means of the pendulum that the form of the earth is a spheroid depressed at the pole or bulged at the equator, was a very important one, made manifest by the difference of the number of pendulations in a given time, at or near the pole, compared with those at the equator; but Galileo's instrument, if we may so call the pendulum, has been destined, it would appear, to give a still more striking and important manifestation of its scientific utility, in what we might almost call the *discovery* of the earth's rotation, made by M. Foucault, a young Parisian, who was interested with the story of Galileo's church-going adventure, in which, by way of devotional exercise, the noble old star-gazer lifted his eyes heavenwards, but, as many a good Catholic would have said, profanely and childishly sat in mere idle contemplation of the movement of the lamps which swung from the cathedral roof! While repeating Galileo's subsequent experiments, M. Foucault was astonished no less than delighted to observe that when the pendulum with which he experimented, in a cellar of the house his mother and he dwelt in, was made to move from south to north, the plane of its vibrations varied, and still more varied, in regular succession, and the light at length flashed on his mind that here was the earth's rotation almost visibly manifested.

Various paragraphs and articles have been since circulating, in which very unsuccessful attempts have been made to give an intelligible account of this fact to the general reader. In the face of these abortive efforts, some of them by men making first-rate pretensions to astronomical and scientific acuteness, we shall not presume to translate the abstract demonstrations of cosmical lore into the ordinary parlance of miscellaneous readers; but this we will say for the latter, that the attempts to render this point intelligible have failed, in many cases, not from the want of scientific penetration on the part of the public so much as from loose description and palpable error on the part of their self-elected teachers. Tables have been said to rotate round their centre instead of round an axis—not so much theirs either as the earth's: pendulums have been described as vibrating for hours or days, without the slightest hint how this was done,—how or whether the effects of drafts, of torsion, of local vibration were guarded against or allowed for,—in what plane, whether meridional or otherwise, the pendulum was made to vibrate in the outset, &c. &c. And, notwithstanding such uncertainties, they were told that it was only "the unscientific mind" that for a moment hesitated to gulp down all the "common sense," cast, like pearls, before those who could not appreciate it: whereas, we verily believe, it was the unscientific alone who were at once carried away by the *ad captandum* idea of the table rotating round its centre, with the earth's rotation, while the pendulum measured out that rotation like fixed hands on a horizontally rotating dial!

The subject is exciting very general interest both here and in Paris. This is indeed a great year of exhibitions! "Any one," as remarked by the *Literary Gazette*, "who would have proposed, not many weeks back, to prove the rotation of the earth upon which we stand by means of direct experiment made upon its surface, would have run the risk, with the mob of gentlemen who write upon mechanics, of being thought as mad as if he were to have proposed reviving Bishop Wilkins's notable plan for going to the North American colonies

in a few hours by rising in a balloon from the earth and gently floating in the air until the earth should, in its diurnal rotation, have turned the desired quarter towards the suspended aeronaut, whereupon as gently to descend; so necessary and wholesome is it occasionally to reconsider the apparently simplest and best established conclusions of science." Yes, and those who had the conceit of being the most knowing and most orthodox of men would have been precisely those who would have laughed loudest at the "absurdity" of the proposition! Alas, poor human nature!

"ANCHORA IMPARO!"

"Imperfect still!" and ever thus
Our noblest efforts here are found:
The fruit of earnest thought and care
Lies on the ground!

The poet dreams of love and war,
Of lofty deeds, and faith divine;
But should he clothe his dreams in words,
How poor they shine!

The painter on the canvas strives
To picture deeds, which erst have won
The smile of God, the praise of men,—
Actions begun

To show to what high reach of worth
The feeble sons of man may gain:
The painter's skill, the hero's strife,
Alike are vain!

Poor are the works the chisel yields,
Though wrought they be by Michael's hands;
And poor the buildings that are left
By mason bands.

All poor alike—"imperfect still!"
The bright endeavours of our kind,
Save sympathy, enlarged and true,
Should fill the mind—

Of him who writes, and him who sees:
Who thus a sacred love inspire,
Feel the warm glow of genius thrill;
Celestial fire!

The worker spares no effort then
To gain the goal of high emprise;
And he who gazes, watches with
A hero's eyes.

For he who works, and he who sees,
A kindred link in one unite:
Action and thought together gleam
With heavenly light.

Thus have imperfect deeds a grace
That those who wrought them strove to gain,
Which proves the effort made, though weak,
Was not in vain:

For, in the outline incomplete,
Love images the earnest will;
Nor deems it ever can be found
"Imperfect still!"

Books.

Something on Ruskinism; with a "Vestibule," in Rhyme. By an Architect. London: Robert Hastings. 1851.

MR. RUSKIN'S dogmatism and mysticism have provoked this *brochure* from one who seems to have very much the fault that he condemns: so much so, indeed, that one is not quite certain at times whether he is playing Mr. Ruskin's game or his own. A writer who says,—"We confide—or what is the same thing—allow some of the most important architectural opportunities to be confided to such creatures as a Smirke and a Blore," has little ground to complain of the "offensive manner" of another.

It is much to be regretted that modern architectural writers should have fallen into this mode of spicing their essays: it is much too general.

The following is a specimen of our author's better style, in reply to Mr. Ruskin's sweeping condemnation of the architecture of the Renaissance:—

"As to Renaissance, we really cannot afford to let that be flung upon the Ruskinian rubbish heap. That it in itself contains a great deal of rubbish must be conceded; yet do not let us on that account fling it all away, for it also contains much that is precious—much more that is useful. It requires to be well sifted, after which we may throw away the base refuse and dross as being not only useless but worse. Renaissance—taking the term in its most comprehensive meaning—is at all

events an established style; nay, a universal one as regards the whole of Europe during the last two or three centuries, and the extra-European civilization of other countries in recent times. Even our modern would-be purely Greek architecture cannot dispense with Renaissance ideas and motifs. Of all systems, that of the Renaissance, and what has grown up out of it, is the most copious and the most ductile. It accommodates itself far more readily than any other to all the various requirements of the present day; adapts itself to buildings of every grade; and is both freely susceptible of fresh impressions, and capable of giving utterance to novel expressions also. Columination, fenestration, arcuation, in all their varieties, and either singly or combined, are at its command. It gives us the dome, the campanile, and either simple unbroken masses, or the most piquant arrangements of composition and plan. For domestic architecture, whether it be in town or country, it is far more generally appropriate and applicable than any other style, if only because, even when stripped so bare as to exhibit scarcely anything of style at all, it has the negative merit of being not unpleasing, provided the forms themselves are well proportioned and well adjusted. What constitutes style may be almost entirely dropped without producing deformity; which is not the case with Gothic, not even the plainest."

As to the production of ornament by mechanical processes, he says, "Be his declaiming against the production of ornamental articles by mechanical processes proof of his sanity, of the soundness of his views, or the contrary, indisputable it is that it runs quite counter to general opinion, and practice also. It is a point on which there is something to be said on both sides of the question. The multiplication of specimens in bad taste is most assuredly to be deprecated; but when articles are produced by wholesale, by thousands and tens of thousands, the very first-rate talent can be employed to design them, and the most diligent study be bestowed on them, at infinitely less cost—in fact, at a merely nominal cost in comparison with that attending the employment of the same talent and study, were each article designed and fabricated separately. And thus a production of real beauty may be diffused as a lesson of taste in quarters where it would else be excluded by its price."

A Description of St. George's Cathedral, Southwark. London: Richardson and Son. If the authors of this guide-book, Messrs. G. and C. White, had confined themselves to the views and description of the building which they have given, as they might very properly have done, they would have found it advantageous. By speaking of Cardinal Pole as the last Archbishop of Canterbury, and dating an event from the time when England "fell into schism," they of course prevent many from aiding its circulation.

Illustrations of Medieval Costume in England.

By T. A. DAY and J. H. DINES. London: Bosworth. Parts I. and II.

THE examples here given are mainly collected from MSS. in the British Museum, *Bibliothèque de Paris*, &c., and are published at a low price. If continued as begun, and confined to six parts, the work will scarcely go far enough to be useful.

Abrégé en Français de la Loi provisoire sur l'Exposition de 1851. An explanatory Analysis of the Protection of Inventions' Act for preventing the Piracy of Inventions during their Exhibition in 1851. By PETER BURKE, Esq., of the Inner Temple, Barrister-at-Law. W. Benning & Co.

THIS is a short separate supplement to Mr. Burke's new work on the Law of Patents and Copyright, which we recently noticed. The summary of the law about the Exhibition in French is a novelty in its way, and must prove very useful to foreigners at the present time.

BRITISH MUSEUM.—The total number of visitors in Easter week was 53,912. The gallery containing the sculptured antiquities from Nineveh was the chief object of attraction.

Miscellaneous.

BUILDINGS IN GOA, INDIA.—Old Goa has few charms when seen by the light of day. The places usually visited are the *Se Primacial* (Cathedral), the nunnery of *Santa Monaca*, and the churches of *St. Francis*, *St. Gaetano*, and *Bom Jesus*. The latter contains the magnificent tomb of *St. Francis Xavier*. Altogether we reckoned about thirty buildings. Many of them were falling to ruins, and others were being, or had been, partially demolished. The extraordinary amount of havoc committed during the last thirty years is owing partly to the poverty of the Portuguese. Like the modern Romans, they found it cheaper to carry away cut stone than to quarry it; but, unlike the inhabitants of the *Eternal City*, they have now no grand object in preserving the ruins. At Panjim, we were informed that even the wood-work that decorates some of the churches had been put up for sale. The edifices, which are still in good repair, may be described in very few words. They are, generally speaking, large rambling piles, exposing an extensive surface of white-washed wall, surmounted by sloping roofs of red tile, with lofty belfries and small windows. The visitor will admire the vastness of the design, the excellence of the position, and the adaptation of the architecture to the country and climate. But there his praise will cease. With the exception of some remarkable wood-work, the minor decorations of paintings and statues are inferior to those of any Italian village church. As there is no such thing as coloured marble in the country, parts of the walls are painted exactly in the style of a small *cabaret* in the south of France. The frescoes are of the most grotesque description. One may fancy what an exhibition it is, from the following fact:—Whenever a picture or fresco fades, the less brilliant parts are immediately supplied with a coating of superior vividness by the hand of a common house-decorator. They reminded us forcibly of the studio of an Anglo-Indian officer, who, being devotedly fond of pictorial pursuits, and rather pinched for time whilst, used to teach his black servants to lay the blue, green, and brown on the canvas, and when he could spare a leisure moment, return to scrape, brush, and glaze the colour into sky, trees, and ground. Very like the paintings in the sculpture: it presents a series of cherubims, angels, and saints, whose very aspect makes one shudder, and think of *Frankenstein*. Stone is sometimes, wood generally the material used. The latter is almost always painted to make the statue look as unlike life as possible.

METROPOLITAN SANITARY ASSOCIATION.—The acting committee of this association have issued an address to the public, recapitulating what they have assisted in doing towards sanitary and social improvement and soliciting support to the efforts now being made by the association in the promotion of further sanitary and social reforms. The objects of this association may be here recapitulated: they are as follows:—"To obtain through legislative enactments remedies for the evils which result from the present imperfect sanitary condition of the metropolis, more particularly those arising from the condition of the dwellings of the labouring population, the non-removal of refuse, the prevalence of public and private nuisances, the unrestricted toleration of noxious trades and manufactures, the defective water supply, the surcharged state of the graveyards, and other deleterious agencies." Aid may be rendered to the association:—"1. By promoting the formation of branch associations in the various parishes and districts of the metropolis. 2. By petitioning the Legislature. 3. By spreading abroad, by lectures and otherwise, a knowledge of the advantages which will be conferred on society through efficient health laws. 4. By donations and subscriptions." An annual subscription of 1*l.* is, and upwards, or a donation of 5*l.* 5*s.* constitutes a member. We would call the attention of all who are friends of sanitary reform amongst our readers (and the majority

* From Burton's "Goa and the Blue Mountains," Bentley.

are so) to the fact that a dinner in aid of the momentous objects of this association will be given at *Gore House* on the 10th inst., as advertised in this week's **BUILDER**, when *Lord Carlisle* will preside.

GAS AT STEVENAGE AND BALDOCK.—At a recent meeting of the inhabitants of *Stevenage* it was resolved to appoint a committee and canvas the town for shareholders and customers for a gas company to be established in order to light the shops and houses, and probably eventually the streets. Considering the smallness of this town, as we presume its rising importance since the *Great Northern Railway* was opened entitles it now to be called, the undertaking is a spirited one, well worthy of praise as well as of imitation. Of its success there cannot be a doubt. In *Baldock*, a correspondent informs us, our predictions have been verified to the letter, a reduction in price having caused an immense increase in consumption. This little place began with 150 lights, and it now yields a profit to the company of between eight and nine per cent. The price, we hear, is further to be reduced to 6*s.* It was this success, we believe, which induced an inhabitant, *Mr. Dear*, to urge *Stevenage* to follow the example of *Baldock*.

MODEL DWELLING-HOUSES.—The scheme for the erection in *Edinburgh* of improved dwelling-houses for the working classes has resulted, we are glad to say, in complete success. The experiment was tried in *Leith-walk*. It was considered prudent to limit the operations during the first year to the erection of one row of fourteen dwellings, at the estimated expense of 1,260*l.*; but the *Edinburgh Courier* states that, from the judicious arrangements of the architect (*Mr. Patrick Wilson*), sixteen dwellings have been erected for 1,300*l.* Two of them contain three rooms, and the others two rooms. Every dwelling-house enters by a separate door, and they all have a supply of gas and water. Each house has a well-lighted scullery and sink; and the other conveniences are ample and complete. The drainage and ventilation are thorough, and each house has the privilege of a plot of ground. The annual rental amounts to 105*l.* 15*s.*, or about 7½ per cent. upon the capital. The scheme is thus likely to prove a safe and excellent investment, independent of its social and sanitary importance. For the completion of it in its original integrity, about 2,400*l.* are required.

FALL OF A BRIDGE.—On Tuesday last week a fatal accident occurred in *Jersey-street*, *Ancoats*, owing to the fall of the iron-bridge there which crosses the *Rochdale canal*. The bridge was built somewhat on the suspension principle, being so constructed that it could be raised by chains, in order to allow of the passage of boats underneath it. A scavenger's cart laden with street-sweepings was passing over, and when it got to the middle the two centre chains, by which the bridge is supported, broke, and the links to which some of the others were attached being drawn from the bridge by the unusual strain, it fell into the water, carrying with it the horse and cart. A man fell into the water, and was suffocated. The *Manchester Courier* states that frequent complaints have been made, at various times, of the insecure state of the bridge. An inquest on the body was adjourned, in order to have some scientific evidence as to the cause, and, we presume, to ascertain upon whom lay the onus of keeping it in proper repair.

LIGHT AND PORTABLE COUCHES.—A sort of *ne plus ultra* of handiness in bedsteads for behoof of military men, emigrants, tourists, hotel and lodging-house keepers, and occupants of small houses short of bed-rooms, has, by the powerful aid of angle iron, been invented by and registered for *Mr. John Blair*, of *Irvine, Ayrshire*. By an adaptation of light angle iron in the construction of the framing of portable beds and couches, not only is extreme portability here secured, but also peculiar facilities for erection and removal, whilst the constructive details possess great strength with little material. A bed frame on this principle, 6 feet 2 inches in length by 3 feet in breadth, when packed away measures only a

little more than 3 feet in length and 2½ inches square. The weight of those already made is said to be only about 45 lbs. in all; and a still lighter sort, with a slightly different construction, is spoken of as only to weigh about 35 lbs. For camping out, a waterproof curtain is added, which converts it into a kind of tent itself. Excursionists may just need this sort of thing at the *Great Exhibition*; and, at all events, it will suit the lodging-house keepers to a T angle. The inventor, *Mr. Blair*, however, is one of those most useful and important public officers so much needed in England,—a procurator-fiscal, or public prosecutor—a highly respectable class of men in Scotland, but is not a manufacturer or tradesman: his invention, therefore, is not yet in mercantile hands, but might speedily be made available, we should think, if the metropolis become so overcrowded as many anticipate.

CONFERENCE OF CO-OPERATIVE SOCIETIES IN LANCASHIRE.—A conference of delegates from co-operative societies, stores, workshops, &c., held its sittings on April 18, at *Bury*. There were upwards of eighty delegates present from various parts of *Lancashire*, *Yorkshire*, and *Cheshire*, representing forty-four stores actively in operation. The delegates reported the progress and present position of the stores. The reports were almost all similar in character, representing the societies generally in a prosperous condition. The reports lasted upwards of six hours, and the following resolution was then moved, and carried unanimously: "That it would be advantageous and beneficial to the various co-operative societies if there were an unity of action established for the purpose of mercantile transactions; and therefore this conference recommends the establishment of a central trading depot." A committee of nine delegates was appointed to consider the details of the resolution, and report.

BRADFORD MECHANICS' INSTITUTE.—The annual meeting of this institute was held on the 15th inst., the *Rev. Dr. Acworth* in the chair, when the usual report was read, from which it appeared that very little progress had been made since last year. A resolution as to the best means of increasing the annual income was moved, when *Mr. Sichel* deprecated the idea of the institute going "cap in hand" begging for support, and contended that, in order to progress, or even maintain its ground, it must be made of a more attractive character, and more in accordance with the growing wants and taste of the age. He asked why working people did not come to the *Mechanics' Institute* for their information, instead of getting it at the ale-house? He predicted that, unless the institute were modified in its character, the erection of *St. George's Hall* and the establishment of cheap concerts, would reduce the number of their members. He strongly recommended that the institute should partake more of the *Athenaeum* character; that its meetings should assume more the form of social gatherings, and the institute itself more resemble a working man's club. Another member complained that the lectures were not more of a recreative character, and another that the reading-room had no newspapers.

A CALIFORNIAN BONDED WAREHOUSE MADE IN STAFFORDSHIRE.—A *San Francisco* newspaper contains a rude woodcut representation of a bonded warehouse lately erected on one of the wharfs in the city, and made a few months ago at the *Horsley Ironworks*, *Tipton*. It is four stories high, the dimensions being 26 feet frontage, 101 feet deep, and 45 feet high: it weighs 500 tons, and is designed to store 2,400 tons of goods. An ornamental spiral staircase forms the means of communication from the lower to the upper stories. The outside has more substantiality than elegance, but the graces of architecture, it is said, have not been altogether lost sight of. Its erection occupied only eleven weeks; and it is stated that the castings were shipped in six weeks after the order reached England. Its cost, including freight, duties, and pile driving, was about 75,000 dollars. The whole is of iron, without even a stick of wood in its construction.

ST. MARGARET'S CHURCHYARD.—This quicksand waste, filled with frail mortality, is now certain to excite great observation: the noted painted window of the church and the abey of St. Peter's will, beyond doubt, bring thousands of strangers to the spot, who will marvel at the careless keeping of the last home of our foregoers: they will, perhaps, imagine some misunderstanding exists between the churches as to whose duty it is to keep it in order. A few cart-loads of loamy mould and a little labour to regulate the grave-stones and level the ground, would make it look Christian-like. But, save the mark, a select vestry and perpetual officers seem not to create a very clear atmosphere adjacent to their whereabouts:—flowers won't show, and even the grass don't grow.—No IDLER in LONDON.

CAUSES OF DEAFNESS.—At the annual meeting of the Royal Dispensary for Diseases of the Ear, Mr. Harvey, the surgeon, reported that during the last year 976 patients had been admitted. Of these 550 had been discharged cured; 166 had been relieved; and 260 were now in weekly attendance. These patients consisted of clerks, needlewomen, domestic servants, distressed foreigners, soldiers, sailors, and police. The principal causes of deafness were to be traced to the fact of living in confined and damp localities, to intemperance, want of cleanliness and out-door exercise, insufficient and adulterated food, wet feet and clothes, sleeping in damp rooms and unaired beds. As long as these causes of deafness were suffered to remain, the medical art was capable of little more than palliating evils which were inevitable.

INSTITUTION OF MECHANICAL ENGINEERS.—A general meeting of this institution was held at Birmingham, on Wednesday last week, Mr. J. E. M'Connell in the chair, when it was announced that a letter had been received from Mr. Peter Hollins, sculptor, in which he presented to the institution a cast from a bust of the late Mr. Telford, the engineer. Papers were then read,—by Mr. Barrans, of London, on an improved axle-box for railway carriages; by Mr. B. Gibbons, of Shute-end, near Dudley, on the ventilation of mines; and by Mr. J. Beasley, of Smethwick, on a new machine for blooming iron. The chairman stated that the subscription for a testimonial to the memory of the late president, Mr. George Stephenson, was progressing favourably, and he trusted that the committee would shortly be enabled to decide upon the nature of that memorial.

COCKERMOUTH CHURCH.—In the account you gave last week of the meeting at Cocker-mouth, it appears as if I had mixed myself up in the very disgraceful scene which there took place. My plans had been selected at a previous meeting of the rate-payers, and I only attended this meeting, at the request of the committee, to give any further information asked for, when I purposely and carefully avoided all personal allusion whatever. In another place one of your correspondents evidently refers to me as the party who sent down "the five coloured plans, &c.," for the builders to tender from. I sent mounted tracings in outline, with the difference of materials only indicated by plain tints, in the usual manner: no coloured drawings were sent, but more than sufficient detail drawings to enable any efficient builder to take out his quantities from, and the result was the tenders were much more consistent than is usual. As the character of THE BUILDER, and the position it takes, depend on the correctness and fairness of the information contained in its pages, I trust you will have the goodness to admit this letter in your next correspondence.—J. CLARKE.

NEW SCHOOLS TO NEW PARISH OF ST. MARY'S, SOWERBY, NEAR HALIFAX.—The opening of these schools took place on Easter Monday. The building stands in an elevated situation, midway between the new parsonage and St. Mary's Church. It measures 106 feet in length by 31 in width, and will accommodate 300 children. It is in one large room, with a wood partition in the centre 6½ feet in height, to separate the sexes: the partition is removable. For ventilation, flues are built under the floor, with valvular grates attached

to them. The windows are also provided with casements, and upon the roof are perforated ventilators. At the east end is a residence for the master. The building is in the perpendicular style of fifteenth century. The front is divided into three parts, having wings at each end, which terminate with high pitched gables, surmounted by moulded points. In each of the wings is a three-light mullioned window, with pointed head filled in with tracery, and in the gables are quatre foil lights of ogee form. In the centre of the front there is a porch with bold angular buttresses of two stages and moulded off-sets. This is terminated by a bell gable of great height, with foliated opening for the bell, and surmounted by a stone cover of suitable design. The roof is of high pitch, of open timber frame work, foliated. All the timbers of the roof and the other wood work are stained by Messrs. J. Wood and Son, of Leeds. In front is an extensive play-ground, enclosed by boundary wall and palisades. The building was designed by Messrs. Perkin and Backhouse, of Leeds, architects; and the contractors were Messrs. Riley, Fox, and Co.

RESTORATION OF QUEEN PHILIPPA'S MONUMENT, WESTMINSTER ABBEY.—Mr. Samuel Cundy has made for the Great Exhibition a restoration of a portion of the monument of Philippa of Hainault, queen of Edward III., in Westminster Abbey. It is executed in English alabaster under the direction of Mr. Scott, from the remains which have been found embedded in an adjoining tomb. The original splendid monument was executed in the year 1370, by one "Hawkin Leige, from France," at a cost of 133*l*. 6*s*. 8*d*., of that currency. The richness of the whole must have been very wonderful. The niches were occupied by thirty-two statues representing different branches of the family, and of which a nearly accurate list is preserved. The figures shown in the portion made by Mr. Cundy, (which represents the head of the altar tomb,) are those of Edward the Black Prince, Lewis Emperor of Germany, King Edward III., John King of France, and William Earl of Hainault. Besides the effigy of the Queen and the statues above named, there was a vast number of angels in the tabernacle work and elsewhere, so that the whole monument contained not less than eighty figures. The monument is now in a state of the most deplorable dilapidation, and one result of the present work will probably be to excite a feeling for its restoration. The statues and angels are executed by Mr. John Philip.

THE "ART-JOURNAL" ILLUSTRATED CATALOGUE OF THE GREAT EXHIBITION.—The first part of the "Art-Journal Catalogue" has been issued, separately paged, so as to be detached from the "Art-Journal," to be bound in a separate volume, together with an essay on "The Science of the Exhibition," by Mr. Robert Hunt. It forms a fourth or fifth portion of the whole, which, when completed, will contain engravings of about 2,000 of the articles contributed by the various nations of the world to the Great Exhibition, and certainly includes a larger amount of original matter and illustrations for 5*s*. than was ever before given. Without the security against loss supplied by the large circulation of the "Art-Journal," its production on such terms would have been impossible. The want of a scale lessens the value of the illustrations.

GOOD AND BAD.—The following tenders for a house for Mr. Haddock, of Bolton (Mr. William Nicholson, architect), seem to me good instances of careful estimating:—

Holt	£500 0
Kershaw	499 0
Warburton	499 0
Shaw and Marsden	498 10

W. B.

SIR,—Oblige me by inserting these tenders for alterations at the "Penton Arms," New-road, Pentonville:—

Hodges	£479 10
Gadby	417 0
Asby and Son	390 0
Smith	390 0
Shaw	384 0
Case	297 0

SOMERSET ARCHEOLOGICAL SOCIETY.—The fifth and last evening meeting of this Society for the season was held at the Museum, on Thursday in week before last. The Rev. F. B. Portman called attention to the illustrated volume of proceedings lately published by the Society, and now on sale. A paper was read by the Rev. R. Mate, on the Rise and Development of Ecclesiastical Architecture. The Rev. F. Warre then concluded his series of lectures on Mediaeval Costumes, by a paper on Ecclesiastical Vestments. Various objects of interest were exhibited.

THE FLAXMAN GALLERY IN UNIVERSITY COLLEGE.—The Flaxman Hall, already mentioned by us, has been opened to the public. We intended giving a further description of it, and of the library which has been built under the direction of Professor Donaldson, but are forced by pressure to postpone the intention.

PIMLICO WORKING BUILDERS' ASSOCIATION.—This co-operative society had a festival meeting in the Lecture-hall, 15, Vauxhall-road, on 16th ult. to celebrate the completion of "the first house of a long line" to be erected in Tachbrook-street, where the office of the association also is. Amongst the promoters of such associations present were, Messrs. V. Neale, T. Hughes, J. Furnival, H. Ludlaw, and Walsh, and Rev. J. Hansard. The meeting was numerously attended by the associates, their wives, and daughters. Appropriate sentiments were given. This association, we perceive, is now in regular business as an operative company, in all the various branches of the building trades.

THE FISHMONGERS' ALMSHOUSES.—The new almshouses erected by the Fishmongers' Company, at Wandsworth, of which we have given a view, being finished, the almshouses have all been removed from the old building, opposite the Elephant and Castle, Newington, and are now in comfortable occupation of their new and wholesome dwellings. The old almshouses will be razed on Tuesday. It is said the parishes south of the Thames are about to unite to obtain the site for the erection of public baths and washhouses.

SIR JOHN SOANE'S MUSEUM, LINCOLN'S-INN-FIELDS.—We are glad to be able to state that, with a view to the accommodation of foreigners and persons from the provinces visiting London during the Industrial Exhibition, the trustees have resolved to keep this Museum open four days in the week during the months of May, June, July, August, and September; namely, Mondays, Tuesdays, Thursdays, and Fridays. Foreigners will be admitted when the Museum is open, on producing a card to be issued at the several embassies.

PALATINE CLUB COMPETITION, LIVERPOOL.—We are informed that the successful competitor is Mr. Parnell; and that the second and third designs selected are by Mr. Williams, and Mr. Arthur Holme.

ATHENS AND ATHENIAN ART.—Mr. C. Newton, of the British Museum, has been lecturing on this subject at the Liverpool Collegiate Institution. In treating of the Parthenon, he regarded it as one great poem with the glory of Pallas Athene and of Athens itself for its subject. By means of drawings, giving views of the sculptures as they still exist, and as they are supposed to have existed in their original state, the lecturer explained the various characters represented by the artist, and detailed the action of the piece, so far as it was capable of being made out.

TENDERS

Delivered a few days ago for the erection of a pair of Villas, at Duppa's Hill, Croydon, for Messrs. Blake and Fuller. Mr. Moffat, architect. Quantities supplied.

Coleman	£2,060 0 0
Kirk	1,979 0 0
Hill	1,830 0 0

TO CORRESPONDENTS.

"*Ignoramus.*"—A cylinder may be defined as "a solid whose base is a circle and whose curved surface is every where at equal distance from the axis" the term "cylindrical globe" is a misnomer.

"*Geometry.*"—"I wish to know what method must be taken to find the radius that would cut a circle so that the two areas may be equal."—E. G.

"*Oak.*"—"Will you, or any of your correspondents, be kind enough to inform me, what will prevent oak mullions, or any other work left of its natural colour, splitting from exposure to the sun and wind."—J. M. H.

"J. H." (inquire at No. 1, Greek-street, Soho), "W.

The Builder.

No. CCCXXXI.

SATURDAY, MAY 10, 1851.

LR. WEALE, in the volume entitled "London Exhibited in 1851,"* which he has just now published, has brought together a very large amount of information, amply illustrated by wood engravings. It contains 910 pages of letterpress, and is a marvel of cheapness. London, "enlarged and still increasing London," being the theatre of an event of high moral influence, the editor thought it "desirable that the stranger in our giant city should be made acquainted with its organisation and structure—with its trade and commerce—with the sources of its social and political greatness—with its many treasures hidden from the eye of the superficial observer. The aim of the present volume is to endeavour to effect this object—and in such a manner as not only to satisfy the mind of the learned and scientific inquirer, but to afford to the man of business and the sight-seer the advantages of a book of reference to those numerous depositories of art and science which abound in the metropolis, and which render such effectual aid towards the refinement of domestic life, by furnishing alike the means of instruction and amusement."

It consists first of general observations necessary to explain the natural situation and structure of our metropolitan city, with essays on those regulations which are connected with our political organization and constitution, habits, and working of the social system; after which distinct subjects are treated of, and a descriptive account given of the noble accumulations of works of art which London contains. This list is very large, and will surprise many who have lived here all their lives. Under the head of Statistics, some very interesting information is given. The architecture of London is treated of at very considerable length; and so, too, are "gardens," "observatories," and public institutions.

Being able to say so much of this book, we regret that the tone of it is such as would prevent most Englishmen from recommending it to foreign visitors. There is no occasion to point out to these our barbarism, weakness, and decline: they need no prompting to detect these matters, and are much more disposed to underrate than overrate anything they find in England. We have an indistinct recollection of an old saw against crying "stinking fish," and of another against the bird that "fouls its own nest." But the writer or writers of "London Exhibited in 1851" have a different notion, and abuse everything right and left: apparently they have no other object than to prove English art utterly debased and irretrievably lost. Admit this as a fact, which we do not, and even then a guide-book for strangers and

* "London Exhibited in 1851," elucidating its natural and physical characteristics, its antiquity and architecture, its arts, manufactures, trade, and organisation; its social, literary, and scientific institutions; and its numerous galleries of fine art. With 205 illustrations, executed by Mr. Robert Braxton, Mr. O. Jewitt, Mr. J. R. Jobbins, and others; including a newly-constructed map, engraved by Mr. Wilson Lowry. Edited and published by John Weale, London.

foreigners by an Englishman is not the place where we should look for the exposition of it. Much of what we object to is very true, and very cleverly stated, but is wholly out of place. With the writer of the work before us, all modern works are mean subterfuges, make-shifts, and make-believes: we are in the "depth of inventive pauperism."

In the Temple church the design of the organ "and the other woodwork is a forgery;" the new Coal-Exchange will be considered "by foreigners of real taste and observation," the "most melancholy instance yet displayed of the state to which a once noble art may, by centuries of abuse, neglect, and false principles, be at length reduced;" and the new Houses of Parliament are treated little better. According to our author, we are precluded from—"all hope of our works again being graced with marks of genuine wide-spread refinement and real splendour, such as pervade and distinguish all those preserved from that brilliant age of our history comprised in the reigns of the three Edward Plantagenets. We may admire and counterfeit, but cannot imitate the marks of a civilization so far above ours. As the direction of the wind is known by a feather, so are the tendencies of a society to civilization or de-civilization written, if we could but read them, in the most trifling works of luxury, even the ornaments of a tomb."

And then of the modern works at Westminster Abbey, he writes,—

"Of the south transept windows and their sham antiques, we would gladly say nothing; but there is in this last refuge of our arts,—this attempt to reproduce an effect without its cause, by simply exaggerating the defects of our fathers' works, by throwing away all advantages that they had, not, instead of acquiring what they had,—thus wilfully combining all their works' unavoidable defects and all our own, with the merits of neither;—there is something in this so dismally pitiful, that even the open surrender of mind to matter, as in the monstrosities of modern engineering, seems less humiliating. One would think it should be disgrace enough to record in monuments what we must perforce show, viz. how much we have lost; without going out of our way to make it appear (falsely), that we have in six centuries gained nothing—no better materials from all our chemistry—no larger pieces from all our manufacturing pretension—no less clumsy construction from all our boasted mechanics—no finer workmanship from all our refinement—no more graceful design from all the opened stores of Greece and Italy—no richer variety from all our laboured collection of the brain-work of every age and clime; in a word, that six centuries have passed away to leave us not only minus the principal thing, but plus nothing."

Of the churches rebuilt since Wren's time, the writer says,—

"Out of thirty-eight old structures (all except four, anterior to the Reformation), some displaying the genuine splendour of the monastic architecture, and nearly all containing that abundance of refined thought by which the mediæval builders endeavoured to glorify God with the best of all He had given them; out of all these, only six have been replaced by buildings with any claim whatever to be considered works of thought. Shame would now gladly draw a veil over the rest of these disgraceful productions. It has been well asked, who could ever have anticipated in any previous stage of church architecture, and especially of its ancient glory in this country, that in the nineteenth century, an English church would come to mean four screens of plastered brick covered by about an eighth of an acre of plastered laths? To such a pitch did the constant pursuit of an object the direct reverse of art (viz.—economy of thought), at length reach. It is not the economy of handiwork in these

buildings that offends us, for some of the Norman churches have nearly as little; and the ever-esteemed St. Sophia quite as little in proportion to its size. Still less is it their economy of material (a quality distinguishing the works of nature, and therefore a beauty in temples to the Author of nature). No: with all their parsimony, these frail tottering erections have no economy of matter; for, as a late architect calculated, about a fourth of what they contain is always useless burthen. and another fourth employed in supporting that burthen;—and the same author truly observed, 'What a shame is it to man, to pile up, in a rude coarse crazy and unhandsome manner, the good materials with which Providence has blessed him, to mar them by folly and ignorance [wilful ignorance in order to save thought] and to call such an assemblage of malformation a temple!' To object to these buildings for their fancied plainness is a double error: first, because plainness has no necessary connection with ugliness or profanity in building (as the Norman and Byzantine examples above-mentioned prove); and, secondly, because these odious works are the reverse of plain. Plain!—why everything visible in them is ornament. What is the ceiling?—what are its hanging mouldings and lumps of plaster?—what are the walls and all other surfaces?—what are the sham stone, the sham marbles, the sham oak?—what is every feature and appearance in the exterior?—the mode of arranging the bricks? to hide the real structure, the mode of counterfeiting in the windows the appearance of holes, the mode of disguising how the wall above them is supported, the mode of hiding the roof or its commencement, by keeping it behind the wall; and yet adding a sham cornice to counterfeit the effect of its projecting over? If all these things be not ornaments, what is their use? We assert that these hideous preaching-boxes are more ornamented than Henry VII.'s chapel, for their real structure is entirely hidden by ornament, within and without."

And then as to the churches of to-day in the revived style of the middle ages, he is equally complimentary, slashes about right and left, and condemns the whole without exception or reservation. Instead of pointing out to foreigners, as he might and ought to have done, the great ability which some of our architects have shown in modern churches, and specimens of the excellent workmanship they contain, the whole are classed together as miserable shams and disgusting puerilities.

St. Pancras Church; St. Luke's, Chelsea; the British Museum; and the new buildings at the Tower of London,—all, of course, come in for abuse; in fact, it is difficult to find anything that escapes it. "London Exhibited" is but half its title; it should have been "London Exhibited in Bad Colours, and London Architects gibbeted."

We share, it is true, in the writer's indignation when he speaks of the interior of Westminster Abbey:—

"The sepulchral memorials that nearly fill the lower parts of this edifice are a subject we would fain leave untouched. The wide world presents probably no other such contrast as that between this matchless temple and the contents that profane it. History hardly suffices to establish so incredible a fact, as that one and the same people could descend in five centuries from that height of refinement to this unparalleled depth of vulgarity. In this spot are brought together, in their utmost intensity, the most opposite combinations of mental qualities—the noblest and the basest, the most lovely and the most odious that mute matter could by any torture be made to embody. Most humiliating is the thought that each of these things was once expected to please, was actually thought beautiful, when the very first step taken was the ugly brutal selfishness of hacking away the hard-thought, hard-wrought

* Technically the "Flemish bond facing."

labour of pious heads and hands of old, to replace it by some rude mass of marble as a foil to 'throw out' the new expression of private vanity. How revoltingly misplaced too is the shouldering, elbowing strife, with which, like advertising placards or rival shops, with every trick that can be devised for glaring prominence, they struggle to outstare each other, as if the very well-being of the defunct depended upon whose statue shall be seen first, or whose epitaph read orienest. How calmly, amid all this feverish strife, lie the modest retiring memorials of the mighty or the worthy of old, from the dignified reposing figures of the royal Plantagenets to the unobtrusive brasses of the untitled and humble, if indeed modern selfishness has left any uncovered. No other nation possesses, or if possessing, could suffer the presence of so clamorous a witness of its degradation; and the time will probably come that the disgrace will be felt beyond endurance, the whole of the monuments since that of Isely removed—those few that possess sculptural merit, to a fitter repository, the rest to be buried if possible in oblivion; and when the beauteous temple, cleansed from these defilements, and with the mouldings of its original decoration restored—for the carvings never can be—will contain only modest mementos of those really great or really buried within its walls, none occupying the floor, and none filling more than one window light, or one of the exquisite blank arches below, each of which affords ample space for any Phidias to mark with appropriate beauty the resting-place of any Newton, though not enough for vanity to supply the want of excellence by pomp and glare, nor to commemorate persons whose memory a pyramid could not by itself preserve."

We must not, however, close this notice, and must repeat the expression of our great regret that Mr. Weale should have made the great object of his guide-book, in other respects so valuable, the wholesale condemnation of modern English architecture and architects.

THE ROYAL ACADEMY.

On Monday, the 3rd instant, the Royal Academy of Arts inaugurated its eighty-third annual exhibition. More than usual anticipation of excellence was indulged in for this eventful season, when so many foreign visitors were expected to arrive among us with inquisitive eyes.

Generally speaking, the gathering of all kinds, numbering 1,389 works, may be reported as a very good one, being, in pictures, some considerable advance in quality upon previous annual occasions. Sculpture appears but scantily represented, and architecture, with four Royal Academicians and one associate, is not honoured by them with a single drawing. The dark room on the ground-floor has long been an opprobrium to the institution, and the sister art of architecture is now located in the despised octagon-room; a locality, however, quite good enough for the collection it enshrines. It is not right that the professors of architecture, who are members of the Academy, should withhold drawings of the great works in which they are employed. The public are in some degree entitled, if not by right, at least by courtesy, to see occasionally drawings relating to those undertakings which are paid for by the public money.*

* A correspondent says—"I am sorry to find that one of the three sisters at the Royal Academy is almost defunct. She has been declining for some years; she grows 'small by degrees and beautifully less,' and presents a most pitiful appearance."

"Why should poor Architecture play Cinderella to her other sisters? Is she less beautiful or less useful than they, or has she fewer admirers? I think the answer to each of these questions would be in the negative. Then there must be some other reason for her present sorrowful plight. What have the doctors been about? Has she been skilfully treated, or has she been neglected? I think, Sir, you will say with me that the latter is the truth, and that architecture will soon be turned out of the Academy as incurable. Where are her professors? They cannot be aware of the present crisis. Are they not by their own inactivity gradually assisting themselves out of office? Unless they brist themselves, at a period not very distant, their 'occupation will be gone.'"

"There is still, however, a chance left of the poor invalid's recovery. Let architects take her by the hand and lead her out of this 'Slough of Despondency.' Let them try what change of air will do for her: in short, let them

By universal consent, historical subjects are always placed in the highest scale of pictorial art, and the present exhibition is more than commonly enriched with these ambitious emanations, although but few of them are imbued with the soul and sentiment of mental expression.

A large picture by D. Macclise, R.A. (67), represents Caxton in his printing-office in the Almonry, at Westminster, showing a proof sheet to Edward IV. It is a work of great skill and labour, the surface being crowded with figures and accessories, in which the painter has, as usual, not spared research for their authenticity. That it wants harmony at present must be admitted, but it is precisely such a picture as age will wonderfully improve in tone, and is, in fact, painted for posterity. Two other works of Mr. Macclise are portraits, both similar in a rigid pose, one being an already known portrait of Macready, as *Werner*; the other a small whole-length of Sir Edward Bulwer Lytton, in which our foppish race will wonder at and envy the singular long and narrow boots, outraged to caricature. "King Lear and the Fool in the Storm," by W. Dyce, R.A. (77), is about as repulsive a picture as this painter's previous works were agreeable. The infatuation of what is called the pre-Raffaellite school in Mr. Dyce's picture, here borders on the vulgar and grotesque, and becomes rather referable to some of the ancient vulgar impersonations of the Flemish Breughels. A study for the central figure of "Daniel, the Prophet," in a proposed composition now in progress, by J. R. Herbert, R.A. (84), is one of the few instances in the exhibition in which the purity of art is exalted by the sublimity of divine expression. This small and simple figure appeals to the higher feelings with perfect success. In a similar way, a female head of life-size, by the president, Sir Charles Eastlake (135), called "Ippolita Torelli," is imbued with such an intensity of feeling, that the spectator's eye becomes riveted on the expressive features, and the speaking, almost breathing lip, with intense delight. This is, indeed, fine art in a high point of excellence. E. M. Ward, A.R.A. (185), has a very interesting picture of the "Family of Louis XVI. imprisoned in the Temple," every part highly studied and carefully drawn, but perhaps too gay in colour for such a solemn subject as a noble family enduring the miseries of imprisonment. The "Battle of Roveredo," by C. Stanfield, R.A. (196), is one of this agreeable artist's most important and excellent performances, and will be viewed with great delight. "Hogarth brought before the Governor of Calais as a Spy," painted by W. P. Frith, A. (204), is a subject of felicitous choice, and is treated with considerable skill. The expression of surprise and uneasiness at the unexpected occurrence is perfectly understood in Hogarth's countenance, and it may almost be traced therein that his knowledge of the French language was sufficiently limited to create a confusion of thoughts in his mind. If Mr. Redgrave's new dignity of R.A. has induced him to take a higher flight in the realms of art, his admirers will have to regret the loss of more agreeable subjects than his "Flight into Egypt, with Mary meditating on the Prophecy of Simeon." The picture has, nevertheless, much excellence. The "Goths in Italy," by P. F. Poole, A. (344), is a glowing, rich, and powerfully painted work, abounding with the merits of careful drawing and well-studied draperies, but is hardly a well-chosen subject, from the inanity of the scene, and the vacancy of mental expression. The learned in *chiaro-scuro* will be puzzled to

have an exhibition of their own. The experiment has already been tried, and, considering the small number of its active supporters, has had a fair portion of success.

"Architects can plainly see that the greatest number of drawings that can possibly be crammed into the Octagon Room, will never make an architectural exhibition worthy of this country. They must not let the public suppose that Architecture as an art is lost for ever, or that the ideas of all its professors are confined to mere bricks and mortar. Let them show their *representatives* at the Academy that they are progressers, not retrogrades, and prove to those gentlemen that if they wish to regain confidence they must move much faster. Allow me to urge the great body of architects to support, either by subscription or by the production of drawings, an annual architectural exhibition, and thus to show that Sister Architecture's case is not quite hopeless."

account for the distribution of shades and sundry crossing lights. A very ambitious work, by F. M. Brown, is entitled "Geoffrey Chaucer reading the Legend of Constance to Edward III." (386). Large as this canvas really is, it is crowded with figures in all kinds of attitudes and varieties of costume, forming a showy kind of *bal-masqué* grouping, with a complete absence of aerial perspective, and a deficiency in solidity. Yet it is a work of great merit in many of the parts, but they are ill put together. C. W. Corpe, R.A. has a very fine work in three compartments, portraying "Episodes of the Sufferings of Laurence Saunders, a Protestant Martyr in the Reign of Queen Mary." (381). It is a most successful appeal to sensitive, pious feelings. The "Finding of Moses," by H. Pickersgill, deserves a better place than it has, being painted with great care. "Samson," by E. Armitage, does not sustain the promise elicited by this young artist's first cartoon exhibited in Westminster Hall. There is good drawing and considerable theoretical knowledge, but the soul of history is wanting; it is a display of school acquirements, and lacks both mind and colour.

A considerable number of clever and delightful pictures, which fall into the category of the historical, or rather the domestic historical, will afford pleasure. Among them may be enumerated "Pepys's Introduction to Nell Gwynne by Charles II.," painted by A. Egg; "Falstaff personating the King," by C. R. Leslie; "The Rescue of the Brides of Venice," by J. C. Hook, A.; "The Defeat of Shylcock" by the same; "Hotspur and the Pop," by A. Elmore, A.; "Hylas," by W. E. Frost, A.; "A Scene from the Merchant of Venice," by F. Stone; "Hamlet and Ophelia (the King and Polonius listening)," by James Godwin (701); and many others of equal merit and beauty.

In the department of landscape, which is the stronghold of the English School, it is sufficient to say that F. R. Lee, R.A.; W. F. Witherington, R.A.; T. Creswick, R.A.; and Francis Danby, A., fully sustain their well-earned reputation; and among other admirable artists undecorated with the magical initials will be found a brilliant work by J. D. Harding, of "Bonneville, on the Road from Geneva to Chamouni." It is numbered 103; and by accident, in the alphabetical list of the exhibitors, this gentleman's name is printed "Hardy." E. W. Cooke has some beautiful works: look, for example, at 539, "Bragozzi, the Fishing Craft of Venice." David Roberts, R.A., has four pictures of great beauty,—one of them of large size.

In animal subjects Sir Edwin Landseer, R.A., has contributed six pictures. Words have long since been exhausted in praise of this artist's performances: it is impossible, nevertheless, to pass over in a general admiration the "Scene from the Midsummer Night's Dream," which is as poetically conceived on canvas by the painter as it was by the lines of the immortal Shakespeare. Sir Edwin Landseer has given an impersonation of Titania of such exquisite beauty, that it almost causes regret he should ever have painted animals. R. Ansdell has three excellent pictures in the same class. T. S. Cooper, A., has six cattle pictures, all excellent; one of them of extended dimension. This admirable artist—so peculiarly English in feeling—is perfectly remote from comparison with any of the ancient masters: yet the critics of the day scarcely ever name T. S. Cooper without wedging in the name of Cyp. Now Cyp was not a cattle painter: he merely introduced them as masses of colour for wondrous atmospheric effect. It is degrading to modern art to be everlastingly referring living painters to ancient types, notwithstanding the great merits of the latter. T. S. Cooper needs no bush, as the old saying goes: he is an original painter, possessing excellencies in the knowledge of structure and form of cattle superior to any preceding artist in the same line, and requires no comparison with Cyp, or Berghem, or A. Vandevelde, to exalt his talents, or estimate his acquisitions.

As on all previous occasions of the Royal Academy exhibition, portraiture is abounding.

Cardinal Wiseman, by Brigstocke, in the gorgeous habiliments of the Romish Church, comes pompously forward. "A Falconer," by H. W. Pickersgill, R.A. (8), is a fine piece of colour; and the same veteran artist exhibits his usual number of excellent portraits. J. P. Knight has an admirable portrait of Mr. Barry, R.A., and Sir J. W. Gordon's portrait of Dr. Conolly is very successful. The miniature room is well filled, and richly adorned with the elaborate works of Sir William Ross, R.A., R. Thorburn, and T. Carrick. Here friends may linger with gratifying pleasure on well-known features, or revel in the graces of feminine form and personal beauty, with which these small gems of pictorial skill abound. Water-colour drawings are almost entirely absent from the walls of the academy.

Before ending the present remarks, some slight notice becomes necessary on the aberration of the true destiny of art, as expounded by Messrs. Hunt, Millais, and a few other misled aspirants. The pitiful and feeble aim of incorporating ugliness of feature and form with the rude interpretations of art, when emerging from total darkness into a dawning light, can only tend to the degradation of the individual perpetrators. The pictures of the antecedent artists of Raffaele in Italy, never disgusted the senses by the brutal impersonations of human form and feature now promulgated. If ill or stiffly drawn, there was always the divine sentiment, the faintly developed grace, and regularity of feature. If the public could enjoy the opportunity of studying Lord Ward's collection of the early Italian masters, they would, in the pictures of Crivelli, and particularly in those of Fra Angelico, at once discern that the so-called Raffaeleites are as remote from the aim and inspiration of the ancient Italians, as the disgusting baboon in form and feature is dissimilar to the virgins and angels of the divine Raffaele.

The great number of works hung on the walls of the Royal Academy would occupy a thick volume to notice: the mere catalogue alone fills sixty-four quarto pages, and contains the names of 700 artists of all grades. We shall find an opportunity to return to them. Of the architectural room we shall speak next week.

THE GREAT EXHIBITION.

"BUILDING CONTRIVANCES."

A PARALLEL to the great idea of the gathering of the nations in the International Exhibition, there has certainly not been since the dispersion of their respective forefathers from the tower of Babel, whatever those kindred bricks, "the critics," may say to the contrary. Nay, although the tribes dispersed as the germs of those populous nations who have now, for the first time, reassembled in any thing like equivalent universality, were to "multiply and replenish the earth" as their great industrial task—it needs little poetic imagination to regard the ambitious heaven-stormers as a set of bungling apprentices in construction and industrial science. We know not what those "artificers in brass and in iron"—those builders of cities and makers of tents—those "handlers of the harp and organ"—and other industrials who lived before the Flood could have done by way of getting up a "Great Exhibition," but assuredly since "the world that then was" perished, "the sweat of the brow" of man has never till now—not even in "the building of Solomon's Temple and the chambers thereof," when "there came of all people—from all kings of the earth," to "hear the wisdom of Solomon," and when "Solomon had threescore and ten thousand that bare burdens, and fourscore thousand hevers in the mountains besides the chief of Solomon's officers which were over the work," and Hiram's builders as well as Solomon's labourers—not even then, and never since, has the sweat of man's brow been the exponent of so much industrial wealth and magnificence exhibited under any one roof.

The *coup d'œil* is, indeed, magnificent. The impression of grandeur with immensity must

constitute a new experience, we should think, to every one on entrance. No less impressive is the counter-sense of one's own bodily insignificance in the midst of such an expanse of construction with such a display.

Were we to allow ourselves to be carried away by every impression as it arose, and guided our steps, as we entered and turned our attention on details more or less prominent, we certainly should not reach our more immediate purpose within the limits of the present article. We shall, therefore, confine ourselves to that purpose, and wend our way at once to the far-off gallery, in which we find "Class VII.: Civil Engineering and Building Contrivances,"—merely indicating a few of the more prominent articles standing in our way as we move westward through the district devoted to the—united kingdom we were about to say, but here all kingdoms are united.

First, however, let us briefly describe the safe for the Koh-i-noor, the mountain of light, which has been contrived by Mr. Chubb. It consists, first, of an octagon table 6 ft. 6 in. in diameter by 3 ft. 4 in. high, the top and sides being made of $\frac{3}{4}$ -in. wrought-iron plates, all secured together by being rebated and with angle iron. In the interior is a fireproof safe 12 in. square, and 2 ft. 9 in. deep, the wrought plates being 1 in. thick. In the centre of the safe is a platform 9 in. square, on which the velvet cushion, jewels, and setting are fixed. A hole is cut out of the table to allow the platform to descend into the safe. In order to secure the diamonds at night, a small door 3 in. square, in one of the panels of the table, is unlocked, and by turning a winch the platform gradually sinks into the safe, and a sliding iron door is drawn over the opening at the top.

The cage is secured to the table by L pieces at the bottom ring dropping into corresponding holes, and these are locked by two separate detective locks: the keys of these locks are held by the crown officers; and without them access to the jewels cannot be had. The key of the small door allows the platform to be raised or lowered only, but does not give access to the jewels. The weight of the whole is 36 cwt., and it is bolted to the floor.

A consideration of this piece of charcoal-in-another-form, and its assumed value, induces reflections on what constitutes worth in the eyes of the world.

Near to the transept will be seen Cundy's restoration of Queen Philippa's monument, which we mentioned before it came here, and behind it is a Gothic monumental tablet in Caen stone, by A. A. Mather, parts of which are very nicely carved. Some modern brasses, by Archer and by Gould, will be observed here.

The spandrell from Hereford Cathedral, carved by Boulton and Swales, is more coarsely executed than we should have expected from them. Part of an altar front, by the same, from St. Mary's, at Greenwich, shows better work. Close by is the Mediæval Court, but we must speak of this another time.

One of the more prominent ornaments in the western wing, as we pass along the central space, is a great Corinthian column in papier maché, executed for the bank at Adelaide, New South Wales, by Mr. C. F. Bielefeld, of the Strand. Another is a design by Mr. W. Harris, of Screenwork, with various other specimens, in minor detail, of Jordan's machine carving. The rustic dome or temple of bronzed cast-iron from the Coalbrook Dale works has already been noticed by us. Several marble chimney-pieces also form prominent central objects: one of these, with statuettes, was executed by Mr. J. Thomas, of Paddington; another with steel grate and fender, gilt mouldings, &c., has on it the names of Mr. T. Sharp, Burton-crescent, and Messrs. Brine, Brothers, St. Pancras.

The first article which we noticed particularly amongst the seventh class articles, was a model (No. 111) of Taaffe's patent for roofing houses. The principle is that of X cramps and screws or nails. Each line of junction in the slates, or plates of glass, is accompanied below by a zinc gutter, across which the cramp is placed. The roofing is, as it were, snibbed down

upon the gutter. Near this model is an "improvement of Taaffe's patent slating," registered by Mr. H. H. Russell, Architect. In this each slate is secured at all the four corners, and any single slate can be removed and replaced without disturbing others. It is stated on the part of Mr. Russell, that "the tail or lower course, on Taaffe's principle, was secured only by screws through the surface of the slate to the timbers beneath;" but on his present model the mode claimed by Mr. Russell is adopted. The latter inventor has here also a model of his patent principle for suspension-bridges, in which the two chains on each side of every division cross each other, in curves descending from the tops of the adjoining piers, and crossing beneath to the lower part of the piers opposite. Russell's speedy lewis is also exhibited.

No. 121 is Neale's prize machinery for sweeping chimneys. The main principle of this machinery consists in the adaptation of india-rubber as an universal joint, and in such an arrangement of the ordinary apparatus, with jointed brooms of whalebone, as enables it to sweep chimneys of the most awkward shapes and sharpest angles, passing the soot as it ascends, but sweeping it down as it descends. The risk of injury to the mortar and brickwork of the chimney seems to be also diminished by the working of this apparatus, which we understand was invented by Mr. Every. Mr. Neale is the honorary secretary to the committee for awarding the medals for the best chimney-sweeping machinery. In connection with this apparatus, there are also prize plans and estimates for altering awkward chimneys.

Amongst the models are some plans of safety window-fittings. No. 126 is the model of Mackie's patent; No. 127, that of Roberts's. The object of these inventions is to enable servants to clean, or glaziers to repair, windows with facility, and without adopting the dangerous practice of standing outside the framework. In Roberts's the sash is held in its place only by brass grooves and sliders, to which it is bolted or snibbed. The withdrawal of the bolts enables the brass sliders to be run out of the grooves, when the sash is at once disengaged. Mackie's patent, it is stated, can be easily applied to windows of old as well as of new construction, and to sashes of any size. In this case, too, the sash is made to glide out freely, the weights being connected to the moveable piece left behind. No. 147 is Theobald's improved window sash, with alarm and fire-escape. Here the windows are so made that the sashes open like doors on hinges. The alarm is a bell, as suggested by ourselves, connected with the sash. The number of fire-escapes shows how alive the public mind is to danger from fire, and how desirable fire-proof buildings must be. We cannot say that much novelty appears in this department, so far as we could discover. One is in form of a scaling-ladder which issues from a chest like a Jack-in-the-box: we have seen a toy like it; but the idea is a good one. The ordinary fire escapes are rather unwieldy articles. Another consists of neighbourly preparations beforehand by help of wire ropes and baskets to be always ready hung on brackets from house to house and called the "Universal Fire Escape."

No. 151, Allen's registered fire-proof iron roof, is a model showing the principle applied to a roof of 50 feet span. The slates are tied, in fact, by iron wire, to iron rods, which constitute the framework of the roof. No. 156 is the model of an emigrant's house made of Morewood and Rogers's patent galvanised tinued iron, corrugated. It is made with a double body, to render it cool in hot climates or seasons, and warm in cold. No. 170, model of a portion of the roof of Dolfur church—model of a roof constructed with ribs of terra cotta—and model of stone or of terra cotta mullioned window—are models on a considerable scale, and are worth looking at. Near these is a section of the Tamar silver lead mine, in Devonshire, with its underground engine and shaft, already described in our columns. A model gas work (No. 171) was ticketed when we saw it—model dwelling for artisans. Here,

by the way, we may remark that there is not yet that current order in the numbering which we expect shortly to see: we had some difficulty, and spent no little time in vain endeavours to hunt out special numbers on the authority of the catalogue, and where they ought to have been found.

Amongst a variety of other notes which we made on this and other classes of exhibited articles, we observe one as to "hollow building blocks for the speedy and economical erection of harbours, docks, wharfwalls, seawalls, embankments, houses, warehouses, sheds, and other buildings, which can be manufactured of potter's clay, Stourbridge clay, brick and tile earth, cement, asphalt," &c.; also (No. 5) "Asser's blocks for building to cause equal distribution of pressure," and which are described on the model as of stone, iron, wood, &c., and "for construction of arches, bridges, tunnels, breakwaters, &c. &c., and for any other architectural purpose." The weight of the bulk, or of any superincumbent pressure, is thus designed to be distributed over and shared by the whole mass. The blocks are intended to interlock into an inseparable structure, the most novel feature of which consists in its forming arches, flat spans, &c., without a keystone.

BRISTOL SOCIETY OF ARCHITECTS.

THE first annual meeting of this Society was held at the Society's Rooms, Small-street, on Monday, the 5th. Mr. C. Underwood presided, and in the course of his observations said that Mr. J. S. Harford, of Blaize Castle, had accepted the presidency. The Chairman said,—"For the introduction and inculcation of the correct principle of Roman architecture in Britain, we stand, I believe, more indebted than we are aware to the learned men of the fifteenth and sixteenth centuries, who, in the reign of Elizabeth, and still more of James I., brought in with them from their travels a love of the modern Italian style of architecture, based on the principles and taste practised in the most palmy period of the Roman empire. Considering that architecture has been admitted to be and is indebted to men of science, learning, and research in all ages, it is, and should always be, the endeavour of this Society to cultivate the acquaintance of men of science and of letters, assured that by such a course they will acquire a more varied store of useful information, which may often be made to bear upon their peculiar art."

Mr. J. A. Clark, honorary secretary, then read the first annual report of the Society, which contained the following paragraphs:—

"Amongst other subjects, two of great importance have been under the consideration of the council, viz. competition amongst architects and amongst builders. With respect to the former a list of suggestions to committees advertising for designs has been drawn up, and though not by any means so perfect as they may yet be made, still, as they touch on those particular points in which experience has shown errors and injustice most frequently arose, it is hoped that their local use will lead to an improvement on the system hitherto pursued. The council are happy to be able to state that already their suggestions have been well received, and attended to in material points by a committee of gentlemen, who lately advertised for designs in this city."

An arrangement with the builders, associates of this society, to effect, if possible, a more equitable mode of proceedings in trade competition and other matters has also been made, which, it is hoped, in course of time, will lead to beneficial results: this, however, can only be expected where a general determination is shown to abide strictly by the means proposed, whenever practicable, and by mutual confidence in integrity of purpose, when unavoidable circumstances interfere. This being a subject of acknowledged difficulty, the more calls for calm and honest perseverance.

An union with the Society for the promotion of the fine arts, has been concluded, from which the following privileges are derived. The fellows are admitted in the academy on the same terms as their artist members, seven

being elected full and voting members of the general body of artists, one of whom will be annually chosen to act as representative of this society on their committee of management. The graduates and students of this society are admitted to all the privileges of the associates and students of the academy. In future exhibitions a space is to be reserved for architectural works exclusively. The opportunity thus afforded to architects to exhibit their designs, at the same time as the artists' pictures, is a great advantage, one which, it is hoped, will, on future occasions, be borne in mind."

WHO CAN MAKE A BUILDINGS ACT?

IT has been evident to us for several weeks past that Lord Seymour's Buildings Bill would not be proceeded with, and we have therefore avoided occupying space by its discussion. His lordship has now formally withdrawn it, and it seems pretty clear that we shall have no measure on the subject passed this session. The following communication was in type before the withdrawal of the measure.

Lord Seymour, in his Bill, attempts the impossible task of laying down rules of construction that shall be universally applicable. To succeed in such a task two things are requisite: first, that the art of architecture should have been perfected; lastly, that those who framed the regulations that are to govern construction should have completely mastered that art. As constant improvement in details of construction proves that art is still advancing, and as doubtless future advances far beyond what we can now perceive must be expected, it follows, that to fix rules of construction by law is to stop, or, at least, most materially to retard, that improvement which it is the interest of the whole community to have promoted. The Bill, however, would not only materially retard future progress, but would also prevent the adoption in London of new methods of building which have been proved to have, under certain circumstances, important advantages. For instance, walls of hollow brick may be built so as to be as strong as those of common brick, though thinner and cheaper: such are also warmer and drier. Whether or not their advantages are as great as their advocates expect, surely their use ought not to be prohibited by Act of Parliament; yet such would be the effect of enforcing walls "built so as to produce solid work," and of such thickness as the Bill prescribes, which would render the employment of hollow bricks not economical. The Bill proceeds upon the principle, altogether fallacious, or, at least, subject to innumerable exceptions, that the stability of a building depends upon the thickness of its external walls. Now, it is very evident that the internal walls may carry much of the weight, and, besides, by acting as buttresses, contribute very materially to the strength.

Again, walls may be built so that the weight shall be carried entirely by iron pillars, or other supports; yet, because the building is of a certain size, its walls must be of a certain thickness: further, it is clear that there is no invariable proportion between the size of a building and the strength necessary for its walls, nor between the strength of its walls and their thickness. Yet upon such presumptions the Bill is founded!

Again, the Bill prescribes numerous regulations with respect to flues and channels for the conveyance of heated air, which, as general rules, may be very proper, but to which exceptions ought to be freely permitted. For instance, it is quite right that no woodwork should be placed near to a channel conveying hot air; but such a rule need not be applied with respect to air which is only to be gently warmed, say by warm water or steam, and the prohibition of pipes conveying steam or hot water near to woodwork is a useless and vexatious interference, except indeed with regard to pipes in which water heated under pressure is to be conveyed. Such rules, unless exceptions be freely admitted (which, if a lawyer is to judge, is very unlikely), will not merely entail upon builders unnecessary expense and annoyance, but throw great obstacles in the

way of improved modes of warming and ventilating buildings, and thus retard sanitary advancement.

Though Lord Seymour professes that his Bill is to protect the health of the inmates of buildings, it contains few regulations of a sanitary nature, and most of these few are very unsatisfactory. For instance, though it prescribes a *minimum* width of new streets, it does not limit the height of the buildings in proportion to the width of the street, as is done by the local Act of Liverpool, which provides that no building shall be erected so as to exceed the width of the street in which it is situated. The observance of some such proportion is evidently requisite to secure the full benefits of light and ventilation. Again, the Bill provides that no room without a window towards a street or alley shall be inhabited. This provision will not prevent the erection of houses back to back, which cannot be properly ventilated, and are necessarily insalubrious. The construction of cellars for habitation is not prohibited, as they are in places where the Public Health Act is in operation, nor are the regulations for existing cellar-dwellings in the Bill so protective of the public health as those of that Act.

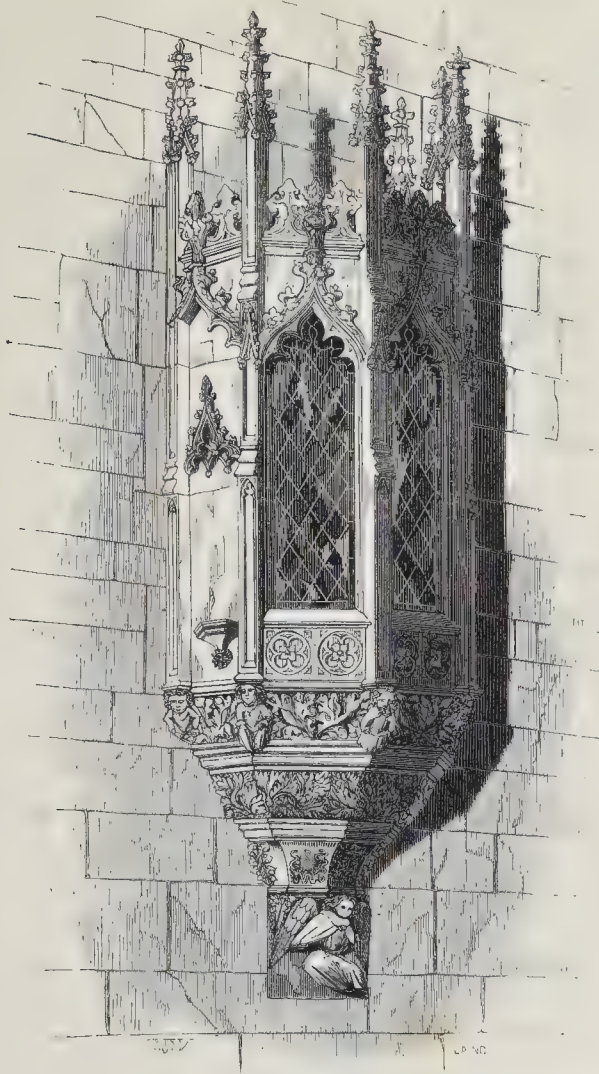
The provisions that no dangerous manufacture, such as gunpowder or firework making, and no noxious or offensive trade, such as bone, blood, or soap boiling, shall be commenced within 50 feet of any building, are too glaringly ineffective to be regarded as sanitary precautions. If any such businesses are carried on to such an extent as to be dangerous or noxious at all, the interval of 50 feet is no protection against the evil: if they are carried on to so small an extent as not to be dangerous or noxious, it is unjust to interfere with them. On either supposition the proposed enactment is absurd, and must be injurious.

It is clear that legislation of details on such subjects is impossible, without on the one hand enforcing conditions which in many instances must be oppressive and injurious, and on the other leaving uncontrolled evils of great magnitude. As it is unlawful to sell food which is unwholesome, so ought it to be unlawful to let a house which is insalubrious; but as penal legislation on such a subject would be attended with serious evils and inconveniences, the best way of effecting the object appears to be by enacting that no house shall be let or re-let unless, after examination by a competent and responsible officer, it be certified to be reasonably safe against the dangers of fire or of falling down, and in all respects fit for the habitation of human beings; that is to say, sufficiently ventilated, lighted, drained, and supplied with wholesome water. If, instead of the cumbersome, ineffective, and inordinately expensive legislation with which Lord Seymour threatens us, the simple principle were adopted of allowing every man to build his house in his own way, on the simple condition that, before being let, it shall be certified as to its fitness as a place of habitation, the progress of the art of building would not be needlessly impeded; useless expenses would not be imposed upon builders; novel and improved modes of construction would not be prohibited by Act of Parliament; while the public health and individual security would receive real instead of fictitious protection.

H.

FOUL AIR PUMP.—Mr. R. Simms, of St. James's-street, Liverpool, has invented a machine for pumping foul air from cesspools or the holds of ships. It has been tried before the officers of the health committee and several scientific gentlemen, at a huge tunnel midden under Corfe's buildings, Prescon's-row. Three night-men were, in the first instance, sent down into the tunnel, which was closed upon them, and the machine was then set in motion, which evidently discharged the foul air rapidly. The men stated that when they first went down, the foul air powerfully affected them; but as soon as the machine commenced working they felt a sensible relief; and when it had been in operation a short time the usual effects of the foul gas were not experienced.—*Abilon.*

ORIEL WINDOW, FROM JOHN OF GAUNT'S PALACE, LINCOLN



ORIEL WINDOW, JOHN OF GAUNT'S PALACE, LINCOLN.

IN the course of last year this very beautiful specimen of the art of the 14th century was sold by the owner of the house to which it belonged, and was bought by Lord Brownlow. It was then presented by Lord Brownlow to the county magistrates, who ordered it to be put up in a narrow court in the entrance of Lincoln Castle. It was placed in its new position under the care of Mr. E. T. Willson, architect, of Lincoln, well known to most of our readers.

SYON HOUSE AND NORTHUMBERLAND HOUSE.—The Duke of Northumberland, with much good feeling, is affording facilities for an inspection of Syon House, Isleworth, and Northumberland House, Strand.

ANNUAL MEETING OF THE INSTITUTE OF BRITISH ARCHITECTS.

THE annual meeting of the Institute took place on the evening of the 5th inst., at the apartments of the society, in Grosvenor-street. Mr. C. Fowler, V.P., in the chair. The report and auditor's account showed that the Institute had obtained an accession of seven fellows and sixteen associates during the year, and that the funds had improved, as compared with the corresponding period of last season, by the total amount of 123*l*.

The report contained a reference to the lamented loss of the Marquis of Northampton and Sir Robert Peel, honorary fellows, and of some foreign members. It regretted the want of interest taken by the younger members of the profession in the competition for the medals offered for the best essay and the best design in architecture, and reported that

there were no competitors whatever in either class. With a reference to the new Buildings' Bill, some praise of the newly-founded Architects' Benevolent Society, and the subscription to Dr. Layard and his researches, the report closed.

A discussion followed on the Buildings Bill, and on the other matters touched upon in the report, but of no great interest or importance.

The election of officers was the next business of the meeting, and on the motion to suspend "the bye-law 23, sect. v.," which declares "that no person who has filled the office of president for two years shall be again eligible to the same situation until a year's interval," an objection was taken that this motion was illegal, there being power in the charter and bye-laws to "alter, vary, and amend bye-laws," but not to suspend them. The Chair-

man overruled this objection, and the motion for suspension of the bye-law in question passed. On the motion for the re-election of Earl De Grey as president,

Mr. Tite said that he had no intention of opposing this motion, nor of proposing an amendment, but that he believed this constant re-election of the president, and the fact of the Institute thereby departing from the course adopted in almost all learned societies,—viz., that of electing a professional president—were the main causes of the want of interest evinced by the profession generally, and the leading members of it in particular, to the value and advantages of the Institute itself. He added the state of the present assembly as the best proof of his allegation, and pointed to the fact that though this was the most important meeting of the session, there were only twenty-four persons present, including two secretaries, and three or four associates. After some further remarks on this important subject, referring to the present situation of architecture as a profession, Mr. Tite concluded with a well-deserved eulogium on Earl de Grey, and by suggesting to the council that the office of “vice-patron” should be constituted, which Earl de Grey should be requested to accept permanently, by which arrangement all difficulties connected with the bye-laws would be avoided, and a position placed at the command of the Institute worthy the acceptance of any member of any profession, however distinguished.

A discussion followed, in which several members took part, approving of the proposition thus made; and, in conclusion, the chairman of the meeting stated, from his early connection with the Institute, as its first secretary, the causes which led to the present state of things, and the difficulties connected with any remedy, but promised the best consideration of the council to the subject. The elections and votes of thanks then proceeded as usual, and the meeting adjourned, at a late hour.

CHURCH BUILDING NEWS.

The chief corner stone of a new church and schools at Castle Hall, near Stalybridge, diocese of Chester, was laid on Monday in last week. The church will be in the English style of 15th century, and consist of a nave and aisles forming the body of the edifice, the nave rising higher than the two side aisles, and at the east end, in continuation of the nave, is a chancel of ample dimensions. Immediately opposite at the west end rises a tower, surmounted by embattled parapet, and four pinnacles at each angle. The roofs throughout are of a flat pitch, and the walls finished with a plain parapet. Internally the main body of the church is of a parallelogramic form, the nave being separated from the aisles by six pointed arches, supported upon five piers on each side. The chancel, which is of equal width with the nave, is entered by an ascent of two steps, and separated therefrom by a chancel arch. The church will be lighted by the windows of the aisles upon each side, and the clerestory by the smaller ones over the apex of each arch. The timbers of the roofs, which are of a simple construction (the principals resting upon stone corbels), will be exposed to view, and together with the pews, seats, doors, &c., will be stained dark, in imitation of oak. The interior will be illuminated by gas. The body of the church is 70 feet 9 inches long by 50 feet in width internally; the chancel 30 feet long by 19 feet 6 inches wide. There will be accommodation for 800 persons, including children. The churchyard will be enclosed by an iron railing of simple character. The architect is Mr. E. H. Sellard, of Manchester, and the contractors are Messrs. Eaton and Hollis, Ashton-under-Lyne.—On Monday in last week the foundation-stone of a new Baptist chapel was laid at Claremont-terrace, Bridge-street, Strangeways (Manchester). The chapel will be in the pointed style, of brick with stone dressings, and seating about 350 people without side galleries, or about 600 in the event of these appendages being found necessary. Under the chapel will be school-rooms to hold nearly 400 children. Mr. Lane is the

architect: Messrs. Haywood and Horsfield are the builders.—St. Peter's Church, Chorley, is just completed. It has occupied one year and seven months in building. The architect is Mr. C. Reed, of Liverpool; and the contractors are Mr. John Chester, mason; Mr. H. Hitchen, joiner; Mr. George Whalley, plasterer; and Mr. William Livesey, plumber, all of Chorley. The church is situated to the north-east of the town, and built upon elevated ground. The architecture is Early English. Externally the building is of small flag stones, with ashlar coins, dressed, from the neighbouring quarries. It is capable of accommodating nearly 800 persons, and has been completed for a sum not exceeding 2,000*l*. It consists of a nave, aisles, chancel, north porch, vestry, and western turret. The length of the nave is 66 feet, by 24 feet wide, and 47 feet high to the ridge of the roof. The aisles are 64 feet long, and 12 feet high. The chancel is 24 feet long and 18 feet wide. The seats are all open. A small gallery is erected at the west end, the width of the nave. The roof is of open-framed timber work, which, with all the wood work, is of stained oak. The roof of the chancel is boarded and ornamental. The windows are lancet, mostly in couples, divided by low buttresses. The porch is situated one bay from the west. Above the aisle, the interior is lighted by a clerestory, having single lancet windows. There is a central doorway at the west end, two long lancet windows, and a *vestica piscis*, surrounded by dog-tooth ornaments in the gable. The apex is surmounted by a floriated cross. In the angle formed by the projection at the nave beyond the aisle is placed a bell turret, surmounted by a gilded cock. The turret is octagon, and perforated by decorated arches, surmounted by gables. The glass of all the windows is deepened in shade, the effect of which is a subdued light. Closely contiguous to the church on the north side is a spacious cemetery, walled round, the land for which was given by Lady Hoghton, of Astley Hall. The requisite funds for the erection of the building have been raised by subscriptions and grants from charitable societies.—The foundation stone of Greenfield Independent Chapel, Manningham, was laid on Monday in last week. The edifice will be in the early English style of village architecture, 68 feet in length by 34 in breadth, the height to the ridge of the roof being 42 feet. The whole of the timbers of the roof will be exposed to view. There will be two entrances. The building will be lighted by seven coupled windows, two single windows, and a three-light window at each end. The north end is to be surmounted by a turret. A gallery at the north end will accommodate 230 children, and 405 adults will be accommodated on the floor, making a total of 635. It is intended to have open benches on the floor. The gallery and body of the chapel are to be heated with hot water, and provision has been made for ventilation. It is also intended, until school-rooms are erected, that one-third of the chapel and gallery should be partitioned off with moveable wooden slides, and used for a Sunday-school. The architects are Messrs. Andrews and Delaunay, of Bradford. The cost of the chapel, exclusive of land, is expected slightly to exceed 1,000*l*.—The churches of St. Luke, Morton, and St. Mary, Riddlesden, parish of Bingley, were consecrated on 23rd ult. The consecration of St. Mary, built more than three years ago, was delayed; in order that St. Luke's might be set apart first, and then become the mother church of the district.—The first stone of a Primitive Methodist chapel was laid at Hull on Good Friday. The exterior is to be in a modified Italian style, with brick pilasters, and stone cornices, architraves, and pediment. Internally it will consist of a floor and gallery, united to seat 1,100 persons. Extensive school and vestry-rooms are placed beneath the chapel. The dimensions of the building are 78 by 60 feet, with orchestra at the end, the height of which from the floor to the ceiling will be 38 feet. The architect is Mr. Sissons, and the contracts have been let to Mr. Musgrave and others.—On Friday in

week before last, the foundation stone of the New District Church, dedicated to St. Mark, in the parish of St. Pancras, Middlesex, was laid in the Albert-road, Regent's-park. This is the seventh new church recently founded in the populous parish of St. Pancras. The cost of the present erection will be about 7,000*l*, which it is proposed to raise by subscription, and to which 3,000*l*. have already been contributed. The church will contain sittings for 2,000, two-thirds free.—The new church of Ulley, parish of Treeton, near Rotherham, erected at the sole cost of Sir C. Wood, Bart., M.P., has been consecrated.—The foundation-stone of St. Paul's Church, Kersall Moor, Manchester, was laid on Monday, in last week. The building will be erected from plans supplied by Mr. A. Trimen, architect. The style will be perpendicular. The tower is a composition from Magdalen, Oxford, and Carisbrook, in the Isle of Wight, with the addition of a lofty spire. The material is stone for the whole of the walls and spire, and fine stone for the dressings. The interior is lined with brickwork. Its extreme length is 135 feet; the width (exclusive of the transepts), 67 feet. The tower and spire will rise to the altitude of 150 feet. Accommodation is to be furnished for 1,280 persons; and one-third of the sittings will be free. Mr. James Holmes, of Lancaster, has undertaken the building contracts. The total cost of the edifice is estimated at about 6,000*l*.; of the parsonage-house, 2,500*l*.; and 1,000*l*. is necessary for the endowment. Mr. R. Gladstone contributed 1,000*l*. as a tribute to the memory of his deceased wife.—On Monday, in last week, the bishop of the diocese consecrated the church of St. Michael, Gloucester, which had been rebuilt from the foundations, under the superintendence of Messrs. Fulljames and Waller, architects; the cost of restoration having been defrayed by voluntary contributions.—On Tuesday, in last week, the new church of the Holy Innocents, at Highnam, was consecrated by the same bishop. This church, with parochial schools, has been erected and endowed at the sole cost of Mr. G. Parry, of Highnam-court, as a memorial of his wife and children, and mainly for the free use of the poor of the immediate neighbourhood. The site for a parsonage-house has been laid out in harmony with the other buildings. The church, consists of chancel, chancel aisle, nave, and aisles, with lofty tower and spire, built under the superintendence of Mr. J. Woodyer, architect; and no expense, it is said, has been spared by its founder.—On Wednesday following, the new church of Hucclecote, in the parish of Churchdown, near Gloucester, was consecrated. This poor parish (value 88*l*. per annum) is a perpetual curacy in the patronage of the Dean and Chapter of Bristol, who receive the tithes, amounting, it is said, to more than 700*l*. per annum! The little church has been built by voluntary contributions, and endowed by the public, with 30*l*. a-year. The Dean and Chapter of Bristol have contributed 100*l*. towards the building.—The new church lately consecrated at Warnley, in the parish of Siston, consists of chancel, nave, and aisles, west tower, south porch, and north sacristy. The style is decorated. The material is the blue stone of the neighbourhood, with Combedown dressings, the roof of red stone tiles. The east window is filled with glass, by Mr. Hudson. It is of three lights, and represents the Nativity, Crucifixion, and Agony. The tracery in the head contains only geometric figures. The tiles throughout, says Felix Farley, “are Minton's, who seems to have secured a monopoly in this essential article of church furniture. Unfortunately a monopoly always entails exorbitant prices, and Minton's tiles are enormous. They are very beautiful, but that is no reason why poor churches should be debared the possession of them. Why should plain black or red tiles be 1*l*. 4*d*. per foot, when any manufacturer could make them for 6*d*.?” The roof is open timber throughout. In the nave and chancel the collars are strengthened with curved braces. In the aisles tie beams are employed. The timber is red deal stained, and the spaces are plastered. The same writer asks, “Why do not modern architects board

behind the rafters? The white plaster quite destroys the dark shadow of an open roof. At St. Mark's, Easton, this is partially avoided by a slight stencilling on the plaster, but the dark wood would have a far finer effect, as may be seen in any old roof; and then the principal beams might be relieved by a little illumination." The seats are all open, and the greater part are appropriated. The architect is Mr. Harrison, a cousin of Mr. Pelly, the late rector of Siston, who projected the undertaking. The site was given by Mr. Davidson. The east window is his gift. Upon Mr. Pelly's death, his widow and family carried on the work; and to the 500*l.* with which he had headed the subscription list they added other handsome donations. The first stone was laid by Mrs. Dickenson, of Siston Court, who placed under it a portion of the rock of Mount Zion, provided for the purpose by the late Vicar of Bitton, who has also by advice and opinion been instrumental in carrying on the building. —Bosbury church, Herefordshire, has been restored and reopened. —The committee for the restoration of St. Botolph, Boston, met on Friday week, to receive plans for the extensive work to be effected in the church. There were ten plans presented, and two or three tenders for warming the church. The selection mentioned in another place was made on the following day. The whole of the plans will be exhibited at the Assembly-rooms to the subscribers.

HOGARTH'S TOMB IN CHISWICK CHURCHYARD.

SURELY a tomb containing such names as Hogarth, Garrick, and Thornhill, is worth preserving.—at all events, the beautiful lines inscribed on it by Garrick to the memory and talent of Hogarth are. At present neither the one nor the other is *scarcely visible, and, unless a person knew the tomb, it would be passed unnoticed.* It would reflect great credit on those connected with the church and parish to reinstate the inscriptions at so trifling an expense as it would cost. These are Garrick's lines inscribed on the tomb:—

"To thee, great painter of mankind,
Who reached the noblest point of art,
Whose pictured morals charm the mind,
And, thro' the eye, correct the heart.

If genius inspire thee, reader, stay,
If nature move thee, drop a tear,
If neither touch thee, pass away,
For Hogarth's honor'd dust lies here.

"D. GARRICK."

RUSKIN AND HIS REVIEWERS.

IN an article on the "Stones of Venice," in the new number of the *British Quarterly*, we are told to look for important changes as the almost inevitable results of Mr. Ruskin's philosophical criticisms and novel doctrines in architecture. "It is impossible," says the writer, "that the modern systems of architectural practice and criticism can survive this blow. We venture to predict that some of the laws herein promulgated will be loudly and almost universally protested against by professional architects, and as universally, though silently, and perhaps tardily and sullenly, adopted by them."

It does not at all appear, however, that Mr. Ruskin's architectural writings have as yet made much impression upon "professional architects," or that they give them any concern. Even if disliked by professionalists, they are not protested against by them,—certainly not loudly, or indeed openly in any way. Those belonging to the profession take Mr. Ruskin's attack on almost every thing connected with established theory and practice, remarkably quietly; probably, because they are of opinion that if it be left to itself, his doctrine will fall to the ground, and be, not forgotten, remembered and referred to only as the visionary speculations of one who shows himself determined to be original, *à toute qu'il coûte*. It is possible, however, that their silence will be differently interpreted,—be attributed to their inability to justify their present practices, or to gainsay any of the accusatory and condemnatory argumentations

directed against them by Mr. Ruskin, who has set himself up for being an infallible authority in matters of art and sound taste, and is therefore likely to pass for such among the many.

That such would be the case is anticipated by the writer in the *British Quarterly*; and the consequences thereupon ensuing are briefly pointed out as follows: "It is among the 'unlearned' that Mr. Ruskin will find his first proselytes; and to these, indeed, it is that he particularly addresses himself, well knowing that the amendment of the professional architect cannot be better secured than by amending the taste of his paymaster, the people. Modern architects commonly evince supreme contempt, not only for all unprofessional opinions concerning the more difficult questions of construction, and distribution (?), but also for all 'amateur' opinions concerning the eminently popular question of architectural effect. This is a trick of the craft to conceal their incompetence and bad faith, and its success hitherto has been owing to the foolishness and false humility of the people, who have not done more wisely in this matter than if they had believed a botanist's assertion of the impossibility of being sensible to the beauty of a flower without a professional acquaintance with botany;" against which last remark nothing can be urged.

It appears, then, that Mr. Ruskin's doctrines are likely to gain with those who virtually possess influence over the destinies of architecture, although they do not at present care to exercise it,—being content to follow, instead of directing and leading; and his doctrines are calculated to produce such a complete revolution in architectural study and architectural taste, that a very great deal of what has hitherto been considered orthodox with respect to both, will become obsolete, and be rendered a dead-letter. He strives hard to put us out of conceit with all the architecture of our country, whether it be mediæval or modern. According to him, the style of the new Houses of Parliament is no better than Gothic put into a strait-waistcoat of Perpendicular lines! While as to our public structures, generally, they all exhibit and exemplify in a greater or less degree "the baseness of the schools of architecture, and nearly every other art, which have for three centuries been predominant in Europe."

So far, too, from our endeavouring gradually to wean ourselves from these schools, and shake off their influence, we have of late taken them again into special favour,—as Pall Mall can testify. When, lo! comes Mr. Ruskin, and tells us we are all utterly wrong; and, to increase our mortification, that equally dogmatical and insulting judgment is, if not actually applauded, suffered to pass unchallenged and unreprieved; none of his numerous critics caring to call attention to such delicate points, or, indeed, to anything that would require them to dissent from the dicta of one whom they would have us regard as an oracle.

It is not to be denied, that the spirit of what was Renaissance, when it first came up, has been stifled by arbitrary rules and the routine founded upon them. It has been checked, chilled, and benumbed; wherefore it requires to be now awakened and re-invigorated, and to be set at liberty again, in order that it may now do for us what it did for its originators about four centuries ago, before it became systematised and formalised. It certainly calls for correction, but it is also very susceptible of improvement. At any rate, it does not deserve the unqualified and sweeping vituperation bestowed on it by Mr. Ruskin, who very cavalierly, and somewhat savagely too, denounces it as "the pestilent art of the Renaissance;" which summary condemnation convinces us of nothing more than his own decided antipathy to it. And surely there must be something very peculiar in that gentleman's idiosyncrasy when we find him, on the one hand, so furiously intolerant of all Renaissance and Palladianism, and, on the other, so dotingly enamoured of the dual palace, and St. Mark's at Venice, in which last he is pleased to behold supreme loveliness!—the very last quality which

any one else would ever think of attributing to that grotesque pile.

We must not tamely allow ourselves to be brow-beaten by Mr. Ruskin, or suffer his crotchety fancies to upset all previous architectural teaching. Crotchety he is even as a writer; for his style is frequently the very reverse of what is suitable for conveying didactic information and criticism, it being eminently fantastic, and not a little mystical and studiously obscure also. Nor is it even original, since it is only Carlyle, and his un-English mannerism, at second-hand.

ZETA.

THE LATE JOHN HENNING.

JOHN HENNING, the restorer of the Elgin Marbles, is no more. He was born in Paisley, on the 2nd of May, 1771, where the genius of art found him at the carpenter's bench, and "threw her inspiring mantle over him." From his native town, Henning was induced, in 1802, to repair to Edinburgh, where he acquired, during nine years' residence, considerable distinction,—a distinction all the more meritorious from having been fostered and encouraged by the patronage and friendship of Jeffrey, Horner, Murray, Brougham, Scott, and others, who, at that time, adorned the Scottish capital in the world of letters, and of whom he has left the "living form and pressure" in his medallions and busts. A visit to London, in 1811, brought the Scottish sculptor in contact with the Elgin Marbles. Fascinated with these noble fragments of Grecian sculpture, he succeeded in obtaining, contrary to academic formula, permission from Lord Elgin to draw from them. This circumstance fixed him in the metropolis, and after twelve years of unremitting assiduity to their restoration, the Parthenon friezes sprung from his hand at once the glory of art and the admiration of the age. No sooner, however, had the friezes of the Parthenon appeared, than piracies of them, as much injurious to art as disreputable to humanity, deprived the indomitable artist of nearly all the profits of his labour, tending, besides, to damage his reputation from their utter imperfections. To his Elgin friezes succeeded the cartoons after Raphael, works of like transcendent merit, in which is faithfully preserved the truth of the original, and which elicited the encomiums of Flaxman and Canova. By these reproductions of Grecian and Italian art, the fine arts have received an invaluable assistance.

Thus has that flame, kindled in obscurity, but gathering as it grew fresh lustre, as much from the difficulties surrounding it as from the noble sources by which it has been fed, closed its brilliancy amid the halo of a reputation seldom attained in a position so unfavourable to the development of artistic talent.

CITY TOLLS.—In the good old times, "when London was paved with gold," I opine—they had a law (and have it now, doubtless) that no cart, wain, or carriage should presume to traverse London streets with any iron tier on the wheels, and it is not very far-fetched to imagine, when that law was modified, it was done so as a favour to the outside barbarians that they should pay a toll in lieu of coming in untiered. This toll still remains: whether you take them in food, or buy their wares at a good profit to them, still, *in and out*, the toll must be paid. This is the time of liberal gifts: St. Paul's has given up the twopennies, the Abbey the monument fees, and, let me be able to say, the Great City has given up the toll on carriages, to, at least, the dwellers within the circuit of five miles of their City—a little for love, and the rest for justice—seeing their carriages do not pay toll to any of the outsiders. This is but fair play; and fair play hurts nobody.—WESTMINSTER.

* Since writing the above, I see by a notice of it in this week's *BUILDER* (May 3), that a publication has appeared, in which, it seems, Mr. Ruskin is taken to task, and Renaissance is defended against his indiscriminate censure of it as altogether worthless, and even pernicious. Still, what has been said elsewhere in opposition to Mr. Ruskin's doctrines, need not stand in the way of the remarks which I here offer.

PANEL, ARMY AND NAVY CLUB.



PANEL, ARMY AND NAVY CLUB.

We add to our illustrations of Messrs. Jackson's *papier mâché* decorations at this club, the annexed panel from the morning-room.

RAILWAY JOTTINGS.

A SHOCKING accident occurred on Wednesday in last week, in the Sutton tunnel, on the Lancashire and Cheshire Junction line. This tunnel is upwards of a mile in length, under the district of Sutton-on-the-hill, near the Frodsham station. Three trains were employed with passenger traffic connected with some races at Chester, and running in the same direction almost simultaneously, a dangerous circumstance perfectly well known beforehand. The first train stuck in the tunnel, from slipperiness in the rails, it is said, but let us add also from want of such a 'simple remedy in such a state of things as powdered chalk, which has been found completely to obviate slipperiness of rail. The second train, having a careful driver, came slowly up without mischief done, but the third drove recklessly into both at a speed of 25 miles an hour, smashing carriages and killing and maiming in the midst of the darkness in the tunnel. Five passengers were killed on the spot, two died shortly afterwards, many were wounded, and doubtless many will never recover from the shock. The want of a corrective to the slipperiness of the rails is not the only blameable neglect here. There must have been no signals, either telegraphic and connected with the tunnel, or along with any one of the trains, or at least such signals as there were must have been neglected. We hope that an example will be made of the really guilty, whoever they may be, and that one of the criminals will not be deemed a sufficient scape-goat for others who may be still more guilty.—A grand banquet is to be given to Mr. R. Stephenson in honour of his engineering skill and success in carrying out the Holyhead railway and the tubular bridges.—There is a singular process being carried on at present at the Britannia-bridge—namely, roofing the tubes, so that the tops be kept free from wet and the consequent atmospheric action. A complete ridge is placed

over both tubes, with a walk in the centre, and the framework is all covered over with cloth rendered impervious to the wet. It will require about 7,000 square yards of cloth to accomplish the work.—The construction of the great central station at Birmingham is at length begun. Plans have been prepared, specifications are in the hands of contractors, in the space of a month the works will be in full operation, and before the end of the year there is every probability, according to the local *Journal*, that the Birmingham traffic from every quarter of the kingdom will centre in New-street. The lines to be accommodated under the immense roof are the London and North-Western, the Midland (including the Birmingham and Bristol branch), the Shrewsbury and Birmingham, the South Staffordshire, and the Stour Valley, the station thus acting as a centre from which will radiate communication with every part of the country. It will, however, be entirely a passenger station. The carriage-drives will be paved, as the approach is to Euston-square station, but all thought of a magnificent structure is abandoned. The front towards the approach to New-street will be in a plain and simple style of Italian architecture. It will consist of a colonnade and two wings, to be pointed with stone. There will be no ornamentation or pretension to architectural effect beyond that which may result from correct proportions and an appearance of substantiality. In the centre of this building will be the various booking offices, and on either side are arranged a double set of waiting rooms, and a refreshment room, extensive suites of offices adjoining. The general egress from the station will be by Great Queen-street. The whole of the vast area of station will be covered in; but it is not yet settled, it is said, whether the roof is to be in one span of 200 feet, or in three. By the conditions, the contractor will be required to finish the whole of the works by 31st December next, under penalty of 100*l.* per week for every week's delay.—Two workmen at the South-Western railway works at Nine Elms were fined 20*s.* and costs last week, or be imprisoned for 14 days, for striking their foreman. The workmen had been summoned for breach of

contract in an alleged combination to abscond from work.—Disturbances have arisen on the Bangor and Carnarvon line, where the English and Welch navies have combined against the Irish, and struck work till the Irish be discharged.—The Emperor of Russia has approved of the plan submitted to him for a railway between Warsaw and St. Petersburg. The expense will be, it is estimated, about 80,000,000 of roubles (rouble somewhat more than four francs). The works on the railway between St. Petersburg and Moscow are urged on with great rapidity, and it is believed that the whole of this important line will be open to the public on the 1st November.

BATTY'S HIPPODROME, KENSINGTON.

THE Hippodrome which has been formed for Mr. Batty in the Kensington-road (at the corner of Victoria-road), being the first construction of the kind which has been put up in the metropolis, we give a plan and view of it, together with a plan and section of the riding-school and stables attached. From the first it will be seen that the longest diameter of the oval is 360 feet, the shorter diameter 260 feet. The size of the posts which carry the roof is 6½ in. by 6½ in.; sill, 9 by 3; purlins, 6 by 4; rafters, 6½ by 6½; braces, 6 by 4; and back rails, 6½ by 6½; the cornice and fascia are together 6 feet deep.

The arrangement of the stabling, with the riding school in the centre is very good. The annexed section and plan will explain it.



The scantling of the timbers of the roof over this part of the establishment is as follows: viz. binders, 9½ in. by 4½ in.; king posts, 9 by 4½; principal rafters, 7 by 4½; struts, 4 by 4½; common rafters, 4 by 2½; purlins, 6 by 4.

The plan and section of the stabling are drawn to a scale of 32 feet to an inch: the plan of the hippodrome to a scale of 100 feet to an inch. The sectional view is on the line A. B. marked on the plan.

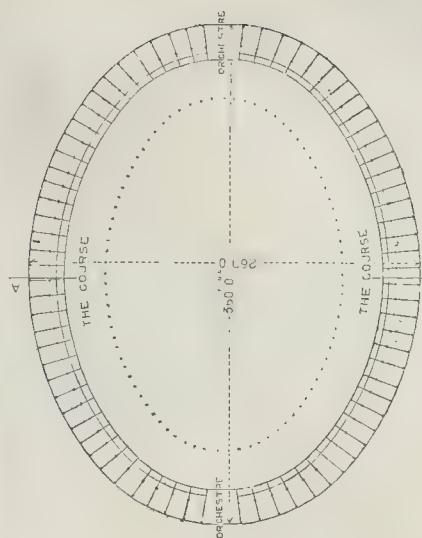
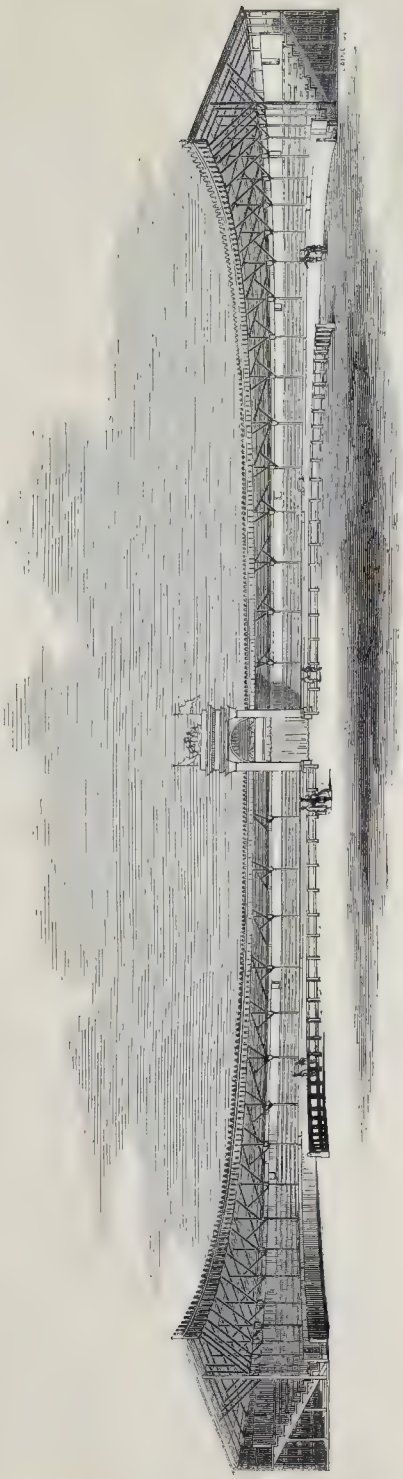
The top and back of the enclosure of the course is entirely covered with slate on boarding. The colours employed in decorating it are blue and white. The entrance to the course from the stables is through the opening enclosed by curtains, seen in the centre of the view. The gallery above is for the musicians: there is a similar gallery on the opposite side.

Mr. Taylor was the architect employed; and the works were executed by Messrs. Haward and Nixon, under the superintendence of Mr. Whittaker, in little more than a month.

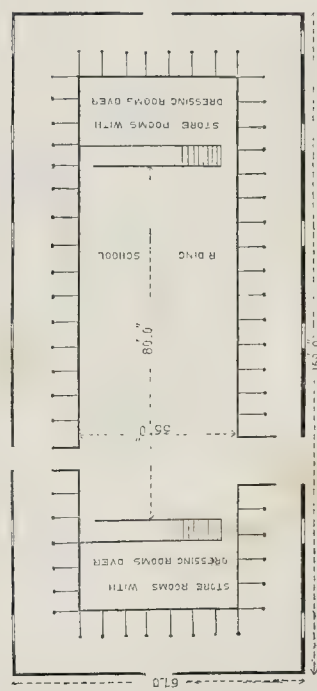
Of the stirring entertainments provided here by Mr. Batty, we may find another opportunity to speak.

A GROWING TOWN: PROSPERITY IN IRELAND.—While in several of the large towns in Ireland, scarcely a mason, bricklayer, or carpenter is at work at this season, we, in Belfast, are in a position to give employment to a large number of useful and steady hands in connection with the building trade. There are now completed, in course of erection, or about to be erected, the sites having been selected within the last few months, no fewer than from 300 to 400 new houses. This, at the outset of the building season, promises tolerably fair. In the course of a month from this, there will not, we are credibly informed, be a smaller addition to the above than from 300 to 400 new houses; about one-third of which will, we understand, be the speculation of one of our merchants.—*Belfast News-letter.*

BATTY'S HIPPODROME, KENSINGTON.



PLAN OF HIPPODROME.



PLAN OF STABLES, &c.

AMENDMENT OF ARCHITECTURAL COMPETITIONS.

THE Architectural Association being anxious to carry into effect that which was proposed in their report upon architectural competition, while London is full, have called a public meeting, by advertisement in our columns, upon this important subject. To this we would strongly call attention. The movement has been approved by many members of the Institute, who feel that something ought to be done now, so the profession will, as it were, set their seal to the present system. The younger part of the profession look for some disinterested support from the elder members of it to whom competition is not so necessary, and will, we trust, find it.

FOREIGN INTELLIGENCE.

Berlin.—The inauguration of the great equestrian statue of Frederic of Prussia will be commemorated by a medal, executed by order of the King. The Academy of Arts will celebrate this event by the execution of a bust of the sculptor Rauch, the postament of which will be adorned by a relief from a design of Cornelius. It represents Minerva's birth from the skull of Jove, whereas Hephaestus lends his aid. This monument to the great Prussian sculptor will be placed in the meeting-room of the senate of the Academy of Arts.—The Kroll establishment, lately destroyed by fire, is already rebuilding, and the plan promises a more splendid establishment than the former. The theatre is to be placed in the saloon towards the garden. Around the whole a colonnade of wood (!) is being constructed, for protecting the public against any sudden change of weather.

France.—Another Legacy for the public good.—M. Hème, a merchant, of the little town of Mer (Loire-et-Cher), lately deceased, has left his whole landed property for building, at his native place, a hospital, endowed with an annual income of 20,000 francs; an annual rent of 1,500 francs to be employed by the municipal council of Mer, and another similar annual sum by the commune of Herbilly.

Art-Stir at Berlin.—As soon as the statue of Frederick the Great has been inaugurated, a great act, as it were, of Berlin art-tendency will have been accomplished. Then, four of the groups on the Schlossbrücke will be put up, of which one has been sculptured by Wolff at Rome, the other three are in the hands of Messrs. Wickmann, Drake, and Möller. The staircase of the great theatre will soon be ornamented by the two geni of Professor Tieck, riding on a panther and a lion. Four groups modelled by Professor Fischer will be placed around the Column of Victory on the Place of Alliance. Ranch is engaged with the statues of Generals York and Gneisenau, which will be placed at the sides of the Blücher monument.

Prague Art-Union.—On Easter Monday the annual exhibition of the "Society of Patriotic Art Friends" was opened to the public. The reports are unfavourable, and speak of an utter deficiency of plastic works, and a very scanty display of works from home artists. From Munich, however, some good pictures have been sent, like those of Peter Hess, Heinlein, Morgenstern, and a great many more. The Academy of Düsseldorf was also duly represented by Mevius and Schirmer; and Hübner sent his famous "Silesian Weavers," a sort of Communist work of art. From Vienna, Rahl's huge canvass, "Reception of King Manfred in Lucrecia," attracted notice.

The new Picture Gallery of Dresden.—Who does not know the old, nearly corroded two-flighted stone staircase of the so-called *Stallgebäude* (stable-house) at Dresden—the aged abode of so many art-jewels and treasures? But already rise high up the walls of the new Museum, which will be contiguous to the Zwinger, combining the whole into one huge square. In two years more the transfer of pictures will have been accomplished, a thing rather urgent, as last summer one of the (double) ceilings of the old gallery fell in, and caused the closing of the establishment for a week. It is contemplated for apportion an

especial space to the Madonna del Sisto di Raffaele, probably the first picture in the world. It is said, that a German artist has proposed to Queen Victoria to make a copy of the Sixtine Heavens-Queen, for London, to be placed also in an especial building, richly decorated. But the execution may meet with some difficulty, as the original picture is promised for eight years to come to different copying artists, according to a certain turn.

Reggio.—The theatre of this city is burnt to cinders, and nothing but the walls left. It had been built in 1740 and 1741, by the architect Antonio Cusini, after the plan of those of Verona and Modena, as it is said, in the short time of 180 days. It contained 160 loggie (boxes), and would accommodate upwards of 1,000 persons.

The first Annual Exhibition of Fine Arts at Cape Town, Cape of Good Hope, 1851.—It must be gratifying to the founders of the Art-Union in England to perceive, how the humanizing results of art are spreading hence over the whole world. According to an article in the *African Journal* (20th February last), this first gathering of African art comprises 509 articles of paintings, models, casts, and medals. The names of the prominent artists are, Messrs. Bell, Bowles, Christian, Chiappini, McDougall, Newman, Steedman, and "a lady." Our contemporary also duly acknowledges the judgment and discrimination of the gentlemen forming the committee, who have arranged the subjects placed under their care with much skill and effect in a building of the governor's garden. In the same number of the *African Journal* is also a leading article, inscribed "A Word or two for the Fine Arts," whence we gather, that the latest works on art and architecture published here, are known and appreciated at even this distant point of South-Africa.

Art-Exhibition of all Nations, Brussels.—The plans for the building about to be erected in the yard of the *Musée d'Industrie* for the purpose of placing therein the works of art of the forthcoming great exhibition, have been laid before the Minister of the Interior. The buildings will form a parallelogram in the shape of the *Palais d'Industrie*, with a front on the Place du Musée. To the four principal galleries which occupy the four sides of the parallelogram, two transversal galleries will be added: the latter will be divided in compartments, especially devoted for pictures of small dimensions. The galleries will be built of wood and lighted from the roof. The transversal galleries will have a lower roof. The six galleries forming the Exhibition will extend to 4,000 metres, which is supposed to be adequate to the greatest amount of art-works likely to be forwarded. These temporary buildings will communicate with the *Palais d'Industrie*, to enable the public to inspect, at the same time, and without leaving the building, the Museums of Industry, ancient pictures, natural history, and the national library. It is stated that Messrs. Delacroix, Diaz, Couture and other French artists will send works to this world-gathering of art in the Belgian capital.

BREACH OF CONTRACT BY A BUILDER.

HICKS AND OTHERS v. BOREHAM AND SON.

THIS was an action brought at Clerkenwell County Court, on Monday, May 5, before Mr. Moody, by the plaintiffs, who are the churchwardens and overseers of the parish of Hurst, in the counties of Berks and Wilts, against the defendants, who are builders and contractors, of 26, Wilmot-street, Brunswick-square. The plaintiffs sought to recover the sum of 12l. for money paid to Messrs. Humphreys and Thirkil, builders and the contractors for the metropolitan sewers, for relaying a drain to the common sewer, which had previously been contracted for by the defendants, and which it was alleged was done in an unworkmanlike manner.

Mr. Spencer, for the plaintiffs, said that his clients were trustees of a charity called "Hicks's Trust." That belonging to this trust were two houses in Grove-street, St. Giles's, Nos. 21 and 22. That in the year 1849, the authorities of the

parish of St. Giles, having had it represented to them that the houses in question were not in good condition, and required draining, called upon the trustees of the charity to carry out the provisions of the Sanitary Law. He, Mr. Spencer, as solicitor to the trust, entered into a contract with the defendants to make the alterations in the drains at the rate of 3s. 6d. per foot, for which the defendants agreed to make a complete job of the drainage to the common sewer. It was at first contemplated to carry the sewer into George-street, but it being ascertained that the Commissioners of Sewers would have demanded 20l. for license so to do, the idea was abandoned. It was then settled to carry the drain to the next house, which communicated with the common sewer. When the work was done, he paid the defendants 32l. 9s. 9d. Shortly after, it was found to be so badly done that the tenant of the house No. 21, who was a baker, was flooded out of his bakehouse by the soil from the drains. Upon this being discovered the defendants came and made some experiments. They said the difficulty arose at the entrance of the sewer, which being out of their province, not being their work, they could not rectify. Upon this the Commissioners of Sewers were applied to, the surveyors of whom pronounced it defective and bad work, and at once set their contractors to relay the drains.

Witnesses having corroborated the above, Mr. Spencer called Mr. George Frederick Fry, surveyor and clerk of the works to the Commissioners of Sewers, who stated that the cause of stoppage was the fixing a 9-inch drain-pipe to a 6-inch drain-pipe, and from the bad levels of the drains as well as their tortuous direction. The drains were so badly constructed, that he at once ordered their contractor to take them up. Had there been a great supply of water it would not have prevented the stoppage. Could not tell who laid the 6-inch pipes down, but they were a very common pipe, and decayed: the 9-inch pipes were very good.

An attorney, who appeared for the defendants, said his clients could not be answerable for other people's work. That he should prove these 6-inch pipes were not laid down by the defendants, and, furthermore, that the work was done in a workmanlike manner.

Mr. Childerhouse, foreman to the defendants, deposed to having superintended the job, and that he had not the least notion of the diameter of the pipe he affixed his 9-inch pipe to. Had there been a proper supply of water, no stoppage would have ensued. Had had much practice in laying down pipes and drains, and had no hesitation in swearing that the drains in question were done in a workmanlike manner. The 6-inch pipes were not laid down by them.

Mr. Humphreys was then called to prove the reasonableness of his charge, and gave it as his opinion that the work was not done in a workmanlike manner. That since he had relaid it, there was no complaint, although less water was used than previous to his reconstructing the drains. His Honour said it was clear that the defendants were not liable for faulty work done by other persons. It was proved that the stoppage arose from the 6-inch pipe, and that the defendants did not lay that down. With respect to the expense incurred in relaying, that he thought the defendants should be absolved. With regard to that portion of the drain which the defendants made, it was his opinion, from the practical evidence of Mr. Fry and Mr. Humphreys, that it was so badly executed as to make it indispensable to reconstruct it. As no damage had been proved to have been done, he thought a verdict for 3l. would meet the merits of the case.

Verdict for 3l., and costs of four witnesses.

The case excited much interest amongst the building profession, the Court being crowded with members of various firms. It was rumoured that the baker whose bakehouse was flooded with the soil, intended to sue Messrs. Boreham for the damage done to his flour and business.

SUBSTITUTE FOR MARINE GLUE.—A transparent substance, well adapted to replace the marine glue of Jeffreys for many purposes, particularly where a transparent joint is required, as in the union of pieces of glass, has been invented by Mr. S. Lenher, of Philadelphia. The composition is as follows:—Caoutchouc 15 grains, chloroform 2 ounces, mastic half an ounce. The two first-named ingredients are to be first mixed: after the gum is dissolved the mastic is added, and the whole allowed to macerate for a week. More caoutchouc may be added where great elasticity is desirable. The convenience of its application with a brush, cold, recommends it for approval.—*Franklin Journal*.

RESTORATION OF ST. BOTOLPH'S,
BOSTON.

We are informed that Mr. G. G. Place, of Nottingham, has been appointed architect to the above work, the committee at the same time appointing Mr. Scott as their "Consulting Architect." The restorations proposed by Mr. Place comprise, amongst others, new tracery and stained glass to east window of chancel; new reredos; new chancel floor; complete restorations of south-west chapel, south porch, and west doorway; restoration of clerestory statues; chancel screen; removal of organ; reseating nave with open oak benches; and opening the magnificent lantern of the tower. The inhabitants and their friends have raised above 3,500*l.* in less than two months towards this undertaking, in addition to 3,831*l.* expended upon the material fabric in 1843-1846.

PAINE'S MAGNETO-ELECTRIC
APPARATUS

AND THE REAL QUESTIONS AT ISSUE.

As some of our contemporaries, among whom we are rather surprised to see the *Athenæum*, are entirely and curiously in error as to the actual questions at issue in respect to the alleged inventions and discoveries of the American electrician, Mr. Paine, we deem it worth while, as these questions have in the meantime assumed an aspect of decided practical importance and public interest, to point them out with a little more speciality than has yet been accorded them,—and this we feel the more induced to do, that, as commentators, and as claiming for a countryman of our own, in the event of their truth being established, those peculiar views which seem to have led to, or at least to have explained, the alleged inventions and discoveries,—we in particular have been charged, by implication, with ignorance and error by the very parties who have based their own criticisms on an utterly mistaken view of the whole subject.

In the first place, then, it is a complete mistake to assert, as one writer does, that there is "nothing new or extraordinary" either in the apparatus alleged to have been invented by Mr. Paine, or in the facts alleged to have been established by him. There is decided novelty in both, whatever fallacy or unreality there may be in either. In the next place, it is as complete a mistake to assert that there is anything really "new" in the "views" or "notions" of Mr. Paine, these views or notions being, moreover, merely his mode of attempting to explain the singular facts alleged to have been established by the action of his new and peculiar magneto-electrical apparatus.

As to Mr. Paine's "mode of proceeding," apart from his own mere "notions," is there "nothing new or extraordinary" in this?—

"When hydrogen alone is wanted the negative wire is made continuous and free to act, while the positive is interrupted by means of a small glass of water, into which the broken or separate sections of that wire are dipped without contact. On the contrary, when oxygen alone is required, the positive wire is made continuous and the negative is interrupted. When both oxygen and hydrogen are to be eliminated, as in the ordinary magneto-electric machine, both wires are made continuous, or neither is interrupted."

New and extraordinary as the two former of these allegations are, they only constitute one element in the real "question" at issue as to Mr. Paine's mode of proceeding. By means of this one element of novelty peculiarity of action is alleged to be obtained in the magneto-electric machine. By another, namely the association of water with a peculiarly formed helix, intensity of action is alleged to be obtained; and by yet another novelty, namely the invention of a peculiar electrode, the safety of this peculiar and intense action is said to be insured.* Here

* The "catalyzing" of nascent hydrogen, by means of impure, without any visible expenditure of carbon or turpentine on the hydrogen so "catalyzed," constitutes another element in the actual questions at issue, the recognition of which, as such, might have been also insisted on in the above enumeration. As for the conversion of water solely into hydrogen, or solely into oxygen, that question is implied in the peculiarity of the action of Paine's apparatus: we have something more to say on this subject, however.

are three great points in Mr. Paine's pretensions, which must be recognised, however speedily they may be thereupon refuted, and to overlook these, and not to recognise their novelty at least, betrays a "sad ignorance" indeed of the present state of electrical or magneto-electrical science.

Then, again, as to Mr. Paine's "new views" or "notions," it seems to be imagined that it is sought to overturn the "scientific fact" that "oxygen and hydrogen in combination give us that valuable fluid" water! Now neither Mr. Paine's "facts" nor "his notions" necessarily do so. Not only would oxygen and hydrogen in combination still give us water; but water would still give us oxygen and hydrogen, as indeed is plainly stated on the part of Mr. Paine himself. The following "notions" of Sir Humphrey Davy we are induced here to quote from his collected works, as they seem to have been written, in the spirit of foresight, for this very purpose and occasion:—

"Even if it should be ultimately found that oxygen and hydrogen are the same matter in different states of electricity, or that two or three elements in different proportions constitute all bodies, the great doctrines of chemistry, the theory of definite proportions, and the specific attractions of bodies, must remain immutable. The causes of the difference of form of the body supposed to be elementary must then be ascertained, and the only change in the science would be that those substances now considered as primary elements must be considered as secondary."

"The improvements taking place in the methods of examining bodies are constantly changing the opinions of chemists with respect to their nature, and there is no reason to suppose that any real indestructible principle has been yet discovered. Matter may ultimately be found to be the same in essence, differing only in the arrangements of its particles, or two or three simple substances may produce all the varieties of compound bodies. The results of our operations must be considered as offering, at best, approximations only to the true knowledge of things, and should never be exalted as a standard to estimate the resources of nature."—Vol. iv., p. 132.

"We know nothing of the true elements belonging to nature; but as far as we can reason from the relations of the properties of matter, hydrogen is the substance which approaches nearest to what the elements may be supposed to be."—Vol. iv., p. 359.

"If that sublime idea of the ancient philosophers which has been sanctioned by the approbation of Newton should be true, namely, that there is only one species of matter, the different chemical as well as mechanical forms of which are owing to the different arrangements of its particles, then, a method of analyzing these forms may probably be found in their relations to radiant matter."—Vol. iv., p. 164.

Sir Humphrey seems to have actually anticipated the discovery of just such inventions as those claimed by Mr. Paine, and whatever be the real merits of these (and however favourably we may have been impressed with a belief in their verisimilitude, we remain as open as ever to conversion of their fallacy or falsity, whenever the evidence may appear to lead to that conclusion), nevertheless, we have no manner of doubt that Sir Humphrey's anticipations will yet be realised. But it is not by the merely "quasi-scientific" that so sublime an idea and discovery as that just referred to will be either realized on the one hand, or appreciated on the other.

As to the novelty of Mr. Paine's explanatory hypothesis or notion, in which hypothesis the writer in the *Athenæum*, as well as others, has been led to think that the whole strength of his claim lies, let us see how it is even as to that point. Mr. Paine thinks, according to Dr. Foster, in the *Scientific American*, that oxygen may be composed of one substance and positive electricity, while the same substance with negative electricity may be hydrogen:—

"May not water, combined with two different imponderable principles, one acting the negative and the other the positive part, constitute oxygen and hydrogen, and may not these two ethereal principles be what some excellent electricians have called the vitreous and resinous electricity? And may they not form fire by their attraction or neutral

approximation? Then, whenever they are discharged, water would appear, and if they were discharged when one portion of water was in chemical union with other matter there is no reason why the other portion free from elastic matter should not fix itself, which would account for oxidation."

Now, although this be essentially Mr. Paine's "new view," the words in which this "quasi-scientific" novelty is here quoted, are those of Sir H. Davy himself!

We trust, now that we have "robbed it" (of some at least of) its absurdities, and shown where some of the "errors somewhere" lie, that "the question" at issue, whatever be its real merits, will appear in a somewhat different light from that in which it has been lately misrepresented, and that henceforth writers in respectable journals will take a little more care how they charge others with ignorance or absurdity on such a subject merely in consequence of labouring in error as to it themselves.

The plan and description of a double apparatus on Paine's principle, with a simple movement by means of a weight, has recently appeared in contemporary columns. As the principle appears to be the same, however, as that already treated of, although the arrangements are necessarily different, we need not describe this new apparatus under present circumstances.

PRESERVATION OF OAK.

In your last number of *THE BUILDER*, "T. M. H." asks to be informed what will prevent oak mullions, or any other work left of its natural colour, splitting from exposure to the sun and wind. I am not certain, or ever heard, that any process can entirely prevent the wood so exposed from splitting; but the following may be found to have some good effects. The oak to be used for mullions, or any kind of joiner's work, exposed and not painted, should be entirely of the heart of the tree; and the lighter the colour of the wood the better to be depended on.

To season it:—The nearer the timber approaches the dimensions required from the saw the more likely is it to get seasoned. It should be placed on the north side of a building, and sheltered from the extremities of the wind and rain. Place one piece upon another, interposing blocks between them; and that the timber may not cleave, but dry equally, daub it over with cow dung. Thus it must remain at least twelve months. After this saw it to the size required; then lay it in a tank or pool of water for several hours; from thence into a copper of boiling water, continuing boiling for one or more hours, according to the size of the timber (steaming the wood no doubt would be nearly as good): afterwards it should be placed upright to drain on the north side of a building, exposed to the wind and rain, and gradually, within three or four months, to the sun, when it may be used for its respective work.

The above suggestions may be found to counteract, to a very great degree, the influence of the sun and wind on timber; but I am disposed to think but few carpenters or joiners will take the trouble to effect it by the process recommended, from the length of time required.

Much may likewise be done by the choice of oak grown upon a chalky soil, and felled at midwinter (instead of the spring), and in the last quarter of the moon, and immediately barked and planed; and then lay the planks in some pool or running stream for a few days, and afterwards dry them in the air and sun gradually: they will neither cast, twine, nor, it is more than probable, ever rift or cleave.

W. C. S.

CHelsea COLLEGE.—A petition, numerously and respectfully signed, is to be presented to the Commissioners of this Royal Hospital from the inhabitants of Chelsea for the removal of the ugly and unwholesome dead walls now surrounding the grounds and obstructing the view of that national institution.

MACHINES FOR WORKING AND POLISHING MARBLE.*

For cutting slabs of marble into narrow pieces, such as shelves, and which is effected by hand with grub saws, a machine called a *ripping bed* is employed, in which as many cuts as may be required in the one slab are effected simultaneously, by an equal number of circular saws with smooth edges, revolving vertically, and fed as usual with sand and water. This machine, represented in fig. 3, consists of a bench about 12 or 14 feet long, 6 or 7 wide, and about 2 feet 6 inches high: upon the top

of the bench is fixed two rails, upon which a platform mounted on pulleys is drawn slowly forward by a weight. The horizontal axis carrying the saws revolves about 9 inches above the platform, and to ensure the rotation of the saws, the axis is provided with a projecting rib or feather extending its whole length. The saws are made as circular plates, about 17 inches diameter when new. The saws, or cutters, are clamped between two collars about 6 inches diameter, fitted so as to slide upon the spindle, and be retained at any part of its length by side screws.

FIG. 3.

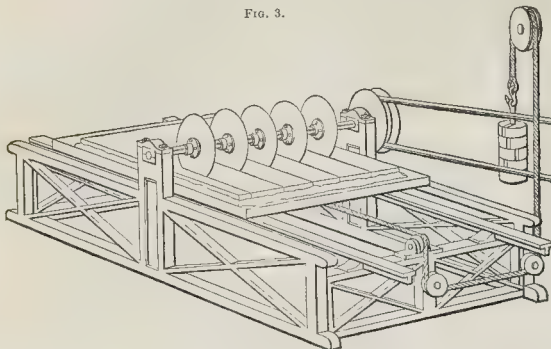


FIG. 4.

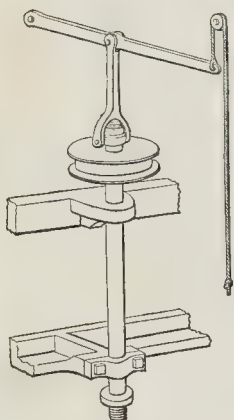


FIG. 5.



FIG. 6.

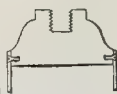


FIG. 7.

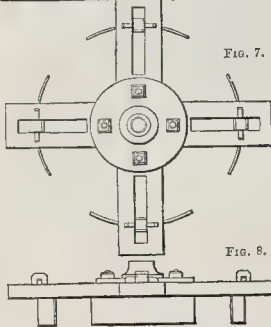


FIG. 8.



The saws having been adjusted to the required distances for the widths of the slips to be cut, and fixed by the side screws, the slab of marble is embedded in sand upon the platform, and the edge of every saw is surrounded on one side with a small heap of moist sand. The saws are then set in motion so as to cut upwards, and the platform is slowly traversed under the saws by the weight, which keeps the slab of marble constantly pressing against the edges of the revolving saws, until the slab is entirely divided into slips.

When the saws are new they nearly reach the upper surface of the platform, and a moderate thickness of sand, just sufficient to form a bed for the slab of marble, raises it high enough to allow the saws to pass entirely through the thickness of the slab; but as the saws are reduced in diameter by wear, it becomes necessary to employ a thicker layer of sand, or to use a supplementary platform to raise the slab to the proper height. To avoid this inconvenience, an improvement has been recently introduced by mounting the axis of the saws in a vertical slide, which is adjusted by a rack and pinion, so as to allow the edges

of the saw to penetrate exactly to the required depth.

Circular pieces of marble, such as the tops of round tables, and other objects, from about 6 feet diameter to the small circular dots sometimes used in tessellated pavements, are sawn to the circular form by means of revolving cylindrical cutters, constructed on much the same principle as crown saws for wood. The slab to be sawn is placed horizontally on a bench, and the axis of the machine works vertically above it in cylindrical bearings, which allow the spindle to slide through them, so as to be elevated or depressed according to circumstances. The spindle is suspended at the upper end by a swing collar attached to a connecting rod, that is jointed to the middle of a horizontal lever. The weight of the vertical rod and cutter supplies the pressure for the cutting, and the whole is raised for the admission of the work by a rope attached to the end of the lever, and passed over a pulley as shown in fig. 4.

For circles of small diameter, the cutters are made as hollow cylinders of sheet iron of various diameters, and each attached by screws to a circular disk of cast iron, as shown in section in fig. 6. The cutter is screwed on the lower end of the spindle, just the same as

a chuck on a lathe mandrel, except that the spindle is placed vertical instead of horizontal. To ensure free access for the sand and water beneath the cutter, one or two notches, about three-quarters of an inch wide, are generally made in the lower edge.

For large circles, the apparatus is made stronger than that shown in fig. 4, and the vertical spindle is fitted at its lower extremity with a circular plate, to which is bolted a wooden cross, shown in plan in fig. 7, and in elevation in fig. 8: the cross has radial grooves about 18 inches long near the outer extremities of the four arms. The cutters consist of detached plates of iron from 6 to 18 inches long, of various widths, according to the thickness of the work. The cutters are curved as segments of a cylinder, of the particular diameter they are required to cut, and are each riveted to a clamp that passes through the radial groove, and is retained by a wedge. The number and length of the cutters is solely a matter of convenience, as a single cutter, when put in rotation, would make a circular groove, and several cutters are only employed in order to expedite the process. But every different diameter requires a different curve in the cutters, and which must all be placed at exactly the proper distance from the centre of rotation.

The horizontal bench upon which the marble is laid, is generally a temporary structure, adjusted to suit the thickness of the object to be sawn. Works of large diameter are seldom more than one or two inches thick, but those of small diameter are frequently much thicker, and sometimes three or four thin pieces are cemented upon each other, and cut at one operation. Short pillars are sometimes sawn out of an irregular block in a similar manner, instead of being chipped and turned. And it has been proposed that long cylinders, and tubes of stone, should be cut with cylinders of sheet iron of corresponding length, put in rotation, and supplied with sand and water.

Marble works of small and medium size, are ground flat upon horizontal revolving laps, after the same general method as that pursued by the lapidary, but with a proportionate increase of size in the lap, which is supplied as usual with sand and water. The laps for marble works are made as circular plates of cast-iron, from 6 to 14 feet diameter, and about 3 inches thick when new: they are mounted in various ways upon vertical spindles, so that their upper sides or faces may be about 2 feet 6 inches above the ground. Across the face of the lap, or as it is called the *sanding plate*, one or two strong square bars of wood, faced with iron, are fixed so that their lower sides may just avoid touching the face of the lap, and their edges present perpendicular faces, from 5 to 6 inches high, at right angles to the face of the lap. The wooden bars serve as stops to prevent the work from being carried round by the lap, and also as guides to ensure the work being ground square.

The piece of marble is laid flat upon the lap, with the face to be ground downwards, and the side of the work in contact with the guide bar. Water is allowed to drip upon the plate from a cistern fixed above, and small quantities of sand are thrown on as required. During the progress of the work the workman leans upon the marble, the position of which is shifted occasionally to expose both the work and the lap to an equal amount of wear, and prevent the formation of ridges, but which is less likely to occur with iron laps used for grinding large surfaces of marble, than when small objects are applied upon lead laps, as by the lapidary and mechanician.

The one side of the marble having been reduced to a flat surface, the work is turned over to grind the adjoining face, and the first face is held in contact with the perpendicular side of the guide bar, in order to present the second face of the work to the lap at right angles to the first. When two pieces of similar size are to be ground each on the one face and two edges, as for the upright sides of a chimney-piece, the two pieces of marble are cemented together back to back with plaster of Paris (a process that is called *lining*), and the pair are ground as one piece on all four

* See page 239, ante.

faces: in this case the flat sides are first ground parallel to each other, or of equal thickness on the two edges, and the latter are then ground square by placing the sides in contact with the guide bar.

When the lap is of moderate size, one guide bar only is employed, and it is fixed across the diameter of the plate, which then allows of two workmen being employed on the opposite sides; but large grinding plates sometimes have two or three bars placed at equal distances across the face, and four or six workmen may then be employed at the same time upon separate pieces of marble.

The sand and water are continually thrown from the lap by the centrifugal force, and the large size of the works sometimes applied prevents the use of a rim standing up above the level of the lap to catch the wet, as used by lapidaries. Every workman, therefore, stands within a kind of trough like a box, about three feet high, without a top or back: the troughs serve as a protection to the workmen, who would otherwise be exposed to a continued shower of sand and water.

The surfaces of large slabs are in some cases ground upon revolving plates: in this case the axis is placed entirely beneath the surface of the plate, and the slab is traversed by two men over the face of the plate to grind it equally, but the machine next described is better adapted for large slabs of marble requiring tolerable accuracy.*

THOROUGHFARES OF LONDON.

As the town spreads and population increases, the great causeways of intercourse are more thronged with carriages, omnibuses, and wains. The streams of foot passengers also concentrate in the same lines of traffic, and were it not that the public conveyances take the greater numbers, our footways should now be thronged to suffusion, and the same inconvenience felt on them that is experienced in the driftways.

Those trunk lines of communication, such as the Strand, Fleet-street, and Holborn, which were all-sufficient for a city of five miles diameter, and for a population of one million, are closely packed now that the bills of mortality traverse nearly twice that extent, and contain double that number of living souls; and as the habitations and numbers are extended, so, in the same ratio, must the construction of public thoroughfares be felt. That main tube or pipe which might serve for the distribution of water to a second or third-rate town, would not suffice for a great city; and so, in like manner, will the leading streets be inadequate to the objects of free circulation, when the mass of human life seeking a free access through arterial ducts to the Bank (the great curculio of the body corporate), becomes impeded or stagnated in circulation.

In our city there are but two of these great arteries, the Strand and its continuation (which, from St. Mary's to the Exchange, may be called the *via sacra*), and Holborn: when one of these is under repair, then the tide of commerce is turned in a fearful eddy through the bye-lanes, and by circuitous as well as awkward routes, toward their destination: it seldom happens that both are free at the same time, and at the present moment, not only both of these, but most of the great leading streets are broken up and subjected to the slow process of bedding, ramming, and re-cementing.

The principal cause of these upturnings of the adamant crust is the perpetual changing of gas and water pipes; which latter in particular, it is to be hoped, the Government will either take into hand, or bestow on some individual corporate management.

Little can be objected to the condition of the minor streets of London, which are superior to those perhaps of any other city, but still they are utterly inadequate to the traffic of omnibuses and heavy wains, for which the whole of the great gangways are insufficient, even when all open and free. It is, therefore, manifest that some other, or third line of route, is much to be desired for the purpose of disembarassing the two central trunk lines.

* To be continued.

It would not be difficult to point out the right direction for this central city road, for it is plain that a course nearly parallel to the river would be the most appropriate, as being the most convenient for commerce and for the disembarassing of the streets: as heavy waggons proceed at a walking pace, all light vehicles and passenger carriages needing despatch, are impeded by turnings-off, cross purposes, deliveries, and dead locks of the merchandise wains; therefore the line of the wharfs and river stores is clearly the most eligible.

Many plans have been proposed for this purpose, some to continue Thames-street westward towards the Temple; but here again is a dead lock, which, if passed by a loop line on the mud outside the garden, might resume its marginal course as far as Hungerford; yet the boldest innovator must stop appalled at the obstacles presented by Privy Gardens, and so on to Westminster, unless he again take mud and skirt the stream fairly on to Westminster-bridge.

The enormous expense of purchasing valuable mansions or business foundations is the real obstacle in the way, for no railway (great though their performances have been) has ever had to deal with the purchase and demolition of so much property.

The river line under high water mark, although the more expensive in practice, would certainly be the cheaper in attainment, for with the corporate sanction it would cost nothing.

So many plans have been given in THE BUILDER for a causeway and quay wall that it is unnecessary to repeat them, or any of them; but whatever may be done in this respect, the public would be much benefited and the great trade of the City facilitated, if sewage, water, and gas companies were consolidated under one *authoritative supervision*, and more particularly the water companies, the whole of which should be fused under one direction, to save the community from the perpetual disruption of the highways of life, as well as to pour in an *equable* and unfailing supply of that element which is at present drawn from the most polluted sources.

QUONDAM.

Books.

Land Drainage, Embankment, and Irrigation.
By JAMES DONALD, C.E. Orr and Co., London.

THIS is one of Richardson's Rural Handbooks. It will probably be found useful in town as well as country, as some of its pages refer to town drainage specially, and others indirectly. The following remarks on depth and permanency of drainage may be offered as a specimen of the author's style of handling his subject:—

"Permanency is one object which should always be kept in view in draining, and this can only be attained by adopting a considerable depth. Shallow drains are exposed to injury by various causes, from which deep drains are exempt, such as pressure on the surface, the change of temperature, the burrowing of vermin, the penetration of roots, and the irregular entrance of impure water: all these tend to keep the earth around a shallow drain in a state of change which must considerably endanger its stability. The failure of draining hitherto has been owing more to want of skill and care in cutting the drains, and placing the materials therein, than to insufficiency of depth. Yet, when the effects arising from the above causes are considered, it will be seen that failure has often been accelerated by the want of a suitable depth."

The following particulars may be of use to some of our readers:—

"With the variations which occur in soils, and in the cost of labour and materials, it is of course impossible to give more than a general idea of the expense of draining. An outline of the principal items of expense may, however, be attempted, to assist those requiring information on the subject.

If the drains are 14 feet apart, the number of poles or roods (16½ feet) in an acre, will be

188½, and if the depth is 33 inches, the cutting may perhaps be done for 3d. per pole, or 2l. 7s. 1½d. per acre. In strong or hard subsoils, it would cost considerably more; but often with proper tools, active workmen, and good management, it need not exceed the above sum. Each acre would require 3,110½ pipes of 12 inches in length, and those of 2 inches bore may cost, on an average, 18s. per 1,000, or 2l. 16s. per acre. Collars will cost about half the price of the pipes, or 1l. 8s. per acre, making altogether, for tiles and cutting, 6l. 11s. 1½d. per acre. If the tiles are 15 inches long, they will be worth about 3s. 7d. per 1,000 more than those 12 inches long, supposing the value of the latter to be 18s. per 1,000. The number of collars required will also be one-fifth less, and this will make a difference of about 18. 9½d. per 1,000 feet, or 5s. 7d. per acre. If one instead of two-inch pipes are used, the expense may be reduced probably as much as 35s. per acre.

Supposing the drains to be 40 feet apart, the number of poles in each acre would be sixty-six, and if the depth were 4 feet, the cutting would probably cost on an average 6d. per pole, or 33s. per acre. 1,089 tiles, 12 inches long, would be required per acre, and the cost of these, at 18s. per 1,000, would be 19s. 5d. per acre. Collars at half the price would be 9s. 8½d., making, for cutting and tiles, 3l. 2s. 1½d. per acre."

The Rookeries of London, Past, Present, and Prospective. By THOMAS BEAMES, M.A., Preacher and Assistant of St. James's, Westminster. Bosworth, Regent-street.

THIS is a subject teeming with interest—painful and plaintive. The working preacher is just the man whose opportunities enable him to treat such a subject fully and efficiently. The author deprecates the necessity which impelled him to adopt a tone of apparent levity in order to insure general attention to a subject of such grave importance. It is not the author, however, who has reason to be ashamed of that, but the levity-loving public, whose sympathies, nevertheless, when they are excited, want nothing in warmth or tenderness. In this very readable volume they will find enough to excite them, and we hope, to leave a lasting impression, all the more that the tragedy is relieved by a little comedy occasionally.

The right feeling and charity of the reverend author in the following remarks we think merit quotation even in our limited columns:—

"It may be very well to plead that the miserable condition of Rookeries is owing to the habits of the labouring population; that the sum of money spent in public-houses bears a large proportion, we forget the exact amount, to the poor-rates of the country. Are there no Rookeries, then, in foreign cities where drunkenness is rare?—do not wretched and dear dwellings produce recklessness and disgust, which in this country vent themselves in intoxication rather than cabals, factions, and insurrections?

Men, even in the higher orders of society, whose homes are not comfortable, seek other resorts, though not confined to a single room, and use stimulants too, though not always such as produce inebriety. But the reading room, and the society to which the purchase of intoxicating liquor is not the passport, supply a refuge in the one case, which in the other the tap-room alone affords.

We want a large, comprehensive, national remedy. We must have an Act of Parliament. Let it discard as much as possible that technical language which renders so many of these documents inoperative: let it be compiled by practical men. Let nuisances, Rookeries, fever courts, *et hoc genus omne*, die the death: let them be replaced, not by shops for the tradesman, but by dwellings for the working man: let the number of inmates for each house be fixed, the due supply of water regulated by some provision which shall bring Water Companies to their senses. Let each family have a sitting-room and at least two bed-rooms. This may be done not merely at little cost, but at a remunerative outlay: it has been proved by those lodging-houses which

have been lately erected in St. Pancras and other parts of the metropolis. On the adjuncts to such colonies we will not dwell: there is here a noble field for ingenuity, philanthropy, and religion: our space only allows us thus generally to allude to the subject."

Harrington's Desideratum for the Age. A Masonic Work wherein the first Principles which constitute Nature are explained, as well as certain other Natural Phenomena, the Cause of Poverty and Distress (that dire disease which is now preying on the vitals of mankind) shown, and the Remedy that will remove this Disease and restore all to Health and Happiness pointed out. Gilbert, Paternoster-row.

WE have given full scope to the title of this little book in order that the author might thereby at once be allowed to state its objects in his own way. A change, he believes, is at hand, whereby these objects will be attained. Free-masonry is the true mother-church which is to lead us all safely through to a new state of things, and Government must act the part of a father to the people while masonry is engaged with these onerous maternal duties. As to the particular nature of the change predicted, we must refer all interested to the book itself, which contains some new ideas that merit respect at least on account of their originality, whether they be worthy of acceptance or not on account of their truth.

A Hymn for All Nations, 1851. By M. F. TUPPER, D.C.L., F.R.S. London: T. Hatchard.

MR. TUPPER thought it would be a sin if men of every nation met together to glorify their own skill, and the wonderful things around them, without some catholic acknowledgment of Him who made them, and he therefore devised a simple hymn, which has been translated into thirty languages, so that all men may, in their own tongue, offer up united praises. The languages are, Hebrew, Sanscrit, Arabic, Chinese, Persian, Hindostanee, Ancient Greek, Latin, Welsh, Irish, Gaelic, Romain in metre and in rhyme, German, Polish, Norse, Danish, Spanish, Dutch, French, Italian, Manx, Ojibway, &c. and the names of the translators are a guarantee for excellence. In some of the languages there are several versions, and it is interesting to see the different way in which different minds have rendered the same sentiments. The book was printed, and superintended by Mr. Thomas Brettell, to whom, as a specimen of careful and varied typography, it is extremely creditable.

Miscellanea.

SLATE.—In a paper read to the Liverpool Polytechnic Society, Mr. Rayner said,—that slate had become an article much more sought after than formerly; that an inch slab of slate is equal to York paving 2 or 3 inches, granite 3 to 4 inches, and marble even 8 to 10 inches thick; that it is an almost perfectly non-absorbent body, for if an inch slab be immersed in water for three months, it will be found, on merely scratching the outer surface, to be perfectly dry underneath; that hence it is not liable, like stone, to be injured by frost; that hence, also, it is extremely useful for chemical purposes, mangers, &c.; and that in this age of competition it has been made to undergo a process of enamelling, which totally changes its appearance and value. During this process it goes through five distinct operations: first, there is the ground coating, burnt in, and afterwards rubbed down to a fine surface to prepare it for the pencil of the artist, who gives it either the appearance of the richest sienna, brocatella, granite, porphyry, or even inlaid work; after which it receives the first coating of enamel, and is again subjected to heat, and again rubbed down. It receives in all three coats of enamel over the painting, all of which having been thoroughly burnt into the slate, at a heat ranging from 350 to 600 degrees, not only protects the work, but secures for it a surface which will carry a higher polish than any other article of a like

nature. For out-door work, such as tombstones, monuments, vases, &c., after five, six, and in some instances, eight and nine years' wear, the polish of enamelled slate has been found as good as on the day it left the works.

STAINED GLASS.—A stained glass lancet window, 20 feet by 4, intended for the north transept of Salisbury Cathedral, is about to be erected by the officers and survivors of the 62nd regiment, in memory of their brother officers and men of the same regiment who fell during the Sikh war. It will be shown at the International Exhibition.—A stained glass window has just been placed over the communion table of Horbury Church. It has been presented by Mrs. Battye, of Huddersfield, in memory of her father and mother.

A painted glass window has recently been placed in Wallasey Church. The window is a stone one of six lights. In the upper central one is represented the Divine Founder of the church giving it the authority of the keys, with the legend, "Behold! I send you forth." On either side on the upper tier are the figures of Abraham and John the Baptist; and in the three lower lights a bishop, priest, and deacon, each with an appropriate legend. The artist is Mr. Miller, of London, and the window is the gift of the Hon. Sir E. Cust.—The chancel window of Mansfield Church has been ornamented with stained glass. The artist is Mr. H. W. Gough, stained-glass window manufacturer, Nottingham. The window is in the perpendicular style, has five lights, and is divided two-thirds from the bottom by a stone transom. The lights are 18 inches wide. In the centre top light is Saint Peter, under a perpendicular canopy, with a diapered ruby back ground. Below is the dying Saviour under a similar canopy, with a diapered purple ground. On the sides are St. Mary and St. John, and underneath St. Paul. These figures form a third of the window; the remaining two-thirds will contain the following:—St. Andrew and St. James to the left of St. Peter; St. Philip and St. Bartholomew to the right; St. Thomas next to St. Mary; St. Matthew next to St. John; St. James and St. Jude to the left of St. Paul; St. Simon and St. Barnabas to the right; the whole comprising the twelve apostles and the crucifixion, and which we understand it is intended to fill by public subscription.

IMPORTANT TO VALUERS.—PARKINSON v. LORD GALWAY.—At the Retford County Court, on Wednesday week, a cause was tried before Richard Wildman, Esq., judge, in which Mr. John Parkinson, valuer, Ley-fields, was plaintiff, and Lord Viscount Galway, M.P., was defendant. It appeared that his lordship, being the owner of some land taken by the Great Northern Railway Company, had employed Mr. Parkinson as his valuer. Mr. G. D. Simpson, of Loversall, was valuer for the company; and Mr. C. Paver, of Packfield, was called in as umpire. After the amount of purchase-money had been agreed upon, Mr. Parkinson sent his account to Lord Galway, charging a commission of 2½ per cent. upon the compensation awarded. His lordship forwarded the account to the railway company, who refused to pay it, on the ground that the charge was exorbitant; and Lord Galway being also of the same opinion, refused to pay; upon which Mr. Parkinson brought an action against him; and the sum considered reasonable was paid into court. Mr. Burnaby, of the firm of Talents, Burnaby, and Griffin, solicitors, Newark, appeared for the plaintiff; and Mr. W. E. Smith, of Doncaster, for the defendant. Most of the leading valuers in Yorkshire and Nottinghamshire attended the inquiry; and, after a long discussion on both sides, judgment was given in favour of the defendant—thus establishing the principle that a valuer is not entitled to charge a per centage.—*Doncaster Gazette.*

BURLINGTON HOUSE AND GREENWICH HOSPITAL.—It is a not merely remarkable, but quite unaccountable circumstance, that one of the most noted, and at the same time the most scenic pieces of architecture in the metropolis, should be unknown to the public except by repute, there existing no view or other representation of it, either pictorial or archi-

tectural. You will perhaps have guessed that I allude to the colonnades within the courtyard of Burlington House; and should I be mistaken as to there being no engraving of any kind which shows them, you will greatly oblige by informing me where one is to be found. At all events, if one there be, it must be a great rarity; and as the subject itself would be perfectly fresh to your readers, I take the liberty of suggesting a view of that piece of pillared scenery as a worthy and highly desirable illustration for THE BUILDER. Surely there would, on proper application being made, be no difficulty in obtaining permission to have a view taken, because refusal would be such discredit to the architect as to deserve to be exposed. That Burlingtonian one is not the only piece of architecture which has been ignored by the pencil, for that truly noble pile and grandiose group of buildings, Greenwich Hospital, which is still unrivalled by any work of similar character in this country, has experienced nearly the same fate. Views of it there certainly are, but besides that, putting all of them together, they amount to little more than one or two, being nearly repetitions of the same general view, there is not a single one of any importance as a sufficiently truthful and artist-like production. Yet Greenwich Hospital would afford subjects for an entire volume of pictorial and architectural illustrations, interior views as well as others, and at the same time abundant matter for letterpress; because many would be the victories and the heroes to be recorded in speaking of the pictures in the Painted Hall. Such a work might be made to deserve the name of a national one—an honourable testimonial to British architecture and British valour.—ZETA.

ART PRIZES.—MANCHESTER INSTITUTION.—The directors of the Manchester Exhibition of Modern Pictures and Works of Art, have determined on awarding one hundred guineas to the artist of the best oil painting not previously exhibited, except at the Exhibition of the Royal Academy of this year, and which has been painted since the year 1849. And the Heywood Gold Medal, and 10*l.* in money to the artist of the best oil painting of a subject selected from sacred or profane history. If the work to which the prize of 100 guineas is awarded shall be of the class competing for the Heywood Prize, then the painter will be entitled to receive both prizes. This liberal proposition ought to lead to a good exhibition at Manchester. A deputation from the council of the Royal Institution have recently visited London on the subject.

GREAT CENTRAL GAS CONSUMERS' COMPANY.—The attempt at amalgamation with the City Gas Company, it seems, has proved abortive. The Great Central Company have passed a formal resolution on the part of the City Gas Company "until all future expenses arising from the opposition of that company be first reimbursed." An agreement has been made by the Great Central with the City Corporation to light the streets of London for 10,000*l.* a-year.

PROPOSED RIDE ACROSS KENSINGTON GARDENS.—A numerous deputation from the inhabitants of Kensington, Paddington, and Bayswater, headed by Archdeacon Sinclair and Mr. Evans, M.P., and accompanied by Lord Robert Grosvenor, M.P., have had an interview with Lord Seymour to protest against the threatened ride.

A TRIFLING DIFFERENCE.—The following is a list of tenders delivered on the 3rd inst. to the Directors of the National Freehold Land Society, for half-brick sewers and pipe drains, on an estate at Stoke Newington: Mr. Wm. Beck, architect. Each party took out his own quantities:—

Crook	£4,132
Moxon and Gent.....	3,331
Bower	2,989
Murray.....	2,974
Althorp	2,892
Hill	2,860
Hughes.....	2,847
Radley and Rogers....	2,744
Smith	2,175
Batterbury	2,148

AMERICAN SCULPTURE.—STATUE OF GENERAL JACKSON.—The American journals say that the equestrian statue in bronze of Andrew Jackson, which has been for the last four years in progress, under the direction of the statuary, Clarke Mills, is near completion, and will be ready to be placed on its pedestal, in Lafayette-square, opposite the President's House, on the 4th of July next. A part of the figure of Jackson has been already successfully cast. The horse is to be cast very soon. Mr. Mill's processes in casting are said to be entirely original, "whereby results are obtained by speedier and more economical processes than have been heretofore used." The size and weight will be about the same as of the statue of Peter the Great, at St. Petersburg. It will be one-third larger than life, and will weigh 35,000 pounds. The material used consists of old brass cannon, condemned by the government. The brass guns and mortars captured by General Jackson at Pensacola are to surround the base of the statue.

NOTES TO THE PROVINCES.—The works on the Norfolk Estuary, which some people say are to give a new county to England, are progressing favourably. Upwards of 1,500 men are employed upon them. The new cut in the river, which will shorten and deepen the passage to Lynn, will be completed next year. It is intended that 3,000 acres of land shall be reclaimed by 1853, and 16,000 by 1856.—We regret to learn that the scheme for providing Bath with fountains has been dropped for the present. The general indifference manifested by the public, and the lukewarmness of the majority of the committee, are said to be the reason. The gentlemen, however, who originated the project of a fountain in the Grove, and another in the Institution gardens, have resolved to prosecute their special proposal to a successful issue.—Mr. Beckett Denison is converting a nest of the commonest lodging-houses in Leeds into a model lodging-house.—The inhabitants of Lutterworth, Leicestershire, have now had their town lighted with gas for several weeks, and they are so much pleased with the improvement that they turned out on the day of formal opening, on the 28th ult., which they celebrated with music, and with feasting both for the body, in fish, flesh, and fowl—all cooked by gas—and for the mind, in lecturing on the subject of the general rejoicing.

THE EDINBURGH ASSEMBLY HALL
STRUCK BY LIGHTNING.—On Tuesday, in
last week, the Assembly-hall on the Castle-hill
was severely injured, and made a narrow escape
from being altogether destroyed. The lightning
struck the centre of the south face of the
church, and, passing down the zinc astragals
of one of the windows, entered the interior,
and ignited a portion of the wood-work. The
fire rapidly extended; and, in a short time, a
number of the oak benches were in flames.
The fire was extinguished, but not until three
of the benches, with cushions, were consumed,
and as many more damaged, while the lath-
work of the south wall was scorched and
burned to the height of nearly twenty feet.
The spire has no lightning-conductor. Mr.
Adie, brother of the engineer, saw the church
struck, and is of opinion that the gas-pipes
near the window alone saved the whole face
of the building as a substitute for a conductor,
and that a proper conductor would have pre-
vented damage altogether.

THE SEWERS RATE.—In answer to a question from Sir B. Hall, in the Commons, Lord Ebrington stated, on Tuesday last, that the rate of 6d. in the pound was only levied on eight districts, with a rental of £400,000; that a great number of new works were proposed—a new system of drainage south of the Thames, arterial drainage north of the Thames, and many others; that the present commission being to expire in the course of the year, Government were to bring a Bill, appointing, he presumed, some new body; but that by that time a great number of the works would be in hand. The bankers (it was understood) were already overdrawn £500,000, and there were about 20,000*l.* of unpaid liabilities.

MOULDING.—Mr. A. Dixon, of Abercorn Foundry, Paisley, has just specified his patent for improvements in moulding iron and other metals. The invention has relation to a method of forming moulds of green or dry sand for casting cylinder pipes, &c., of iron and other metals. Mr. Dixon claims—the means of making moulds and cores of pipes, cylinders, fluted columns, square tubes, and other castings of a similar nature, as described.

FESTIVAL TO FOREIGN SCULPTORS.—It is proposed by the British sculptors, exhibiting at the Building in Hyde-park, to give a dinner to the foreign sculptors who have contributed to the Exhibition, on Monday, May the 12th. Sir Charles Eastlake, the President of the Royal Academy, will preside.

RESPONDENTS.

"*Water Pipes.*"—"A supply of water requires to be conveyed across a valley: the spring is 20,000 feet distant and 200 feet higher than the point of delivery: at 10,000 feet from the spring the pipes will be 400 feet below the level of that point, so that in the remaining distance the water has to rise 200 feet. I wish to know what bore the pipe must be from the spring to the lowest point, and what bore from thence to the place of delivery to give 1,600 gallons per hour."—AQUARIS.

"Subscriber from beginning" (shall be attended to),
 "J. T." (we have heard nothing of the engraving),
 "J. J. L." "W. P." "Mr. H." "N. E. S."
 "J. H. H." "G. B." "Graves" (we have not time to
 refer), "C. M." "J. W." "A. & W." (we shall be
 glad to hear from them), "Mr. H. jun." "Lady B."
 "Pimlico" "Clericus" "R. H." (the letter was ac-
 cidentally mislaid), "P. S." "C. C." "W. B." "J. P."
 "Pulchra qui mecum fuit" (declined with thanks),
 "Mr. P." "F. S." (we cannot recommend), "Clerk of
 Works of thirty years' standing," "W. K." "A Sub-
 scribe" (under our mark).

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editor, and not to the Publisher.

ADVERTISEMENTS.

ROYAL ACADEMY of ARTS.
TRAFFALGAR-SQUARE.—The EXHIBITION of the
ROYAL ACADEMY is NOW OPEN.—Admission from Eight
o'Clock till Seven, One Shilling. Catalogue one Shilling.
J. P. KNIGHT, R.A., Sec.

[illegible]

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COMPETITION and other DRAWINGS.
—Mr. THOMAS S. BOYS, Member of the New Society of Painters in Water Colours, and author of: "The Picturesque Architecture of Paris, Ghent, Rouen, &c." and of "London as it is," offers his services in Tinting Bookbindings, Landscapes, Perspective Views, Interiors, &c. From the long experience he has had in such subjects, he is fully aware of the points essentially necessary to be attended to. Drawings and designs lithographed in a superior manner.—Address, Mr. BOYS, 24, Albany-street, Regent's-park.

D E C O R A T I V E PA I N T I N G . — M r .
FREDERICK SANG, from the Royal Academy of
Munich, DECORATIVE ARTIST in FIRESCO, and in all other
public buildings of the metropolis, has been seen in the principal
Architects in particular, that he has considerably increased his
Establishment and is now enabled to undertake, on the shortest
notice, the embellishment of private and public buildings, in any
part of the United Kingdom, of most reasonable terms, and in
any style of the Classical, Medival, or Modern styles.—Apply to
SANG, Decorative Artist, 88, Pall-mall, London.

H. S. GRAY, GRAINER IN OIL TO
THE TRADE,
No. 8, Bishopsgate Without, London.

HOUSES PAINTED and DECORATED.
 W HALL and CO., of No. 35, Ligonrspond-street, Gray's
 Inn road House Decorators and General Contractors. New four-
 roomed houses painted inside and out, in a workmanlike manner,
 for 40 only, finding the best materials; shop fronts repainted and
 decorated at 12 10s. each; fronts of eight-roomed houses for 12 10s
 a ft., paperhanging at 6d. per piece. Estimates given for general
 repairs in any part of town or country.

MECHI'S MANUFACTURES.—Mr. Mechi respectfully informs his patrons the public that his manufactures at the GREAT EXHIBITION will be found in the gallery at the north-east corner of the transept.—A. Leadenhall-street, London, May 2nd, 1851. P.S. In order to afford room for the best collection of stock which Mechi has provided to meet the demand, great care has been taken to facilitate the ingress and egress of visitors to the exhibition, during this season, he has fitted up an additional showroom, and made other extensive improvements, to which he earnestly invites public attention.

GUTTA PERCHA ESTABLISHMENT,
88, New Bond-street. — A. THORN and CO. Looking
Glass, Picture, and Print Frames, Console Tables, Brackets, Chan-
cellers, Cornices, and other decorations. The Trade supplied.
Same terms as at the Gutta Percha Company's Works, 18, Wharf-
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GUTTA PERCHA CURTAIN and
CORNIC RINGS. These rings have been much approved
by the faculty, particularly for nervous and aged patients. Owing
to the peculiar properties of Gutta Percha, these rings do not make
noise when drawn along the pole or wire. The following sizes
may be had, either with or without loops:—Size: 1 inch diameter,
1/4 inch do, 3/4 inch do, 2 1/4 inch do, 3 inch do, 2 1/2 inch do.
TUBING, LINING FOR TANKS, ORNAMENTAL
MOULDINGS, &c. of all sizes.
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A MASTER WANTED for a YOUTH
aged 17, having served part of his time, and very useful in the trade. Address, Post-janet, C. J. W., care of Mr. Wellborne, Stationer, &c., 178, Toley-street, Porten, Southwark.

A STEADY MASON, who understands letter cutting, and who is used to church architecture, may hear of a **PERMANENT SITUATION** in the country on applying, by letter, post paid, to **NO. 48, CROSS STREET, LONDON.** A Christian would be preferred.

PUBLIC BATHS and WASHHOUSES,
ST MARYLEBONE. WANTED, an ENGINEER at the
above establishment, a person who thoroughly understands his
business. Wages, 7 per week. Applications and testimonials to
be left with Mr. FOOT, Clerk to the Commissioners, on or before
Tuesday, May 12.

WANTED, in an Architect's Office, an ASSISTANT one who understands the making-out of working drawings and measuring work. Salary according to capabilities. Address, stating salary required, to G. A. Mr. Jones's, Law Stationer, 18, High Holborn.

WANTED, in the office of an Architect and Surveyor, a CLERK. He must not be under eighteen years of age, and must be able to give satisfactory references. Apply, by letter only, stating qualifications, to H. H. Office of "The Builder," 1 York-street, Covent-garden. The duties being light, but a small salary will be offered.

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WANTED, an experienced SHOP FORE-
MAN, to take the management of from twenty to forty
joiners. He will be required, also, to set out and measure up the
various works done under his superintendence. Apply on Monday
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references required.

WANTED, by a Young Man, who served
his time to the plumbing, painting, &c. a SITUATION
under a painter, where he would have an opportunity of improving
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WANTED, by a thoroughly practical and experienced Man, aged 32, a SITUATION as GENERAL FOREMAN, or SHOP FOREMAN in a large firm, having had a similar engagement. Country preferred.—Address, A. P. L., Office of "The Builder," No. 1, York-street, Covent-garden.

WANTED, by an experienced, middle-aged,
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The Builder.

No. CCCCXXXII.

SATURDAY, MAY 17, 1851.

SEVERAL correspondents have addressed us, complaining (some in unmeasured terms) of the deposition of the Architectural Drawings in the Octagon Room, at the Royal Academy; and urging the increased necessity of obtaining an architectural exhibition elsewhere. One letter to this effect we printed last week, and we will give a second as an exponent of the general feeling:—

"I perceive," says the writer, "that poor architecture is at last fairly driven into 'the black hole' at the Royal Academy: the mask will shortly be dropped altogether, and the utmost we may expect in a year or two will be, a stray drawing here and there, somewhere up out of sight, to be guessed at, hardly to be seen—even a hole of refuge will be suffered no longer.

This is the treatment the one art is receiving from the other. Call them sisters no more, since the one will seize all the patrimony and will drive forth the other—away—anywhere, but to rest *here* no longer. And what say the influential and respectable body of architects thereto? Again and again advertisements appear in 'The Builder,' calling on the profession to spare a trifle towards the rent of a room for the 'Architectural Exhibition.' Some respond: the greater number 'fear to offend the Academy;'—truly the Academy study them for their deference; or fifty trifling reasons may be found, sufficient to render them happy and contented, while they are being ridden over rough-shod.

Just so with competitions,—they will be jeweled, cheated, robbed; but they will do nothing but bend their backs again for fresh stripes: the last thing is to combine and resist such imposition. A committee is formed of a few Quixotic individuals 'to do something;' but, perhaps, there are a few names in the list 'whom nobody knows;'—or 'this public body has taken some part in it, so that'—having no connection with any other shop 'sleeps on in dignified torpor.

What wonder if the art languishes, when the majority of its professors, caring for nothing which will not feed their own personal vanity, gladly let all the rest go to the dogs, and will not understand how the raising and improving the position of the whole body would elevate each individual, and make him a beneficial return in the end. I should hope that what has taken place will be sufficient to put those gentlemen connected with the Architectural Exhibition who have assumed the labours and responsibilities of a committee, at once in possession of the necessary funds, and that a permanent institution of the kind will be established,—until Architecture is provided by the country with a suitable building, and the management of which shall be in the hands of Architects."

Now, it is right it should be understood that the responsibility of the step rests wholly with the Architect-Academicians, and that they were led to it through the smallness of the number of exhibitable drawings present in, and a desire to obtain as much room as possible for oil paintings, of which a larger number than usual were submitted. We are enabled further to state, that it is not in any degree determined that this is henceforth to be the fixed hiding-place of poor English architecture, who is just now "catching it" from all hands, and has not a friend left to aback her; but that if she appear in better clothes

next year, she will be housed in her former quarters, and allowed to take again her share of the North Room with the painters, so that (to joke on a bitter subject) we may enjoy our 'half-and-half' as before, such as it was. The octagon room is quite unfit for the purpose, notwithstanding the opening of a second window in it, and is altogether inadequate for such an architectural exhibition as the metropolis ought to make. We must say, however, as we said last week, that it is about as good a room as the collection it now contains deserves; but we must at the same time also repeat, that the Architect Academicians might and should have prevented this. "What is the use of having architects amongst us," two members of the Academy said in our hearing, a few days ago, "if they will not exhibit?" The remark may be worth the consideration of our brother-architects in the Academy, not as affecting themselves, but as touching future elections, and the position of the art they profess.

The collection consists of but eighty-seven drawings and one small model, and of these there are a dozen, such as Mr. Arundale's "Meeting of Godfrey de Bouillon and the Emperor Alexius" (309); "The Pulpit in the Church of St. Gudule, at Brussels," by Mr. Essex (285), &c., which cannot be strictly called architectural. The most important drawing, and a very cleverly executed drawing it is, is 250, "A Composition," by H. E. Kendall, jun., founded on a quotation from Rogers's "Italy," which describes,

"A vast metropolis, with glittering spires,
With theatres, basilicas, adorned;
A scene of light and glory."

This is an endeavour to give examples of a certain style (in this case Italian), as applied to bridge, town-hall, and other buildings, disposed pictorially; and, though it may remind us in parts of "Rosherville," and be more noticeable for playful fancy than dignified beauty, it has many claims for praise.—No. 241, "The Mansion now in progress of erection for the Earl Ducie, at Cromhall Park," by S. S. Teulon, is a Tudor building, with large tower and high roof, less successful as a composition than some previous works in this style by the same architect.—243 is a "North View of Preston Hall, near Maidstone," by John Thomas. There is a view, also, by Mr. Andrews, of Somerleyton Hall, the seat of Mr. Peto, (executed by Mr. Thomas), of which we shall give an engraving in an early number of our journal.—251, "Design for the Cambridgeshire and Ely County Lunatic Asylum," by E. and S. Lapidge, is Tudor in style.—249, "Drummond Castle, Perthshire," shows a design for the restoration of the Keep, by G. P. Kennedy; and 259, "The Trossacks Inn, Loch Katrine," is by the same. This Inn, which has been erected for Lord Willoughby d'Eresby, has been mentioned by us before as in character with the scenery that surrounds it.—267, "New Wing at Adare Manor, Limerick," by P. C. Hardwick, is an exceedingly good adaptation of domestic Gothic, cleverly depicted: there is nothing better in the room.—260, "The Great Western Hotel, Paddington," by the same, will probably come out better on the ground than on paper. It has two high turrets (one at each end) and a central balcony is carried by sculptured figures.—A view of "Colney Hatch Lunatic Asylum," 271, by S. W. Daukes, is

hung too low to be examined.—272, "The Goods Departure Warehouse of the Great Northern Railway at Battle Bridge," by J. L. Cubitt, is a very good drawing of a subject without any claims for representation.

—282, by W. Papworth, is a study of Fenestral arrangement,—showing public entrance to galleries of art attached to a nobleman's residence. The building is very lofty: the portico and entrance somewhat of the smallest.—Two views of St. Stephen's, Walbrook, 289 and 297, are sadly out of perspective.—The design for St. John's Church, Hobart Town (288) by G. E. Street, has an enormous tower as compared with the body of the church and a high roof with louvres.—291, "Design for proposed Lunatic Asylum," by W. Boyle, is picturesquely treated.—318, "The Handley Memorial, Sleaford," by the same, is injured by the restriction of size for the base.—292 is a view of Bishop Duppa's Almshouses, Richmond, now being erected, by T. Little (not F. as in catalogue). These are Elizabethan in style, and have the entrances at the back, which gives a novel aspect to the front. Mr. Little also exhibits a view of "St. Mark's Church, Regent's Park," (307).—294, "Design for re-building Blackfriars-bridge, and throwing open the West Front of St. Paul's," by A. Ashpiet, has the peculiarity of proposing the erection of shops on each side to pay the interest on the cost: midway the shops are omitted for a certain distance (as at Edinburgh) to give a view of the river. Were there any probability of this design being carried out, we should, with all regard for him, protest against any such obstruction of the river view.—

"Llanarth Court, Monmouth," (304), recently rebuilt with terraces by W. and E. Habershon, is Ionic, on a basement.—314, "Design for the proposed Improvement of New Cannon-street, City," by A. B. Blenkarn, has little out of the ordinary manner.—The piers of the suspension-bridge over the Thames, just now commenced near Chelsea Hospital, will be of curious Moorish design if carried out in accordance with 315, by T. Page.

We will take this opportunity of recording that the Academy dinner of this year was distinguished by a speech from Prince Albert, expressive of His Royal Highness's esteem for the President, Sir C. L. Eastlake, of the consideration due to every artist, and of the continued favour with which the Academy is regarded by the Crown. On the second head the Prince said, "The production of all works in art or poetry requires, in their conception or execution, not only an exercise of the intellect, skill, and patience, but particularly a concurrent warmth of feeling, and a free flow of imagination. This renders them most tender plants, which will thrive only in an atmosphere calculated to maintain that warmth, and that atmosphere is one of kindness—kindness towards the artist personally, as well as towards his production. An unkind word of criticism passes like a cold blast over their tender shoots, and shrinks them up, checking the flow of the sap which was rising to produce, perhaps, multitudes of flowers and fruit. But still criticism is absolutely necessary to the development of art, and the injudicious praise of an inferior work becomes an insult to superior genius."

* This is more apparent in a lithograph of the Memorial which has just been published for the architect by Aclerman.

REMARKS ON THE SYSTEM OF SMOKE-CONDUCTION AND VENTILATION ADOPTED AT OSMASTON MANOR.*

Four centuries have hardly elapsed since our forefathers found it necessary, for their personal comfort, to construct fire-places and flues in the walls of their houses, for the consumption of fuel and the removal of smoke; and it is well known how the skill of their architects converted the chimney stack and its terminations into picturesque, and even highly ornamental, features. It must also be acknowledged, that little progress, if any, has been made by their descendants, in improving upon the models thus bequeathed to them. In modern times, however, the superiority of workmanship exemplified in closely-fitting doors and windows, has rendered it highly requisite that greater attention should be given to the construction of chimney openings and fire-grates. Volumes of scientific research, and records of the application of true principles, have been published, and very great improvements have been made in the form of the chimney-back and the open grate; but the separate flue, with its consequent termination, has continued to retain its ordinary form, and, though the stack and the shaft have been varied to suit the architectural character of the building, the attempted cure of smoky chimneys has been confined to the mouth of the flue, or to innumerable contrivances at the top of the stack.

The system of smoke-conduction and ventilation now proposed for consideration has no claim to novelty, except in one particular, as particular circumstances of smoke and ventilation flues have been adopted for several years in places where peculiarity of situation, or other circumstances, rendered the application necessary. Indeed, the germ of the principle of descending and ascending flues is observable in the well-known ventilation of mines, in which the air, sucked downwards through the short leg of the downcast shaft, traverses immense galleries, carrying with it smoke and foul air, and is finally discharged at the top of the upcast shaft; the greater altitude of the latter, combined with the application of strong heat at some part of its length, causing and increasing the draught.

The particular points of difference which the present example presents, in comparison with others of a like kind, consist in the application of the principle to a residence on a large scale, having open fire-places, and in the traction of all the smoke and foul air generated in the house, offices, stables, conservatories, and green-houses, into one large detached vertical shaft.

Mr. Francis Wright, with whom I had the pleasure of co-operating in the erection of his house, and to whose energy and fixedness of purpose the successful result in this instance is mainly attributable, intended at first to erect a house with high pitched roofs, gables, and chimneys; but the situation being high, it was considered that the irregular points of such a building would hardly form a satisfactory skyline, and it was therefore abandoned for a design, marked by horizontality of general form, in the style of James I. It was moreover thought desirable that the roofs should serve as terraces or platforms, at different levels, from which the beautiful scenery of the adjacent country might be enjoyed, without inconvenience from smoke. As the use of ordinary chimney flues and stacks would have been incompatible with this condition, recourse was had to Mr. Sylvester's suggestion for the removal of the smoke, by the means which would also prevent its return into the rooms, and allow such a combination of the ventilating arrangements, as would render the action of the whole efficacious and regular. At this stage of the proceedings, Mr. Sylvester was called in, and this portion of the work, with other economical arrangements, has been carried on, more or less, under his direction.

From observation and experience it appears, that the principle now under consideration can only be successfully carried out where the following conditions are fulfilled:—

1. The addition of a system of artificial ventilation, whereby the quantity of air necessary for combustion is supplied in a pure state, which, in its progress to the chimney, changes the air of the apartment.

2. The perfect insulation of the flue, so as to be free, if possible, from the influence of atmospheric changes, and the temperature of the external air.

3. The securing, as nearly as possible, an equable temperature throughout the whole length of shaft.

4. The application of heat at the base of the vertical shaft, sufficient to force the current upwards, at the point where the horizontal flue is connected with the chimney stack.

5. The absence of all right angles in the connection of the collateral flues with the main ducts, on the principle which would be most efficacious in promoting the rapid and unchecked flow of water in pipes or drains.

6. Such a height of shaft as shall always be considerably above the highest fire-place in the building, increasing in an accelerating ratio with the heights of the fire-places above the level of the horizontal duct. The upper part of the chimney stack should be entirely clear of all surrounding trees or buildings, otherwise a turn-cap may be necessary to prevent downward currents in storms or windy weather.

In the case of a large house, with its numerous apertures enveloped by a medium ever in motion, and with its internal atmosphere more or less sympathetic with the currents of the outer air, a variety of novel circumstances are called into operation, which complicate the action of the simple principle, and increase the difficulty of its application. The general system observed in the plan of Osmaston Manor, is the combination of the portion used as a dwelling, with its domestic offices, stables, conservatories, and gardens, in one connected arrangement, by which the distance of the kitchen gardens and hot-houses is also reduced to the least space, compatible with a due regard to appearance and shelter. The general cold-air shaft forms a tower at one angle of the kitchen, and it is connected with the heating apparatus by means of the underground shaft, shown on the basement plan. The upper part of the shaft is provided with a turn-cap, moved by a spindle and vane, which insures the regular supply of air downwards, by keeping the open side of the cowl always turned towards the wind. There is also a central tower in the house, rising to the height of 80 feet; and a clock-tower at the angle of the conservatories forms the centre of the stable court.

The smoke-shaft is placed in the centre of the kitchen garden at a level 20 feet higher than the ground floor of the house, and a rise of several feet is thus obtained throughout the underground main flue, from the retaining wall to the base of the shaft, which is in itself favourable, as it increases the velocity of the current.

As to the manner in which the fire-grates in the rooms are set, the formation of the back, and its connection with the flue,—the back hearth is a grating, under which there is a shuttle, which, being opened, allows the ashes to fall into the smoke flue, into which all accumulated dust and light ashes are removed immediately by the strength of the current, without the slightest inconvenience in the apartment. The front hearth and grating are cast in one piece, and the former is generally covered with Staffordshire tiles, through which a considerable amount of heat is transmitted from the radiation of the iron. The back of the grate is formed with louvings, through which the smoke passes into the flue, the size of the opening being regulated by a rod connected with the front of the fire-place.

The ordinary smoke flues are formed of elliptical Staffordshire tiles, which, being glazed inside, do not allow any considerable accumulation of soot, and descend as nearly vertical as possible to the underground brick flue. These horizontal or secondary tunnels are built of brick or stone, perfectly air-tight, and they form invariably a very acute angle at their connection with the main tunnel, so as to offer the least obstruction to the forward cur-

rent. In the construction of the main underground tunnel between the building and the smoke shaft in the kitchen garden, the sides, bottom, and arched top are formed of nine-inch brick-work, between which and the earth the outer space is filled up with solid concrete, care being taken to preserve good drainage from the same underneath the inverted arch of the tunnel. The whole of the outer surface of the upper vault was covered with tar, burnt into the joints of the brick-work, over which a coating of gas tar and gravel, 3 inches thick, was spread, to receive the concrete. By the use of stone springers, the inner arched flue was constructed of half brick (the arch being turned in short lengths), and it is thus surrounded by an air-tight vacuum, which serves as a non-conductor of atmospheric influence, while the other means adopted are effectual in rendering the whole water-tight. The horizontal tunnel has a double connection with the great shaft; and the boilers used for heating the hot-houses and garden walls, being fixed immediately under this part, effectually accelerate the draught in the curved junction between the horizontal tunnel and the vertical shaft. It is proposed to fix a small gasometer in this part, from which the gas will be conveyed in pipes throughout the smoke tunnels.

In assigning to the main descending and ascending shafts their relative position upon the plan, we were governed by local circumstances, and considerations of obvious convenience in the arrangement. As the architect is generally trammelled by such considerations, it will not be of any practical utility to give rules for the relative position of the shafts, further than that, where possible, it is better to place the air-shaft towards the direction of the prevailing wind, which in this country blows most frequently from the west.

The shaft is 150 feet high from the ground, which is at this point 32 feet above the cellar floor level: there is, therefore, a total altitude of 182 feet for the ascent of the smoke to the ultimate discharge. This shaft, with the whole of the external face of the walls of the house and offices, is built of dark gray limestone obtained in the neighbourhood. It is 21 feet square at the base, and 17 feet square at the top, under the corbelled cornice. It stands exactly in the centre of the middle garden wall: on each side, ranges of hot-houses are in course of erection. The smoke shaft is circular, 8 feet in diameter internally, and stands, for its entire height from the ground line in the garden, quite free for the outer casing: the space between the shaft and the outer wall of the tower is occupied by cast iron winding steps, with landings at every eighth step: they are laid into the outer, but do not touch the inner wall. Very easy access is thus given to the gallery at the top, which commands fine views of the property, and the surrounding country. This mode of construction is applicable to large chimneys of every description. The instability of many large shafts is owing to the disturbing effects of the expansion of the brickwork near the heated smoke current, which has sometimes a temperature of 200° to 300° above that of the external air, and the consequent expansion varies from 1 to 2 inches.

The cold-air shaft is 8 feet square internally, 12 feet square externally, and 63 feet high from the ground line in the kitchen court: it is provided with a turncap and vane, to render the action constant and unvarying, and is connected with an underground flue, of the same dimensions, running parallel with the horizontal smoke tunnel, and supplying the heating apparatus with pure fresh air, whence it is transmitted to the apartments in a very agreeable condition. A constant circulation is maintained from the apparatus, in winter and summer, throughout the apartments, to the several chimneys or other ventilating apertures, until it ultimately finds its way to the top of the large shaft. Hot water apparatus, upon Mr. Sylvester's principle, is fixed in certain portions of the distant flues, so as to render the action as regular as possible throughout the whole of the apartments. Connections are also formed by flues in the wall with all the baths, water-closets, or other places where

* From a paper read at the ordinary meeting of the Royal Institute of British Architects, by Mr. H. I. Stevens, on Monday, April 25th.

ventilation is required; all of which are ultimately united with the grand arterial conduits.

Some description of other arrangements at Osmaston Manor may prove interesting:—

The coal-yard is placed in the centre of the stable and kitchen courts: it is, however, passed without notice in consequence of its being several feet below the court, on the same level as the passage leading to the stoker, and communicating with the brewhouse and cellars. On the inclined floor of this passage a tramway is laid, with turning-tables at the angles. The trucks running on this way convey wine and malt liquor into the cellars, and by means of a hydraulic lift connected with it, coals or heavy goods are raised to the bed-room floors, without the slightest interference with the staircases in the house. The principal lift rises to the height of 40 feet from the cellar floor, and has a well or cylinder of the same depth below, in which the plunger works: the machine is put in action by the introduction of water at the bottom, which, by its pressure, forces the piston upwards. There is another lift, connected with the scullery, for the use of the kitchen offices.

The boilers, attached to the heating apparatus, and supplying hot water to the baths and house generally, are fixed immediately under the brewhouse, and the pipeage from them is intended to heat the conservatory also, while a large plunge bath is rendered tepid from the same source.

The whole of the building is rendered fire-proof by the use of cast-iron girders, supporting brick arches, which form the floors and roofs. The upper surface of the roofs was first levelled with concrete: bricks were then laid at distances of two feet, forming a succession of gutters, with a sufficient fall to the cast-iron gutters. The whole was then floated over with Roman cement, and covered with thin sheet lead. The slates are one inch thick, polished on both sides, cut to a regular gauge and size by the workmen, and merely laid on the ridge part, without any other assistance to form the joint than the accuracy of the cutting. The surface is now remarkably level, and has not undergone the slightest change since the roofs were finished. I should not recommend the use of Roman cement immediately under lead, but I should prefer tiles, made so as to form the ridges and gutters, on which the lead might be dressed; as, where the surface of the lead is in contact with the cement, oxydation is found to be going on to a considerable extent, from which those parts which touch the brick only are perfectly free.

A considerable collateral advantage is obtained by the adoption of flat roofs, and the remote discharge of smoke. The portion of the offices occupied as larders and dairies, being covered in a similar manner to the principal part of the house, forms an excellent drying yard, accessible from the landing of the laundry stairs, and screened by perforated stone work, so as to be entirely out of sight, except from a high level.

The system of smoke conduction which I have described has now been in operation for two years, and, as far as regards the general principle, it must be pronounced quite successful. Mr. Wright assures me that smoky rooms are unknown in his house, and that the ventilation is perfect and most agreeable. The rapidity of the current is increased considerably when the wind is high, but there is at all times, even under the most unfavourable circumstances of density in the atmosphere, a free discharge of smoke and foul air. A genial warmth from the heating apparatus is always diffused throughout the passages, and in the remote corners of the rooms where the radiating influence of the fire cannot extend. The roofs are also perfectly accessible, and free from the slightest taint of soot or foul air.

It is not my intention to advocate the system for general use, as in numerous cases it could not be applied, and it is probable that the extra cost would, in the generality of practice, prove a barrier to its adoption. There is, moreover, no doubt that the situation of Osmaston is peculiarly favourable for the appli-

cation of Sylvester's principle, built as the house is on hanging grounds, with a considerable elevation behind, by which the relative altitude of the great shaft is increased, and the discharge is obtained clear above all surrounding objects.

There are, however, few public buildings on a large scale in which the system might not be advantageously employed, and the lunatic asylum near Derby may be mentioned as an instance in which the result is found to be quite satisfactory, while the architectural difficulties have been surmounted in a very successful manner. The absolute necessity for a great height of shaft precludes its adoption in small houses, unless in ranges of combined dwellings. The removal of the ashes and soot being effected at the bottom of the flues, is a very important advantage, and when the latter are properly constructed, they rarely require sweeping. The distance of the shaft from the house, as at Osmaston, is not at all necessary, as there is no objection whatever to its being built in the centre, with the apartments grouped round it; in which case, a tower rising out of the mass would form, under skillful treatment, a highly picturesque feature, and under such circumstances, it would only be requisite to make the height of the smoke shaft as much above the highest fire-place as is requisite in ordinary cases to ensure draught, while the flues need not descend, but they might traverse the walls to the place of connexion with the vertical tunnel: of course, in such instances, due allowance must be made for loss of draught by friction, according to the distance which the smoke travels horizontally to the main shaft. Only a very slight space is required for the passage of smoke and vapour, when the fires have been lighted a short time in the grates at Osmaston: indeed, I have observed on several occasions that the opening of louvres at the back of the fire-place did not exceed one inch superficial.

Other objections may be raised to the application of the system besides its expense, such as the disagreeable appearance of a house without chimneys, and the discharge of a large body of smoky vapour from one shaft, instead of small quantities from numerous smaller ones: still these objections are only incentives to invention; and as the principle is right and philosophical, and has been proved by successful operation, we may expect that vases, balustrades, and statuary works will supply the place of chimneys, and that we shall soon learn to consume the carbon of the smoke, and to reduce it, as nearly as possible, to clear vapour.

In reply to numerous questions from members, Mr. Stevens said, that the expense incurred at Osmaston was much greater than it would have been if the house had been constructed with ordinary chimneys, but he did not think it could be taken as a fair example of the best mode of applying the system, which could be carried out in a cheaper manner. In the present instance it had cost about 5,000*l.* of the total sum of 50,000*l.* to 60,000*l.* which had been expended. The pure air shaft was used for the ventilation of the house generally, so that coolness in summer could be ensured as well as warmth in winter. The highest fire-place was 34 feet 6 inches above the floor line of the principal rooms, and the flues from all of them descended to the horizontal shaft, which was 8 feet square, and ended in the upcast shaft. The latter rose to the height of 150 feet above the highest fire-place. The chimney flues were formed of tiles, made in the form of a parallelogram, 14 inches by 10 inches, with the corners rounded off. That size was retained when the flues became horizontal, and when they entered the main shaft a space of 144 inches was allowed for each downward flue. He was of opinion, however, that there would be no danger, and certainly a saving of expense, if the vertical portion of the flue were made smaller to the extent of about one-fourth, which would allow a proportionate saving in the construction of the main shaft. There were flues in the external walls, but they were so built that it was hardly possible that they would be acted upon by the atmosphere. Alluding to the construc-

tion of the main upward shaft, he observed, that if all chimney flues were built and kept with an air-tight space around them, there would not be such frequent complaints of smoky chimneys. The fire in the grates at Osmaston was made upon a grating at the level of the floor, and the ashes fell through it into an ash pit, which could be cleared by drawing away the moveable hearth, or the ashes might be allowed to pass through the opening and to fall to the bottom of the flue. The draft being strong, and every part of the work fire-proof, there was no apprehension of their catching fire, in the event of any ignited soot finding its way to them. Unless there were a number of fires burning at one time, there might be some difficulty in maintaining the draught, if the fire was not constantly kept up at the bottom of the great shaft. The removal of the soot was provided for by the size of the flues, all of which were large enough to receive a man. He was informed that the application of this system to the Bath Gaol added 5 per cent. to the cost of the building. The draught was not prejudiced, but, on the contrary, rendered stronger, by the windows being opened; nor would the draught of the rooms having closed windows be affected by the windows in the other rooms being opened. The division of the horizontal main flue into two branches, at its entrance into the upright shaft, was occasioned by the position of the shaft with reference to the house; the latter facing to the south-east, whilst the former faced the four cardinal points. The inner circular shaft was of 9-inch brickwork, without iron bands, and, from a point indicated in the section, it stood entirely separate from the outer walls, to the very top. The stairs formed a spiral round the shaft, but the steps were not at all connected with it, nor did they even touch it: they were formed of plates of cast-iron, let into and supported by the outer wall.

The outer square casing was of brick and limestone; in the thinnest part about eight inches thick. With respect to the height and capacity of the up-shaft, the general proportion was 144 inches for each flue that entered it, both horizontally and vertically; but he believed that proportion might be reduced. The height of the shaft must be regulated by the distance the smoke had to be drawn downwards, the friction increasing in an accelerating ratio in proportion to the height; but if there were fires on the ground floor only, a very low shaft would be sufficient. The shaft at Osmaston was five times the greatest height from which the smoke was drawn: he believed that it was higher than was necessary, but he was not able to lay down any rule, as it must depend on the locality. There was no advantage in placing the shaft so far from the building: Mr. Wright's wish was to convey the smoke entirely away from the house, and it was found that if the shaft had not been of a considerable height, in some states of the wind, the smoke would have been blown back again. At present, even in the worst winds, the shaft stood so free, that the draught was not at all affected, even in the farthest flues.

To an inquiry, how fresh air was introduced into the various apartments, Mr. Stevens replied that, in some instances the air was let in at the floor level, by gratings in the skirting; but he intended, in the rooms about to be finished, to introduce it at the top. He believed that Mr. Silvester considered that mode preferable to the former, as the fresh air mixed better with that of the apartment, and persons were not so likely to feel the draught. The vitiated air would then escape at the chimney, which was in fact the ventilator. It was desirable to introduce the air in as large quantities as possible, so as to have much more than was required. The smaller the current, the greater was the sensation of draught.

To an inquiry, how the warm air was introduced into the rooms, and whether the downward shaft was provided with any machine to ensure a supply of fresh air, Mr. Stevens said that the down-shaft was provided with a turn-cap and vane, which had the effect of turning it to the wind, so that the passage of the air was always constant and unvarying. From that shaft the air passed along a duct to the

heating apparatus, a series of vessels placed together, in which hot water circulated. After being thus warmed, the air passed into a flue, and so upwards in the brick-work of the walls to any part of the house. He had generally thought it best to introduce it into the apartments near the windows, so as to check the current of cold air in that part of the room. He believed it had been found that, by introducing the air at the bottom of the room, the draught became so rapid as to prevent the ventilation of the upper part of the room, and that was one reason for proposing to introduce it at the top.

THE INSTITUTE OF BRITISH ARCHITECTS.

The following is a list of the office-bearers elected for the ensuing year:—*President*—Earl de Grey. *Vice Presidents*—C. R. Cockrell, C. Fowler, P. Hardwick. *Honorary Secretaries*—J. J. Scoles, C. C. Nelson. *Honorary Secretary for Foreign Correspondence*—T. L. Donaldson. *Honorary Solicitor*—W. L. Donaldson. *Ordinary Members of Council*—J. B. Banning, T. T. Bury, B. Farrey, H. Garling, J. Jennings, H. E. Kendall, Jun., J. W. Papworth, G. G. Scott, Sanston Wood, E. Woodthorpe. *Treasurer*—Sir W. R. Farquhar, Bart. *Auditors*—E. Christian, Fellow; S. J. Nicholl, Associate.

THE INTERNATIONAL EXHIBITION. MACHINES IN MOTION.

ONE of the lions in this department of the Exhibition is Appold's Centrifugal Pump, which seems indeed to rank next, in attraction as well as in noise, to Applegath's wonderful printing machine, by which *The Times* and *The Illustrated News* are printed. By means of a little wheel, 12 inches in diameter, with twisted apertures, radiating from an open central space, there is made to rise to the roof of the department a mass of water which produces a broad and heavy, noisy, and continuous waterfall that might turn a powerful water-wheel. Of course, however, to produce this striking result, sufficient power is requisite to produce that rapid revolution in the little wheel which does the work. The wheel itself contains only a single gallon of water when its apertures are full, yet, by being made to revolve at the rate of 607 revolutions in a minute, it lifts no less than 1,800 gallons in course of that time; so that it must be filled and emptied about three times in the course of every revolution. In fact, the disc, once under water, where it works, may be said to carry the water through its apertures in continual streams, or threads, or cables rather, of water, forced out at several interspaces by the centrifugal power of its rapid rotation; so that the weaving of such threads of water is not so fruitless a process as the ancient one of twisting ropes of sand. By the way, could not quicksands themselves be very rapidly scooped out by a machine somewhat like this?

The direct purpose of Mr. Appold's invention, which he has most liberally made a present of to the public so far as regards any private patent right which he might have reserved to himself, is for the drainage of marshes; but to this might also be added such other uses as that of clearing cofferdams for docks, &c. Indeed, it is stated by the inventor to be "particularly well adapted for a tide-pump, discharging more water the lower the lift, the pump going the same speed; while other pumps discharge only their contents, no matter how low the lift." The machine at work was manufactured by Messrs. Easton and Amos, of Southwark. We examined the interior of the perpendicular leader, if we may so call it, through which the water is lifted from a narrow slope below, in order to assure ourselves that the disc or wheel was of something like the dimensions stated. A small one was also exhibited, which, though only three inches in diameter, evolved 150 gallons a minute, and sent a strong jet up to the roof. A modification of Mr. Appold's invention, though called "Bessemer's centrifugal disc-pump for draining land," is also exhibited. The disc is 6 feet in diameter, and it discharges 20 tons a

minute. There are also other interesting forms of the same centrifugal principle, such as a disc-pump for locomotive engines.

Near these machines Messrs. Holtzapffel & Co. have erected a pretty little miniature shop, containing specimens of ornamental and fancy turning, an amateur turning-lathe, and other apparatus; and behind this curiosity-shop we have another erection, to show "the imperishable water-shoot" for the improvement of labourers' cottages and other buildings, by dispensing with all external wood and metallic work on roofing: the invention consists simply of a tile eaves-gutter, in place of a leaden, zinc, or wooden one. The roof-tiles, or slates, of course, lap over this gutter, which takes the place of the edge-row. The only "machinery in motion" here is a stream of water issuing from pipes, and running, as rain does, over the roof and into the tile-gutter. The mode of joining the lengths of gutter, an important point, seems questionable.

Armstrong, of Newcastle, has several of his simple and useful hydraulic machines at work near this spot. The rapid wheelings, liftings, and lowerings of a little model crane, with a comparatively heavy weight attached, speak well for the utility of an invention which we long since recognized as a hopeful one, whether applied to cranes or to various other purposes, wherever a common water-pipe can be laid on with water from a proper level. A machine for hoisting sacks is also exhibited.

The next machine we have noted is a model sawing-machine for quarry work, sent from Bath, by Messrs. Randall and Saunders, of Orange Grove, who have the original, and we believe as yet the only one, in use at their quarries at Corsham. By this machine the stone is cut from its natural rock according to the thickness of each stratum, the saws only cutting in the line of depth, or rather at an angle of about 45 degrees. The strata, as illustrated on the model, assume, under the operation of this machine, the shape of a flight of steps, and the saws run from top to bottom, and simply cut into the face of the whole flight. The apparatus, at the Corsham Quarry, works eight saws, which are 24 feet long. By a simple arrangement each saw is allowed an action independent of the others, and can be worked at any angle. In case of an impediment, it is arranged for either saw to stop before it is strained, and without interfering with the action of the others. This machine does the work of seventy men. When the stone is cut out into blocks, it is removed by a traversing crane worked by the same ropes which work the saw frame, and both are driven by steam power. The same persons exhibit a model of their balance saw-frame, which is constructed on a new principle for sawing blocks of stone, marble, &c., either by steam, horse, or hand power; and with this machine is shown a model of a portable balance hand-saw frame, for working one or more saws by hand power for cutting stone or marble. Both are worked at an angle, like the quarry saw.

Messrs. Randall and Saunders also exhibit a brick and pipe making machine with double screw press and perpetual cutter, adapted for making their patent draining bricks, for sewerage purposes, and of which a description has appeared in our pages.

A patent riveted-iron, square-cellular crane, rising in the form of a quarter of a circle set on end, with the chains running through the interior of the tube, is exhibited by Mr. Fairbairn, of Manchester. Its height is probably 18 to 20 feet. The same manufacturer exhibits an improved patent riveting machine, of massive proportions. Near it is another from Duktinfield's iron works,—Garforth's patent direct-acting steam-riveting machine for steam boilers, &c. The advantage of such machines is said to be that, while the repeated impacts or strokes, formerly necessary, rendered the heads of the rivets liable to give way in finishing, repeated hammering tending to crystallize the iron, and thus to destroy its tenacity, here the effect is produced by instantaneous pressure. The hemispherical form, too, is given to the rivet, and is preferable to the conical, both as regards strength and appearance. A large

high-pressure boiler, furnishing steam for the machinery in motion, it is said, was made by this latter machine, and proved to stand 150 lb. per square inch.

A striking-looking machine, though not a very new one, is Ryder's patent forge for iron or steel, the strokes of its little hammers on its anvils being so rapidly reiterated, that the apparatus looks as if it were in a state of men constant vibration. The anvils and hammer shipped while we saw it were adapted for rounding a bar of iron into something like a spindle. Red-hot iron was represented by cold lead, which rapidly assumed the form of a clean spindle four or five times the original length of the lead.

The steam travelling crane of Messrs. McNicol and Vernon, of Liverpool, may next be noticed, though it cannot be easily described without engravings. It consists of an elevated framework, with a sort of skeleton railway, supposed to run aloft along the course of a timber or stone yard, or other space where logs, stones, &c., require to be moved about. It has three motions, a hoisting, a longitudinal, and a transverse, each of which may be worked separately, or any two of them together. The machine is said to be able to load five tons, and shift it 100 feet in a direct line, in forty-five seconds. Ten thousand and twenty-five logs of Quebec timber are said to have been lately shifted in nineteen minutes twenty seconds by it at Liverpool, in presence of some members of the council and about thirty other gentlemen.

A somewhat ponderous congeries of pipes in this department is called The Fuel Economizer for Engines of 100 horse power, Green's patent. Its purpose is to convey heated water into the boilers at the boiling point, the feed water being heated by the spare heat from the boiler flues to boiling heat, and a considerable quantity of steam generated before it enters the boiler, thereby saving, it is said, one-third to one-fourth of the fuel. The apparatus can be applied to boilers of any description, stationary or marine.

A sea-water freshening machine, — Fell's patent,—is said to produce 200 gallons of fresh water a day from sea water. The principle of this invention, which has only been patented about two months, consists in keeping the water to be freshened below the boiling point, whereby its vapour is more easily managed, and more rapidly condensed and cooled than could be done by the usual process of distillation.

Machines for spinning, weaving, and printing cotton and flax, lace machines, and such like, form a very considerable portion of the whole exhibition of machines in motion. It is a most interesting sight to see these at work, and we cannot help remarking, that nothing more curious or beautiful can be seen in all the exhibition of machinery in motion than the many modes in which human actions are simulated, such as the whisk of the weaver's arm in the sudden hitch by which he sends the shuttle from side to side, or in the movement of the shoulder, elbow, wrist joint, knee, and foot, by which other familiar operations are performed. One ingenious little machine bristles an india-rubber band with carding-needles, bending, angling, and cutting every wire as it threads it on, in a way that looks really quite magical.

Amongst the lighter order of machines are those for making envelopes, which constitute centres of attraction for the visitors, as does a simple little apparatus into which pins go higgly-piggly, and come out all ready stuck in radii round a new sort of pin-paper, into which they "take their places" in a way that seems to astonish both "ladies and gentlemen." Round the ornamental pin-paper is the somewhat old motto for so sharp and lancing a little weapon—"Peace on earth and good will to men!" but such a seed, sown where it may be, can but do good.

One of the machine-made barrels, of good stout build, may be seen in this department; it is said to have been made in five minutes, by the patentee, Mr. W. Wild, of Salford.

We may here mention that Messrs. Clowes

and Spicer have a new edition of the catalogue just ready, which will doubtless be more useful than the first. Under great difficulties these gentlemen kept their word, and were ready on the opening day, not only with the shilling catalogue, but with the first part of their *Illustrated Edition*. The latter contains a description of the building by Mr. Digby Wyatt, and some other useful introductory matter.

NORTHUMBERLAND HOUSE, IN THE STRAND.

The original Northumberland House was built in 1605, and Bernard Jansen and Gerard Christmas are supposed to have been the architects. According to a MS. note by Inigo Jones, in his copy of "Palladio," in Worcester College, Oxford,* the front was 162 feet in length, and the court 81 feet square. All that is old of the building we now see is the curious façade next the Strand, surmounted by the lion of the Percys. Along the front originally there was a border of capital letters instead of the present ugly parapet.

In the quiet court-yard, of plain Italian character, to which the handsome portal leads, it is difficult to believe that you stand in the throbbing heart of an excited city. The figure of Nelson, and the Lion, inscribed *Esperance en Dieu*, seen above the façade (an appropriate conjunction), alone enable you to recall the locality. At the back are grass, gravelled walks, and flourishing trees. The staircase is very handsome. It has a central flight of marble steps, and branches right and left; with richly worked *or-molu* railing and lamps, scagliola columns, and carved marble podium. The great feature of the house, however, is the Picture Gallery, an apartment of large size, richly (perhaps too richly) ornamented with groups in relief, eagles, boys, and foliage fully gilt, and containing a series of fine copies of Raffaele's School of Athens, Marriage of Cupid and Psyche, and others. Amongst the pictures, with which the walls of the other rooms are covered, will be found choice specimens of the art of Titian, Vandyke, Salvator, Carravaggio, and others. Admission till now has been obtained with difficulty.

LIGHTNING CONDUCTORS.

In your last week's number, in the account of the "Edinburgh Assembly Hall struck by Lightning," you observe that "the spire had no lightning conductor."

So frequently are these occurrences recorded, that one should imagine their cost to prohibit their employment; but from having for some years past attached those invented by Professor John Murray to many towers and spires, and witnessed their efficacy, I can assert that the cost has not in any case exceeded two shillings per lineal foot, including the gilt head and water-tank.

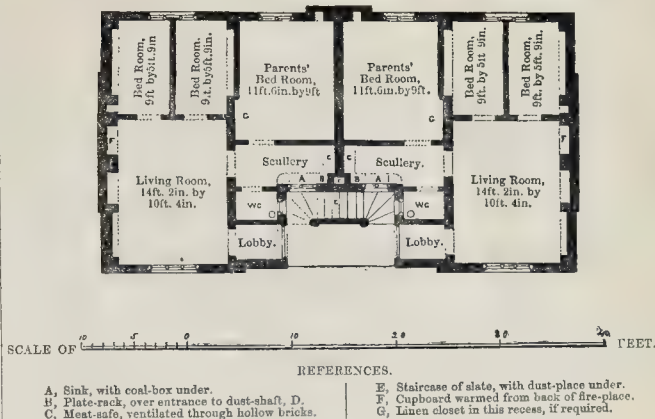
Whilst King Cross Church, at Halifax, was unfinished, and the conductor incomplete (the lower end being 20 feet from the ground), an electric discharge took place during a heavy thunder-storm, which passed down the conductor, and struck the ground at some short distance from it, without affecting the building. Scaffold-poles were at the time many feet above the level of the attracting point, and lead flashing within three feet of the conductor: the holders were of glass, secured by iron loops run with lead to the stone-work, the conductor being formed so as to admit of contraction and expansion.

With so efficacious and inexpensive a remedy (which you have frequently noticed heretofore), why need we have to record the destruction of buildings by almost every thunder-storm?—R. DENNIS CHANTRELL.

THE WARWICKSHIRE ARCHAEOLOGICAL and Natural History Society and the Northamptonshire Architectural Society will hold a public meeting at St. Mary's Hall, Coventry, on Wednesday, the 21st instant, when several papers will be read, and the various churches, &c., visited. On the following day an excursion will take place to examine the most interesting objects in the neighbourhood.

* Quoted in "Hand-Book for London."

PLAN OF MODEL HOUSES FOR FOUR FAMILIES.



MODEL HOUSES FOR FOUR FAMILIES, ERECTED AT THE CAVALRY BARRACKS, HYDE-PARK.

His Royal Highness Prince Albert, as President of the Society for Improving the Condition of the Labouring Classes, has had this building raised with a desire of conveying practical information calculated to promote the much needed improvement of the dwellings of the working classes, and also of stimulating visitors to the Great Exhibition whose position and circumstances may enable them, by the carrying out of similar undertakings, without pecuniary sacrifice, permanently to benefit those who are greatly dependent on others for their home and domestic comforts.

In its general arrangement, the building is adapted for the occupation of four families of the class of manufacturing and mechanical operatives, who usually reside in towns, or in their immediate vicinity; and as the value of land, which leads to the economising of space, by the placing of more than one family under the same roof, in some cases, renders the addition of a third, and even of a fourth, story desirable, the plan has been suited to such an arrangement without any other alteration than the requisite increase in the strength of the walls.

The most prominent peculiarity of the design is that of the receding and protected central open staircase, with the connecting gallery on the first floor, formed of slate, and sheltered from the weather by the continuation of the main roof, which also screens the entrances to the dwellings.

The four tenements are arranged on precisely the same plan, two on each floor.

The entrance is through a small lobby, lighted from the upper part of the door.

The living room has a superficial area of about 150 feet, with a closet on one side of the fireplace, to which warm air may be introduced from the back of the range: the corresponding recess may be fitted up with shelves; and on the opposite side of the room a shelf is carried above the doors, with a rail fixed between them.

The scullery is fitted up with a sink, beneath which is a coal-bin of slate: a plate-rack at one end, drained by a slate slab into the sink, covers the entrance to the dust-shaft, which is enclosed by a balanced self-acting iron door. The dust-shaft leads into a closed depository under the stairs, and has a ventilating flue, carried up above the roof. At one end of the scullery is an enclosure, forming a meat safe, ventilated through the hollow brickwork: shelves are fixed over the doors, and a dresser-flap against the partition wall.

The sleeping apartments, being three in number, provide for that separation which, with a family, is so essential to morality and

decency. Each has its distinct access, and a window into the open air: two have fire-places.

The children's bed-rooms contain 50 feet superficial each, and, opening out of the living room, an opportunity is afforded for the exercise of parental watchfulness, without the unwholesome crowding of the living room by its use as a sleeping apartment.

The parents' bed-room, with a superficial area of about 100 feet, is entered through the scullery—an arrangement in many respects preferable to a direct approach from the living room, particularly in case of sickness. The recess in this room provides a closet for linen; and a shelf is carried over the door, with a rail fixed beneath it—a provision which is made in each of the other bed-rooms.

The water-closet is fitted up with a Staffordshire glazed basin, which is complete without any wood fittings, and supplied with water from a slate cistern in common of 160 gallons, placed on the roof over the party and staircase walls. The same pipes which carry away the rain-water from the roof serve for the use of the closets.

CONSTRUCTIVE ARRANGEMENT.

The peculiarities of the building in this respect are, the exclusive use of hollow bricks for the walls and partitions (excepting the foundations, which are of ordinary brickwork), and the entire absence of timber in the floors and roof, which are formed with flat arches of hollow brickwork, rising from 8 to 9 inches, set in cement, and tied in by wrought-iron rods connected with cast-iron springers, which rest on the external walls, and bind the whole structure together: the building is thus rendered fire-proof, and much less liable to decay than those of ordinary construction. The roof arching, which is levelled with concrete, and covered with patent metallic lava, effectually secures the upper rooms from the liability to changes of temperature to which apartments next the roof are generally subject, and the transmission of sound, as well as the percolation of moisture, so common through ordinary floors, is effectually impeded by the hollow-brick arched floors.

The external and main internal walls are of patent bonded brickwork, which has the important advantages of securing dryness and warmth,* with economy of construction: another important benefit arising from the use of hollow bricks is, that where they are laid double, in parallel courses, without headers, as in the patent bonded brickwork, the internal face of the wall is sufficiently smooth to render plastering unnecessary. In the present instance, where plastering has been resorted

* Those who are conversant with the evils resulting from the absorption of moisture by common bricks, and the consequent loss of temperature in rooms by evaporation, will only appreciate these advantages.

it is confined to one side of a thin partition, or to partitions formed with bricks not intended for the situation in which they are used.

In regard to some other parts of the brick-work, it should also be observed, that owing to the erection of the building having been determined on late in the winter, many difficulties had to be contended with in obtaining a sufficient supply of hollow bricks; and from accidental circumstances, disappointments were experienced in reference to a considerable number, on which account the structure should be regarded rather as the pledge of future excellence in hollow brick construction than as its full accomplishment.

The glazed surface of the bricks used in the two upper floor living rooms, and at the foot of the staircase, may, however, be referred to as a specimen of what can be accomplished by the skilful adaptation of fitting materials, and as highly creditable to their maker, Mr. Ridgeway, of the Staffordshire Potteries. Specimens of glazed bricks of clay from the north of Devon are also exhibited.

The advantages afforded by the use of hollow bricks in securing an effective system of insensible ventilation, deserves particular notice. Fresh air is admitted from any suitable point of the exterior of the building to a chamber at the back of the living room fire-place, where being warmed, it may be conducted to any convenient place of exit above the level at which the fresh air is admitted. Vitiated air may be conveyed either into the chimney flue or to any other suitable place of exit through the upper wall courses, perforated for this purpose, beneath the springing of the arch, or through the arch bricks themselves. Suitable air-bricks and ventilators have been prepared with these express objects in view.

Internally French plaster has been used, as drying quicker, and having a harder surface than ordinary plaster. The floors, where not of Portland cement, are laid with Staffordshire tiles, excepting to the right-hand room, first-floor, which is of lava, by Orsi and Armani. The coping is in Portland cement. The external string courses and internal cornices are the patent bonded bricks set in Portland cement, with the played side outwards.

MATERIALS AND FITTINGS USED IN THE BUILDING, WITH ADDRESSES.

The unglazed hollow bricks have been chiefly made by Clayton's patent brick and tile machines, to which the prize of the Royal Agricultural Society of England was awarded in 1850. The process of manufacture may be seen at the Atlas Works, Upper Park-place, Dorset-square, where detailed particulars may be obtained.

The patent bonded facing bricks generally, and those used in the floors and roof, were made at Aylesford, near Maidstone; the red patent bonded internal bricks, at the Baxley works, near Esher, Surrey; and some of the partition bricks, at Mr. Cubitt's works, Pimlico.

The glazed bricks were made by the Ainslie machine, at Mr. Ridgeway's, the Potteries, Staffordshire. These being the first specimens, the actual cost at which they are likely to be hereafter supplied has not yet been ascertained.

The brick-work was executed by Mr. S. Grimsdell, Sun-street, Bishopsgate-street.

The metallic lava covering the roof, the floor lava, and the gravel lava to the front, were laid by Messrs. Orsi and Armani, Guildhall-chambers, Basinghall-street.

The French plaster and the Portland cement floors have been executed by Messrs. J. B. White and Sons, Millbank-street, Westminster.

The tile floors in the left-hand ground floor rooms are from Mr. Peak, Tunstall, Staffordshire, or Macclesfield-street South, City-road Basin. Those in the right-hand rooms are from Messrs. H. & R. Haywood, Burslem, Staffordshire, and South Wharf, Paddington.

The staining fluid used for the wood work is from Ibbotson's Varnish and Colour Works, Hammersmith.

All the trusses used in the building are those of Lowe & Co., Salford; agents, Messrs. Kenard & Co., Upper Thames-street.

The metal window-lights, the ventilators,

and all other articles of ironmongery, excepting the stoves, are manufactured by Hart & Sons, Wych-street, Strand.

The bell-pull apparatus to the left-hand water-closets, is supplied by J. W. Dann, Cromer-street, Gray's Inn-road. That to the right-hand, by G. Jennings, Great Charlotte-street, Blackfriars-road.

The stoves in the left-hand ground-floor rooms are from Mr. Leslie, Conduit-street; in the right-hand room is the "Cottager's Stove," manufactured by D. and E. Bailey, High Holborn. The stoves in the left-hand rooms, first-floor, are from Pierce, of Jermyn-street; to the right-hand, the Prize Cottage Range, by Nicholson, of Newark, is fitted in the living-room, and suitable stoves in the bed-rooms, with fire-brick back and cast-iron chimney-piece complete, by the same maker.

The earthenware sinks are from Mr. Ridgeway, the Potteries, Staffordshire, who has also supplied specimens of earthenware pipes, wash-hand basins, and the water-closet pans: two of the sinks are of slate.

The fittings, generally, are such as have been used in the model-houses built by the Society for Improving the Condition of the Labouring Classes; to which the architect of this building, Henry Roberts, F.S.A., also acted as honorary architect.

THE NEW PHILOSOPHY OF ARCHITECTURE.*

THE *Eclectic Review* for the present month has also an article on "The Stones of Venice," very similar in its tone to that in the *British Quarterly*, and in some respects even stronger, it being confidently asserted by the writer that the new philosophy will inevitably produce a thorough change both in theory and practice of architecture, and that too, in other countries as well as our own. Of what kind that change will be we are not informed, either by the writer of the book or his reviewers, for they leave it entirely to be imagined by their readers; and all that the uninitiated—he they even professional men—can conjecture is, that it will be ultra-revolutionary, and will put down almost all that is now in vogue, though what is to be substituted for it is not said—perhaps has not been yet considered.

The calmness with which reviewers prognosticate that we are on the eve of a complete revolution in all matters of architecture, has nothing in it very surprising; because, however great the changes may be which it will bring about, they will not affect them. With architects, on the contrary, the case is widely different: they will have to accommodate themselves to a new system of things,—to unlearn their present habits and tastes, as well as to acquire new ones,—and the task of unlearning is perhaps the most difficult,—at any rate, the most disagreeable one of all, if only because it is attended by the painful consciousness of having wasted time in studies which have merely fostered error and mistaken views. Whatever, therefore, the rising generation of architects, who have not yet entered upon their career, may do, the present one must earnestly deprecate the change we are told to expect; and most of all must those do so who have been most successful under the present system, because all that they have done will come to be regarded as evidence of the present degraded state of architecture, previously to its being enlightened by the touch of the new philosophy and the rays of the seven lamps or luminaries.

Yet, strange to say, notwithstanding that their interests are so nearly concerned, the architectural profession seems disposed to leave the matter to take its course, undisturbed by them, trusting, perhaps, to its dying away as suddenly as it came up. Still, it would be no more than common prudence in them to watch the opinions which obtain currency without the pale of their own body. However strongly they themselves may be opposed to them, it is possible that they may be forced upon them. Surely, then, it behoves architects, instead of sitting still with folded hands, to bestir themselves,—to prepare for, if they cannot avert,

the revolution which they are told is about to break out upon them. Nor would it be difficult for them to attack and expose Mr. Ruskin's fanciful system and doctrines, which, as I now find, have been smartly handled in the *brochure* to which you referred.

Mr. Ruskin is altogether hostile to the "Great Exhibition" scheme—quite as much so as Colonel Sibthorpe himself, although not for exactly the same reasons. He is, undeniably, no friend to the alliance of art with manufactures, and "the mercantile value of art" must sound to him little better than a very profane phrase. How far those who extol him as a teacher go along with him in all antipathies, is not very clear, for they do not care to point out how greatly his peculiar doctrine runs counter to and clashes with the general taste, and many industrial interests also. The *Eclectic*, however, has ventured to remonstrate with him for his violent protest against the decoration of shop fronts and railway buildings. With regard to shops, what is to be regretted is, not that embellishment should be bestowed upon them, but that it should generally be in such bad taste, attention being given to mere showy vulgar display; and, so it be but striking, it matters not how preposterous it is. And that such is the case is all the more to be regretted, because shop fronts afford,—at least might be made to afford,—excellent opportunities for tentative essays in design and ornamentation; for even though failure should be as frequent as success, it would be comparatively of no consequence, nor could we get anything worse than we now have, even were we to get nothing better. No doubt, many in the profession would think it quite beneath them to design anything of the kind: the question is, whether, were they to undertake to do so, they would not find it *above* them, that is, above their power to show superior taste and *forte* in what throws them entirely upon their own resources of invention.

ZETA.

DINNER TO FOREIGN SCULPTORS.

ON 12th inst., the first of a series of interchanges of hospitality and good feeling in connection with the International Exhibition took place at Willis's Rooms, when the British artists met to welcome their brethren, the foreign sculptors, who have graced the exhibition with many fine works in their peculiar branch of art. Sir Charles Eastlake took the chair. Appropriate toasts were given and responded to, by Herr Lefew, the Prussian commissioner; Herr Kiss, M. du Seigneur, Signor Monti, Signor Bezzi, Mr. Scott Russell, Sir Charles Eastlake, Mr. M'Douall, and others.

We are not certain that this friendly demonstration was quite so well managed as it might have been. Many more persons would have operated if it had not been so hurried.

"A Sculptor" writes us as follows:—"Permit me to say a few words on the subject, and the reasons which prevented some brethren of the craft from joining the festival. When first proposed, I hailed with delight the prospect of unity among sculptors, who, from various reasons, are, as a body, less united than many others,—each groping his own way, as it were, unassisted and unadvised. Seeing the word "festival" at the head of the invitation, there immediately occurred to me the glorious "Ponti Moli" annual festivals at Rome,—a sort of carnival pic-nic,—when the artists of all nations join in a festive day, without the Eternal City,—memorable on more than one occasion; and also my mind reverted to the festival given to Cornelius at Munich, on his return from Rome, when two to three hundred honoured that great artist by an entertainment a few miles from Munich, where, under refreshing shades, "the Isor rolling rapidly," the song, the toast, the simple cheer, went round,—in the presence, too, of the king, who came out to witness the pleasing event. Remembering likewise the simple manners of our guests, it struck me that a similar festival might be adopted for the present occasion, when, from the over-crowded state of the vast metropolis, and the delightful advent of spring, an escape a few short miles from town, say to Hampton

* See p. 297, ante.

Court, Virginia Gardens, or Windsor; and an afternoon of intellectual feasting on the works of art and nature, at either place, might have been brought to a close by an entertainment obtainable, I conceive, at a much more moderate cost than a London dinner and wine, railway included. Finding, however, that it was not entertained, and that a thorough London close-penned-up aldermanic wine and dinner was decided to be, greatly fearing the results to health and comfort, I had the courage with some few others to decline the proposition."

NOTES IN THE PROVINCES.

It is proposed to erect public baths and washhouses at Grantham at a cost of 800*l*.—At Lyme Regis a discovery of an ancient piece of stone architecture has lately been made in a house partially destroyed by fire a few months ago. It consists of a chimney-piece, of Ham-hill stone, with Norman mouldings: length, 8 feet 4 inches; extreme width, 2 feet 11 inches; thickness, 8 inches, standing on jambs 4 feet 2 inches high, 2 feet 2 inches wide and 8 inches thick; the weight of the whole chimney-piece being more than two tons. It was an arched fire-place, and the whole of this ancient piece of workmanship had been hid in contracting the aperture, the chimney-piece having been battered over, canvassed, and papered.—In the council at Worcester, last week, the mayor stated that the Treasury had decided on making a grant of 150*l*. a-year towards the school of design to be established there, besides some casts, books, &c.—The infant-school buildings at Studley were opened on Wednesday, in week before last.—Messrs. Dickson and Mackenzie, of Wellington, have obtained the contract for erecting new gas works for that town. There were several tenders, but that of Messrs. Dickson and Co. was the lowest, namely, 2,000*l*. The works are to be commenced forthwith, so as to be completed for lighting the town next autumn.

The site is at no great distance from Mr. Edwards's present gas works. The first stone has already been laid.—On Monday, in last week, the foundation-stone of the new Grammar-school at Lancaster was laid. The architect is Mr. Paley.—The Rodderup Bell Mining Company, at Leadgate, Alston, have erected spacious school buildings, which were opened on 1st inst. The buildings consist of a school-room capable of accommodating from 100 to 120 children, and a master's house.—The restoration of Sir John Barrow's monument, which was struck by lightning in January last, is now nearly completed at a cost of 120*l*., to be repaid by an entrance-fee to the tower and temple.—At the East Prince's-street Gardens, Edinburgh, operations are busily progressing. The stairs on each side of the Scott Monument to the south, which conduct to the road on the slopes, are nearly completed. A hall has just been built for the Philosophical Institution there at the back of their present premises in Queen-street, intended to serve as a reading-room and library. The apartment is seventy feet in length by thirty in width, and forty in height. It has an imitation oak roof, and is surrounded by a light gallery, supported by iron pillars. Light is supplied from the roof and large windows in the south end of the hall. The arrangements have been all carried out under the eye of Mr. Bryce, the architect, seconded in the mechanical part of the works by the builders, Messrs. Goodall and Sanderson.—There is now said to have been something "mysterious" in the fire at the Assembly-hall attributed to lightning. That the hall was struck by the electric force appears to be admitted, but one paper insists "that the fire in the hall preceded the lightning," and a correspondent suggests "that the fire may have been the proximate cause of the explosion of the thunder cloud, and that the current of heated air passing up the rain conducting pipe may have formed a railway for the lightning."—A new arcade is about to be built at Glasgow in a line with London-street, and confronting a new terrace in Bothwell-street, at Waterloo-street, just erected on a design by Mr. Kirk-

land, architect, of the Corinthian order of architecture, for Mr. James Scott, one of the Glasgow magistrates.—Sir Michael R. Shaw Stewart has presented to the town council of Greenock, as representing the community, the valuable piece of ground, in the neighbourhood of the ancient mansion-house, known as Well Park. The ground is a perfect level, extending to about five acres, and has a fine soil. The conditions which Sir Michael attaches to the gift are enhancements of its value, as they include the preservation of the trees, and of the Old Well, from which the park derives its name. Sir Michael has also offered a large field in the east end of the town, for an experiment in the meantime, but if successful, as a free gift to the public, the condition being that the younger and operative branches of the community show a wish to enjoy themselves on the spot in out-of-door and manly sports.

PROFESSIONAL PRACTICE.

MUCH has been said of late through the medium of your columns of the non-appreciation of the time and labour of architects by the public at large, and many complaints made of the paltry sums offered by art-patronising individuals for the remuneration of competing architects; but surely if they do not know their own dignity and the dignity of their profession, it is not so much to be wondered at that building committees should not appreciate the unremitting study or ingenuity of an architect, or offer a premium which they would not consider too much for a donation to one of their servants who had done them any little extra service.

The following advertisement appeared in the *Manchester Guardian* of last Saturday:—

"To Parties about to Build.—An Architect will undertake the Design, Estimate, and Superintendence of any Class of Building at the lowest 1 per centage."

Now, Sir, whilst such things as this occur, I fear it will be useless for those devoted to the interests of the profession to attempt to give the public at large an adequate idea of the responsibility or duty of an architect, nor will any committee give to him that respect which is due to him as a member of the most important branch of the Fine Arts.

OBSERVER.

PROJECTING EAVES OF COTTAGE ROOFS.

METROPOLITAN BUILDINGS ACT.

KNOWING you and all your London readers will be interested in a decision given by the official referees on Monday the 5th inst. I send you the particulars.

I have just built and covered in two semi-detached villas, at the Mount Eliot Estate, Lee Bridge, Blackheath. On the first house I had match-boarded the soffit of the projecting part of the roof, and screwed on an O G iron gutter, on the ends of the rafters over a deal fascia. This was objected to by Mr. Collis, the district surveyor, and in the next house, according to his direction, I substituted laths and cement. I may as well say here, the first house, in wood, cost 5*l*. 12*s*.; the last, in lath and cement, 3*l*. 11*s*.; so by adopting the very letter of the Buildings Act, I saved more than one-third. However, Mr. Collis felt himself bound to take me before the referees, and the case being called, I will state, as nearly as I can, what took place. When we were seated one of the referees addressed Mr. Collis in these words: "Mr. Collis, we understand, from very high authority, that a wooden cornice, or soffit, to a roof not hanging over the public way, is not contrary to the Act." Mr. Collis, who appeared completely astounded at this statement, said, "It is contrary to the wording of the Act." The referee: "Well, we understand not, and hope you will not bring any more such cases before us." Another referee, "Surely Mr. Collis does not wish to press this case, after what he has heard." Mr. Collis said, he did not, but still considered it "contrary to the Act." Mr. Collis declining to proceed, I addressed the referees thus: "Gentlemen, I thank you for the lenient decision you have come to in

this case, and sincerely wish the Act had, in many other instances, been carried out in its true spirit, instead of insisting on its very letter. If such had been the case, I feel assured it would not have received the opposition it has done from the building branches in London." I enclose the papers as a guarantee of correctness.

N.
* This decision confirms Mr. Godwin's view of the question in the case "Delay and the District Surveyor of Kensington," reported and commented on in the *BUILDER*, vol. viii. p. 601, but on that occasion pronounced *against* by the referees, and we, in justice to ourselves, draw attention to it. Although the arguments used on that occasion were not admitted at the moment, they have germinated and produced fruit.

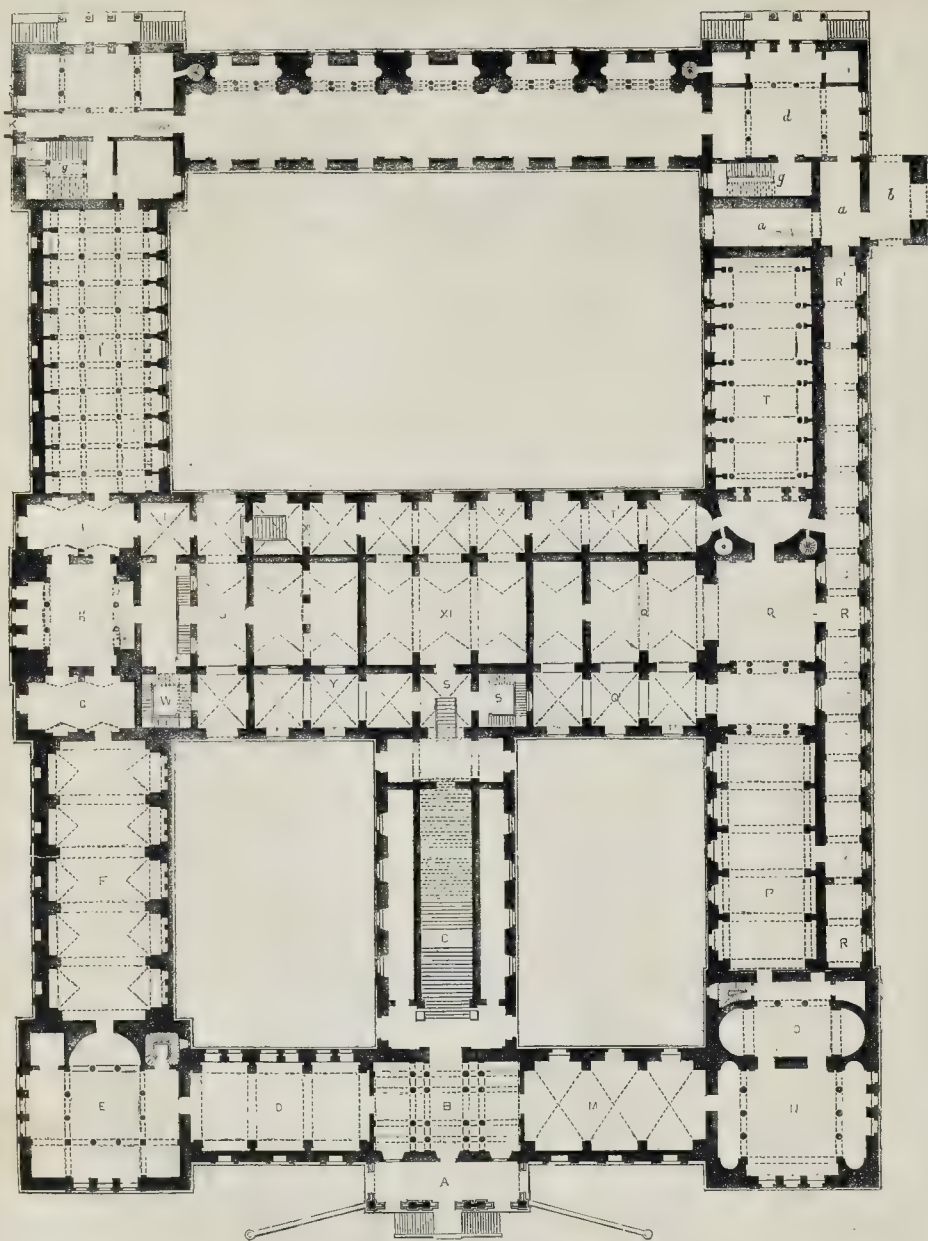
THE IMPERIAL MUSEUM OF FINE ARTS AT ST. PETERSBURG.

THE curiosity which was excited concerning this building by our recent notice, has led us to give illustrations of the Museum from Mr. Klenze's "Architectural Sketches." We have extracted part of the report, and have translated the explanation of the ground-plan given by M. Von Klenze. It was in the reign of Catherine II. of Russia, that collections of art were first thought of in St. Petersburg, and it was she also who caused the so-called *Eremitage* to be erected for their proper accommodation. In succession of time, however, these spaces became inadequate to the yearly increasing art-objects: besides, the tendency of the times outgrew arrangements mostly intended for show. Thus, a new building was willed by the present emperor, to which a visit to Munich in 1838, and the talents of M. Von Klenze, the builder of the Pynakotheka, paved the way. The projector and architect were fully aware, that a fair space, independently chosen in the vast capital of Russia, would have answered best the claims of art; but weighty considerations prevailed in favour of the present site, which, however, was obtained by costly purchases, and demolitions of such buildings as the Palace Schipelloff, and even the imperial library, treasury, stables, &c. It was thus, however, that a grand site was obtained, even in the most populous part of St. Petersburg, bounded on the west by the Neva Quai, on the north by the Moika Canal, and whose east front forms part of the Great Million-street, while its south aspect is towards the "*Winter Palace*." Nicolas had, besides, stipulated that the Art-Museum should communicate directly with the imperial residence; a desideratum also achieved by the choice of this locality. As, therefore, the Art-Museum was to form part, as it were, of the sovereign's *demesne*, part of the plan (the decorative), was given, while the other pole pointed to the proper light and appropriation of the objects exhibited. "As the style of the building was left to me, those, who have any insight in the essence of art, will be able to know that it was the principle of classic times (*klassischen Kunstzeiten*), and, therefore, the architectural style, *Kar. Æoyn*, which I chose. I did not, however, confine myself to that—*obscure* imitation and inappropriate use of those few forms—which the barbarism of so many ages has left us, like the crumbs falling from the repast of a Lucullus or Apicius, and which poverty or ignorance gathers in its beggars' sacks, thinking that they could give us thus a glance of ancient splendours." According to the nature of the locality, the main front was to be placed east in the Great Million-street, quite appropriate, as its breadth here is 90 or 100 feet. The finest aspect, surely, is that towards the west, commanding the splendid quay and river of the Neva, and the plan has also been extended to this; but as this site is yet occupied by a building containing the greatest part of the Picture Gallery, they will have to be first removed to their place in the New Museum.

Our view shows *half* the elevation next the Canal. We shall give plan of the upper story and an interior view on another occasion.

IMPERIAL MUSEUM OF FINE ARTS, ST. PETERSBURG.

PLAN OF GROUND FLOOR.



SCALE OF 10 20 30 40 50 60 70 80 90 FEET

REFERENCES.

A, forms the access from the street called the Great Mallon: it is formed by eight pilasters, on which are ten Telamones, made from the fine grey granite of Soudabal. Their height, conjointly with the pedestal, is 22 feet. This entrance leads to

The vestibule, B, whose ceiling is supported by sixteen columns of red granite, from Finland.

C, is the principal staircase, whose steps of Carrara marble have a width of 23 feet, and conduct to the first story.

D and E, are the spaces for the exhibition of the antique marble works.

F, a gallery for modern sculpture.

G, the workroom of the director of the marble department.

H, saloon for the antiquities of all kinds.

J, collection of antique vases and sepulchral monuments.

K, room of the director.

M, N, O, P, Q, R, Library of art and costly works.

S, S, Stairs and passage to the underground warming apparatus.

Y, Room for the illuminated MSS.

X, Ante-room, and

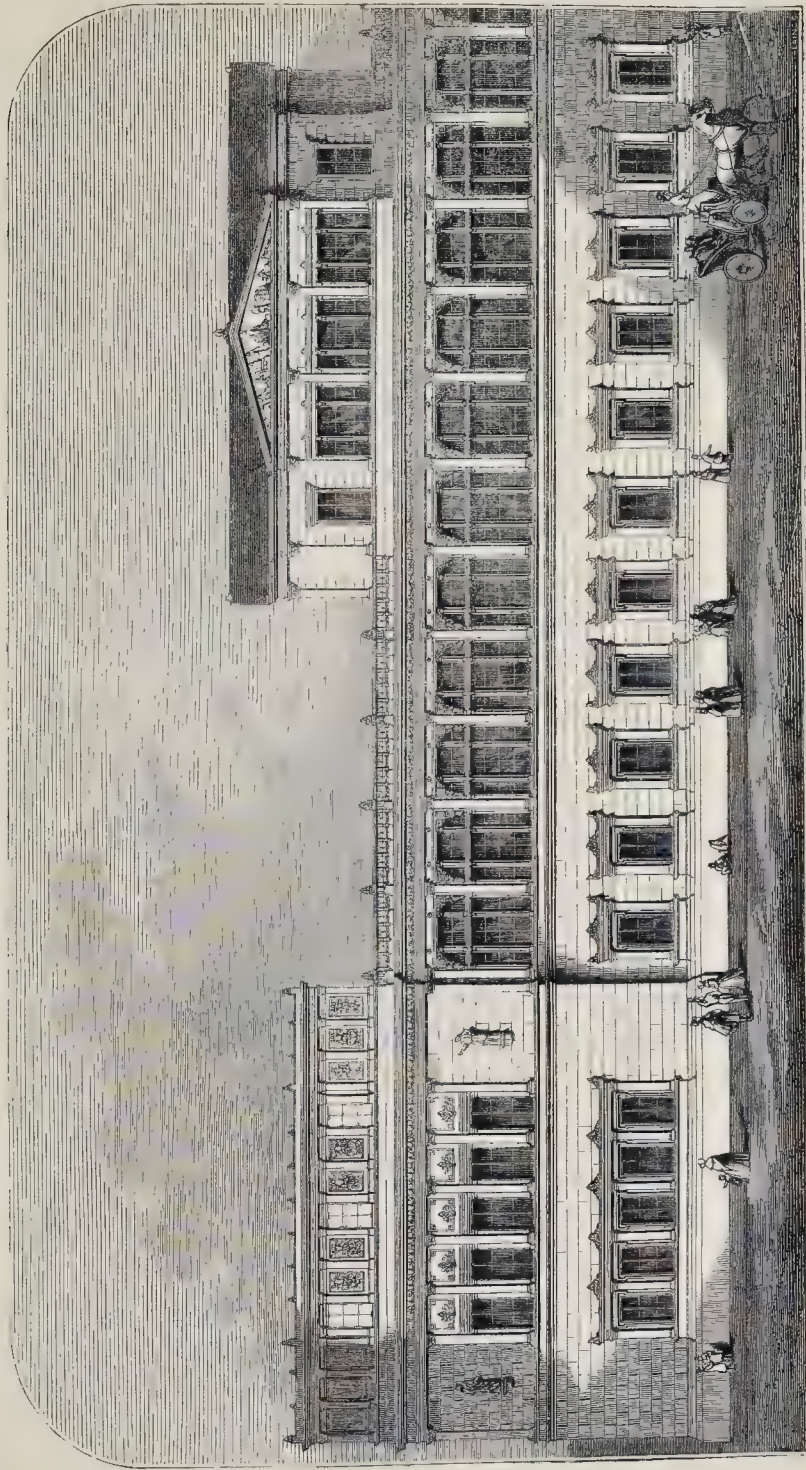
X X, Room for the antiquities which have been found in Kertsch, the ancient Pantikoprum, and which are intended to form an especial department of the collection.

T, Collection of engravings.

T I, Collection of drawings.

W, Staircase for the service of the establishment.

a & g, Spaces not yet completed; intended for collections of Russian (Slavian) antiquities.



IMPERIAL MUSEUM OF FINE ARTS, ST. PETERSBURG.
MONSIEUR LEO VON KLENZE, ARCHT.

MACHINES FOR WORKING AND
POLISHING MARBLE.*

LARGE slabs of marble and stone are ground very accurately in a machine patented by Mr. Tulloch, and called a grinding bed. In this machine, represented in fig. 9, the slab to be ground is placed horizontally upon a moving bed, and the grinding is effected by sand and water, by means of a large flat plate of iron resting upon the surface of the slab. The two surfaces are traversed over each other

with a compound motion, partly eccentric and partly rectilinear, so as continually to change their relative positions. The machine consists of a frame about 9 feet long, 6 feet wide, and 8 feet high: about 2 feet from the ground is mounted a platform that is very slowly reciprocated horizontally for a distance of from 1 to 2 feet, according to the size of the slab, by means of a rack and pinion placed beneath, and worked alternately in both directions.

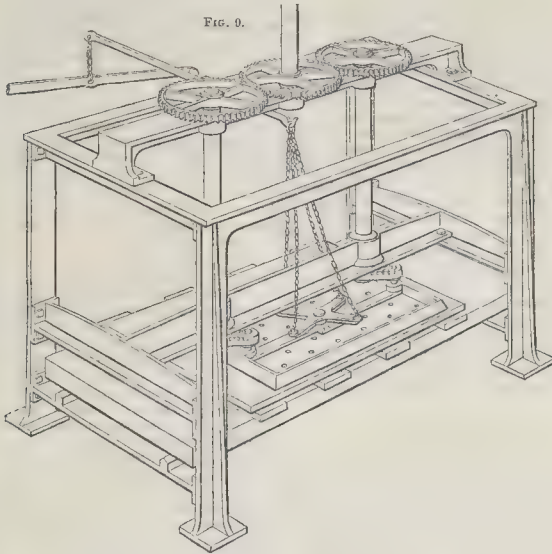


FIG. 9.

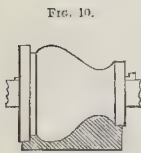


FIG. 10.

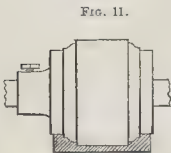


FIG. 11.

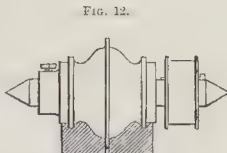


FIG. 12.

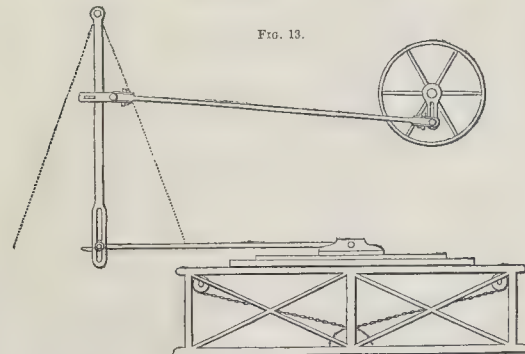


FIG. 13.

Above the platform are fixed vertically two revolving shafts, having at their upper extremities horizontal toothed wheels of equal diameter which are driven by means of a central toothed wheel keyed on the driving shaft. The two vertical shafts are thus made to revolve at equal velocity or turn for turn, and to their lower ends are attached two equal cranks placed parallel to each other, the extremities of which therefore describe equal circles in the same direction. To these cranks the iron grinding plate or runner is connected by pivots fitting two sockets placed upon the central line

of the plate. The cranks are made with radial grooves, so that the pivots can be fixed by wedges at any distance from the centre of the cranks. When the machine is put in motion the grinding plate is thus swung round bodily in a horizontal circle of the same diameter as the throw of the cranks, which is usually about 12 inches, and consequently every portion of the surface of the grinding plate would describe a circle upon the surface of the slab being ground if the latter were stationary. But by the slow rectilinear movement of the platform the slab is continually shifted beneath the plate so as to place the circles, or rather the cycloids, in a different position, and it is only

after many revolutions of the cranks that the same points of the surfaces of the grinding plate and slab are a second time brought in contact.

The grinding plate is raised for the admission of the slab by means of four chains suspended from a double lever, and attached to the arms of a cross secured to the centre of the upper surface of the plate, which is thus lifted almost like a scale pan. For slabs that are much thicker or thinner than usual, the principal adjustment is obtained by the removal or addition of separate beds, or loose boards, laid upon the platform to support the slab at the proper height. Slabs that are too large to be ground over the whole surface at the one operation, are shifted once or twice during the grinding, to expose the surface equally to the action of the grinding plate.

The necessary pressure for grinding is given by the weight of the horizontal plate, which is supported almost entirely by the work, as the pivots of the cranks merely enter the sockets, and allow the plate to descend when left to itself. For delicate works a counterpoise weight is attached to the double lever, so as to regulate the pressure on the work.

The sand and water are applied to the grinding surfaces in much the same manner as in the iron runners used by hand previously described. The grinding plate is made on the upper side with a raised rim like a tray, and the bottom of the tray is perforated with numerous holes about 1½ inch diameter, arranged at equal distances apart. The sand and water are thrown into the tray at intervals in small quantities, and run through the holes and between the surfaces of the slab and grinding plate, which are thus uniformly supplied with the feed that ultimately makes its escape round the edges of the grinding plate.

Various qualities of sand may be employed according to the perfection of surface required, and very flat surfaces are produced by this machine. The grinding or smoothing of the best works is effected with a succession of fine emeries, with which the surfaces may be made very smooth, and almost polished; but from motives of economy, the grinding of ordinary works is more frequently completed by hand, with grit stones and snake stone before the work is finally polished on another machine.

Rectilinear mouldings in marble are wrought by machinery in a manner altogether different from the hand process of working mouldings, in which, as previously described, nearly the whole of the material is removed with chipping chisels, and the surfaces of the mouldings are only smoothed by abrasion. In the machine process, on the contrary, the whole of the material is removed with revolving grinders, by which the work is reduced to the required form, and left smooth at the one operation.

The machine for working rectilinear moulding, or as it is called the moulding bed, closely resembles in its construction a ripping bed already described, except that the frame carrying the revolving grinders is provided with the power of vertical adjustment by a screw placed beneath, in order to raise the grinder to the proper height to suit the thickness of the marble, and that instead of the grinders being thin circular sheets of iron, they consist of solid cylinders of cast iron turned to the counterpart forms of the required mouldings. Indeed, the ordinary ripping bed is occasionally used for working mouldings on large works, and when it is provided with the vertical adjustment for elevating or depressing the axis to any required position, the ripping bed is equally suitable for working mouldings; but as the latter are in general only required on slips of marble only a few inches wide, a narrow machine is usually employed for the purpose.

The forms of some of the grinders are shown in figs. 10, 11, and 12: the outline represents the grinder, and the shaded part beneath, the entire compound moulding that would be produced by the same. A separate grinder is required for every different moulding, and consequently a large number of grinders have to be provided to meet the demand for variety. They are all pierced with a central hole fitted to the axis of the machine into which they are

* Concluded from p. 303. From Holtzapfel's "Turning and Mechanical Manipulation."

to be employed, and secured either by a wedge or a side screw, so that they admit of being readily exchanged when a different form of moulding is required.

The grinder of suitable form having been selected it is fixed on the axis of the machine: the slip of marble is cemented with plaster of Paris upon the bed; and the frame carrying the spindle is adjusted by the screws beneath to the proper position, to allow the grinders to penetrate the marble to the required depth for the production of the moulding. As in the ripping bed, the grinder is made to revolve so as to cut upwards towards the surface, and the attendant keeps a small heap of moist sand constantly in contact with the face of the grinder. The weight attached to the sliding bed by a line passing over a pulley keeps the work constantly advancing in a straight line towards the grinder as fast as it is cut, and the work finally presents a compound rectilinear moulding of exactly the counterpart form of the grinder. Mouldings on the edges of narrow slips are sometimes wrought in pairs, as in fig. 12, the two pieces being cemented together sideways as one block, and which is placed edgewise upon the machine.

Circular mouldings in marble such as the base of a column, a vase, or similar object, are generally wrought by turning in a lathe. Small flat circular mouldings, such as are sometimes seen in the corners of chimney-pieces, are ground to their forms by machinery, in much the same general manner as the rectilinear mouldings, but the machine already described for cutting out small circles of marble, is employed for grinding the small circular patterns.

The grinders are made of cast-iron turned to the counterpart form of the pattern, as shown in section in fig. 5, and screwed upon the upright spindle of the machine the same as the circular cutters. The counterpart grinders are kept supplied with moist sand, and the grinding is continued until the circular pattern is entirely developed: the works are afterwards polished in the lathe.

The polishing of rectilinear works in marble, by machinery, closely resembles the polishing of flat slabs by hand, previously described, the chief differences being, that for large slabs, from two to six rubbers or blocks are employed, and that they are reciprocated by the machine instead of by the hand. The slab of marble to be polished, is laid upon a flat bench or table about 12 feet long and 6 feet wide. At a moderate height above the bench is fixed a crank driven by the engine, a connecting rod from which leads to an iron swing frame, working as a pendulum placed 2 or 3 feet from the end. Fig. 13 represents the side view of the polishing bed: the swing frame consists simply of two rods moving upon centres above, and carrying near their lower extremities a horizontal bar extending the entire width of the bench: to this bar as many separate iron rods are attached as there are rubbers to be employed at one time, and every rod is jointed to its own rubber, which, for flat surfaces, consists of a block of wood about 2 feet long and 6 inches wide, covered with thick felt. The attachments of the connecting rods to the crank and pendulum are all capable of adjustment, so that the length of stroke can be readily changed to suit the size of the work in course of being polished, but generally the stroke is about 3 feet long.

The rubbers are used with the succession of powders, and the weight of the blocks and rods supply the pressure. Several narrow rubbers are used instead of one wide rubber, in order to allow each rubber to adapt itself readily to any trifling irregularities in the surface of the slab. The rubbers are shifted across the width of the slab, by sliding them to another position on the horizontal bar of the pendulum frame, and the platform of the machine is traversed endways by a chain and drum, or a rack and pinion, to expose the work equally to the action of the rubbers.

Rectilinear mouldings are polished in the same manner, except that elastic rubbers are employed. These are made of coarse cloth, like sacking: generally old sugar bags are used for the purpose: they are cut into strips about 6 inches wide, folded lengthways, and nailed

through the middle of the fold close together to a block of wood, so as to present when complete a surface 8 or 9 inches wide, composed of the edges of the cloth, the loose flaments of which penetrate into the angles of the mouldings. For polishing the edges of narrow works in marble several pieces are fixed close together edgewise in a wooden trough, and they are all polished at the same time."

FOREIGN INTELLIGENCE.

Brussels—Statues to Vesalius and Godfrey de Bouillon.—The number of fine commemorative monuments in the Belgian capital has obtained an appropriate addition by the colossal figure of Vesalius. Two tablets of bronze have now been placed on the principal fronts of the pedestal, bearing the following (Latin) inscription engraved in gold letters:—"To André Vésale, the father of anatomy, born at Brussels, November 31, 1517; died at Zante, victim of a shipwreck, October 25, 1564."—"This monument, raised under the auspices of Leopold, King of the Belgians, with the co-operation of the state, the provinces, and the city, and by means of private subscription from the entire medical body of Belgium, was inaugurated on the 31st December, 1847."

As the Vesale monument is now finished, the pedestals of the fine statues of Godefroid de Bouillon and Charles de Lorraine wait to be similarly completed. It is intended to engrave on one side of that of Godefroid de Bouillon, the two first lines of Tasso's divine *Gierusalemme Liberata*:—

"Canto il capitano, che il gran sepolcro
Libero di Christo. . . ."

It is also to be adorned by two basso-relievs, representing the taking of Jerusalem, and the coronation of the chief immortalised by the lines of Tasso.

Distribution of Prizes of Academy of Fine Arts, Paris.—The distribution of prizes for the best works of painting, engraving, lithography, and architecture, took place on the 3rd of May, in the great hall of the Palais National, in presence of the Vice-President of the Republic, Ministers of Public Instruction, &c. Not only had the interior arrangements of the locale been much improved, but a military band enlivened by appropriate music the intervals of the festival. Parts of the speech delivered by the Minister of the Interior deserve to be quoted, as painting the present position of art in France. "The clergy are no more rich enough for building cathedrals, to light them by the iris of glass painting, or to employ for the decorations of their chapels the minds of a Michelangelo or Raffaele; with the parceling out of all landed property, and on a soil democratic to the bottom (*jusqu'au tuf*), there is but one patron left for art,—the nation.* The most brilliant epochs of art were those distinguished also by other sublime achievements of human mind and daring."

After the conclusion of the speech, M. Mercey, Chief du Bureau des Beaux Arts, called in succession the names of the artists, whom the votes of the jury had considered worthy of reward,—the decoration of the Legion of Honour, medals of the first, second, and third class. In architecture, medals were given to Messrs. Bouchet, Godebeuf, Galand, Jume-line, Héraud, Brunet, Debaine, and Steinhil. After the ceremony had been concluded, the lower galleries were thrown open, where only the works of the rewarded artists (a creditable selection) were exhibited to public sight.

Archæological Society of Rome, April 26.—This day is considered the anniversary of the foundation of Rome (!), on which, also, the above Society celebrates that of her establishment. Dr. Braun, the secretary, spoke first on the progress of publications of last year, especially the plan of the Via Appia, which will appear successively as the excavations undertaken thereon progress. The recent excavations also at the Forum, the Tabellarium, the Basilica Ulpia, the Palatine, and the church of St. Nicola-in-carcere, have yielded valuable in-

* The sale of art-works of this year's exhibition has been one of the worst on record.

formation on ancient Rome. After a few words of condolence which were devoted to the loss of the late amiable Marquis of Northampton, a bronze discus from Egypt was exhibited. It is adorned with a relievo representing the head of Mercurius, under which a cock sits on the rudder of a ship, in the act of devouring a scorpion. Padre Sacchi then read an Essay "On the famous Pompeii Mosaic, representing a battle of Alexander the Great." The Padre stated his reasons for believing that this picture represents the battle of Arbela.

Carthaginian Antiquity.—The French consul at Cairo has presented the national collection of the Louvre with a gigantic marble head, found at a considerable depth within the present citadel of Tunis. It represents Astarte, a goddess adored by the Syrians and Phœnicians, and which corresponds to Luna or Juno of Roman mythology. Astarte was considered the protecting omen of Carthage, where she had a temple. The proportions of the figure are above two metres. An especial ship of the state will bring it to France, and it has been deposited in the garden of the church of St. Louis, in Tunis, in the mean time.

Slavian Antique Sculpture.—A very important discovery has been made of late in this new archæological department. A stone statue, six yards (Ellen) long, has been found in the river Zbrusz, in Eastern Poland, near the village of Linzkowic. It represents the old Slavian idol, *Swiatowid* (the world-seer), who has four faces turned towards the four quarters of the heavens, like many of the Hindoo deities. The beardless faces of the four heads, covered with a rich *chevelure*, are well executed, and express the youthful daring of the personage they represent. *Swiatowid* was the chief oracle of the ancient Slaves, which was consulted on every important emergency; for which purpose a fine white steed was entertained in his honour. If they wanted advice, the steed was let loose to any given aim; if it attained it, the response was affirmative. There existed a renowned temple in honour of *Swiatowid* in the isle of Rügen (Baltic), whereto a vast pilgrimage took place. This very richly decorated old national shrine was destroyed by Waldemar I., the Dane, in 1168. The statue is richly ornamented with various sculpture, and has been presented by M. de Potocki, the owner of the locality where it was found, to the archæological collection of the University of Cracow.

THE MUSEUM OF PRACTICAL GEOLOGY, PICCADILLY.

THE Museum of Practical Geology was formally opened to the public on Monday, 12th, by H. R. H. Prince Albert. A large number of very distinguished persons, both in rank and talent, assembled in the great gallery of the Museum, a larger number, indeed, than we ever saw collected together at the same moment for an equally short ceremonial.

Sir Henry De la Beche, in the course of an address to the Prince, stated that "Though many years since, in 1839, the Government sanctioned lectures, in connection with the museum, on analytical chemistry, metallurgy, and mining mineralogy; the want of proper accommodation has, until the present time, prevented their delivery. Now, however, that a theatre for them is provided, it has been deemed expedient to extend these lectures so as to embrace instruction of a character resembling that given in foreign schools of mines, and which, while it should be adjusted to the wants of this country, should also have reference to the mineral wealth of the empire at large. Several memorials from important mining districts have been presented to the Government to afford facilities at this establishment for instruction available for the mining interest—one of so much magnitude in this country—the value of the mineral products of Great Britain and Ireland being now estimated at about 25,000,000*l.* per annum, taking the various products as nearly as possible in their first state. It has been further estimated by competent foreign writers that the annual value of the mineral substances raised in the British islands is equal to about

four-ninths of that of all Europe, including these islands.

To your Royal Highness it would be needless to point out the bearings of the mining schools of France, Saxony, Russia, and Austria, upon the mineral resources of those countries—the useless expenditure they prevent, and the real productiveness they promote. To those intimately acquainted with the mining districts it is a matter of deep regret to find many a powerful mind struggling with a want of knowledge of what others have accomplished or are now doing. Great as the achievements of un instructed men have sometimes been in such districts, they would have been still greater had correct instruction been afforded them.

While it is proposed to receive pupils for regular courses of study, to teach by means of lectures, experimental researches in the laboratory, and also by the aid of the geological survey in the field, the collection in the museum will be gratuitously open to public view."

The Prince, in replying, said:—

"I rejoice in the proof thus afforded of the general and still increasing interest taken in scientific pursuits; while Science herself, by the subdivision into the various and distinct fields of her study, aims daily more and more at the attainment of useful and practical results. In this view it is impossible to estimate too highly the advantages to be derived from an institution like this, intended to direct the researches of science, and to apply their results to the development of the immense mineral riches granted by the bounty of Providence to our isles and their numerous colonial dependencies. It will always give me the greatest pleasure to hear of, and as far as I am able, to contribute to the continued success of the Museum of Practical Geology."

The collections are alike scientific and practical, and should be visited by our readers. The laboratory has been fitted up under the direction of Dr. Playfair, and is thought to be the most complete in the country.*

CHURCH-BUILDING NEWS.

A LARGE painted window has just been placed at the east end of one of the chapels in Cirencester Parish Church. It is a memorial window, offered by Mr. Joseph Cripps, of Farm Hill, near Stroud. The subjects are the twelve apostles, each under a small canopy in the upper tier; and the four lower large lights are filled with representations of our Lord, with the family at Bethany, and at the grave of Lazarus (St. John, chap. xi.), each subject under a canopy. In the spandril, there are angelic figures, bearing scrolls with an inscription—"As we have borne the image of the earthly, we shall also bear the image of the heavenly." The parishioners are taking the opportunity of improving the parish church by removing a gallery which would intercept the view of this memorial window. The minister and churchwardens are clearing the chancel of many seats that disfigure that part of the church. The window is executed by Warrington.—The Independents of Gloucester have been re-building their place of worship, after a design by Mr. Medland, the architect of the Worcester Lunatic Asylum. Amongst other embellishments is a painted window by Rogers, the gift of Mr. Ellis, a principal member of the congregation.—Upwards of 1,400l. have been subscribed towards the erection of the new chapel at Ladywood, Birmingham, on a site given by the Governors of King Edward's School. It is to contain 1,400 sittings, and the estimated cost is about 4,000l., exclusive of the endowment. This, however, is already secured.—Mr. Boulton has given 500l. for the purchase of a site for a new church in the direction of the Soho Park, Handsworth, the inhabitants of which have held a meeting as to the best mode of carrying out the project, when subscriptions to the amount of 1,050l. including 100l. from Lord Dartmouth, and Mr. B Boulton's donation, were announced! —

The new edifice, dedicated to St. Stephen, at the north end of Crown-street, Liverpool, near Brownlow-hill, is now nearly completed. The architecture is the geometrical decorated. The building is 115 feet in length, by 70 feet wide, and its general character is very plain. Seating for 1,000 persons is provided. There is a gallery at the west end for the use of the congregation entirely, as the choir and organ, according to ancient usage, will be placed on the ground floor, at the north-east end of the building. Mr. G. G. Scott furnished the designs for the building, and the contracts were taken by Mr. A. Dempster, of Liverpool.—Upwards of 3,000l. have now been subscribed towards the erection of a new church at Rugby. The building is to accommodate 1,000 persons, two-thirds free.—Mr. Hay, of Liverpool, architect, set out the foundations for the new parish church at Whorlton, near Greta-bridge, on Friday week, with Mr. Jones, of Barnard Castle, the contractor. The present church is in a ruinous condition, incapable of repair, and Mr. P. H. Stanton, with Archdeacon Headlam, of Wycliffe, came forward and paid a rate of 2s. in the pound for all their tenantry, besides handsomely subscribing to this purpose.—Mr. J. J. McCarthy, architect, has been appointed to complete the works of the new Roman Catholic Cathedral, Armagh, the building of which was commenced ten years since by the late Roman Catholic Primate, Dr. Crolly. The late Mr. Duff, of Newry, architect, designed the edifice in question, the building of which was suspended owing to a want of funds.

VAUXHALL GARDENS.

THESE two-hundred-years-old gardens, with their long covered walks, open-air orchestra, thousand lights, fire-works, and supper-boxes, are again deservedly in full vogue, and all seem to agree with Pepys, as to them, that "to hear the nightingale (?) and the birds, and here fiddles and there a harp, and here laughing and there fine people walking, is mighty divertising." Very little change has been made; descriptions of the gardens in "England's Gazetteer," of 1751, would serve equally for the present 1851. Mons. Saqui is exhibiting some amusing combinations of coloured fires and water-works, which may give hints to our fountain-makers. Arena-riding is one of those arts in which progress seems very difficult. There are the same jumps through the same hoops, the same slashing of flags and throwing about of legs, which our fathers and grandfathers witnessed, and which, by the way, in connection with "Astley's," are amongst the earliest holiday recollections of nearly everybody. Oh! "those cherry tarts when I was young!" Horse-riding awaits its Newton! A great advance has been made in this practice by Palmyra Anato, now at Vauxhall: the grace and modesty with which the most difficult feats are performed by her are extraordinary, and will tend to a refinement of the art.

DINNER OF THE METROPOLITAN SANITARY ASSOCIATION.

LORD CARLISLE took the chair at the dinner given by the Metropolitan Sanitary Association on the 10th, at M. Soyer's "Symposium," in the Kensington-road, and a large number of friends of sanitary reform rallied round him. Amongst them were the Bishop of Ripon, Lord Ebrington, Lord Robert Grosvenor, Lord Ashley, Lord Moreton, R. A. Slaney, M.P., Edwin Chadwick, Coroner Baker, Charles Dickens, George Cruikshank, Dr. Gilchrist, H. Austin, Ranger, T. Tooke, Rawlinson, Lee, Grainger, Crecy, Rogers, Walsh, Lusignan, C. Cochrane, Abrahams, Tottie, Lord Hume, Southwood Smith, H. Roberts, Moseley, Colin Mackenzie, Barnett, and many others who have long laboured in the cause.

Lord Carlisle, in his principal address, urged forcibly the importance of this cause;—a cause, he said, which has its business with deaths that may be prevented, since, as we know, in districts where, from accident, more favourable sanitary condition exists, these

deaths do not occur—with deaths arising from epidemic and contagious diseases which amount to some 50,000 in the course of every year—with deaths consequently outstripping in numbers the carnage of the most destructive campaigns and the most protracted wars—with deaths, moreover, which strike down those whom our modern warfare especially saves, and cuts off one-half of some districts of all who are born before they reach five years of age—with deaths, in fine, which threaten all, but especially those who fill the many walks of humble life. Such a cause as this is surely one of solemn importance, which we should do all we can to increase in the appreciation of all classes. I have alluded to the claims and the dangers of humble labour. We have, indeed, close to where we sit, a remarkable building, which is in itself a shrine of labour; but while we gaze on the large area of its vast extent—on the wondrous results of its harmonious and completed combinations—on all their gorgeous magnificence—let us not refrain from tracing them back to that crowded workshop, that damp cellar, and that stifling garret, in which so much of that collected mass of ingenuity and splendour has been elaborated. And we shall derive, perhaps, not the least precious lesson which the Crystal Palace itself, in all its completed maturity, and in all its glittering unity, can teach, if, transferring our care from the work to the workman, wherever it may be his lot to weave the slender thread or guide the ductile metal, we study as best we can to surround the scene of his daily labour with some portion of the decencies, the comforts, and the enjoyments with which he so plentifully enriches our own. There is too much reason to fear that the stimulus of drink is often resorted to as a diversion to the depressing effects of an uncleanly house or a polluted atmosphere. The chairman then pointed out the necessity there was for some independent body to keep the Government up to the mark of their duty, and called on the public to support the Metropolitan Sanitary Association, for that and other reasons.

This we cordially echo. The Association has already done great and extensive good, and it is desirous as well as capable of doing more. It needs but a moderate and a steady support from the public at large.

Mr. Dickens made an admirable speech—earnest, suggestive, and elegant;—a speech that touched every man's heart, because it came, and was felt to come, from the speaker's own. His toast was the "Board of Health," and he compared those who blamed the board for not moving faster, to a man who would not wind up his chronometer, and yet abused it for not going.

We must add a dozen lines about M. Soyer's new residence, Gore House, formerly the Countess of Blessington's, and these shall be to recommend a visit to it, not merely by those who want to dine (that is not exactly our province), but to all inquirers after novelty. We don't want our readers to turn their rooms into *Salles de Danse*, or *Vestibule de la fille de l'orage*, or form "grottoes of eternal snow;" but they will see many pretty novelties and clever quips. Lord Carlisle paid a well-merited tribute of praise to Soyer for his endeavours to improve the cookery of the poor.

METROPOLITAN COMMISSION OF SEWERS.

A general Court of Commissioners was summoned on Saturday last, for twelve o'clock, for the purpose of ordering works, hearing appeals, receiving presentments, affixing the seal to contracts, and ordering summons to be served on defaulters. After a delay of nearly an hour and a half, a sixth commissioner not being in attendance, the Court adjourned!

PRICE OF GAS IN LONDON.—The tender of the Great Central Gas Consumers' Company for the contract to supply the gas for the public works has been accepted, it is said, at a rate of about 2s. per thousand cubic feet; and Mr. Dakin announces his hope that the price for private consumers will ultimately settle down to something like that rate. The lowest price now is 4s. the thousand cubic feet.

* Illustrations of the interior of the Museum will be found in our sixth volume, pp. 622 and 639.

GLASS PIPES

FOR CONVEYING WATER AND OTHER FLUIDS.

The deleterious nature of some of the metallic pipes now in use for the conveyance of water for domestic purposes, has of late strongly attracted the notice of the public, and should lead them to regard with favour Messrs. Swinburne's glass pipes, advertised in our paper. Glass, especially that kind which is made without metallic flux, is impervious to water for an almost indefinite period of time, and is therefore an admirable medium for the circulation and retention of water.

Although this quality has been long appreciated, the difficulty of making joints on glass tubes of a durable or effective nature has prevented their use. Any cementing substance of a high temperature, such as solder, would crack the glass, and most non-metallic cements of a saline or resinous quality bear little pressure, and are generally soluble. Messrs. Swinburne consider this difficulty is now entirely obviated, by their process in which a metallic collar or band is firmly fixed at the end of a glass pipe, and incorporated with its exterior substance. By this means glass pipes can be most easily joined together.

The price for the pipes, including the joints, is less than that of lead, and they are made of curved or rectangular shapes to suit the positions in which they may be required.

Books.

Letter to the Trustees of the National Gallery. By Colonel RAWDON, M.P. London: Ridgway, 1851.

COLONEL RAWDON calls the trustees to account pretty sharply, for not taking steps to obtain more accommodation for bequests of works of art, and for permitting the injury which is being done to the pictures in their present position. He says,—

"Let the matter be but fairly explained in the House of Commons thus:—We find an error has been committed in placing our national collection where it is. That the increasing requirements of London have made the position worse than it was when first selected. We find that the building is also far from sufficient, neither permitting classification nor arrangement, and in other respects unsatisfactory. That with such evidence before us of the dangers arising to the pictures, we are not justified by those who may come after us, in recommending their remaining longer in Trafalgar-square. That however convenient of access it is, the inconvenience of going a little farther off is nothing to the evil of deterioration which the pictures now undergo. That we have not the means (putting climate aside) of adequately enlarging the building from time to time, as would be required. That we think a large portion of the building should be devoted to a British school. That those fine Rubenses which are at Whitehall, and the Cartoons at Hampton Court should form part of our national collection; but that it is neither safe, or if safe, there is not room now to allocate them. We believe, also, that patriotic individuals are deterred from leaving or giving pictures to the nation, from the idea (be it just or not) that their pictures would be endangered. Under these circumstances, we hope that you, as representatives of the people, will enable us to make provision for them elsewhere, in a building worthy of this great country, and becoming an object so connected with the gratification and enlightenment of the people. In order to preserve these treasures of art as long as human skill and foresight can do so, we see that it is essential to remove them somewhat from the focus of our great capital."

The colonel then recommends, as the place best suited for the purpose, the position first suggested in *THE BUILDER*, namely, the site of Kensington Palace. According to the best authorities, the pictures are rapidly depreciating in their present locality; and this shows the necessity for an immediate consideration of the question.

Chemistry of the Crystal Palace: a Popular Account of the Chief Materials employed in its Construction. By THOMAS GRIFFITHS, late Professor in St. Bartholomew's Hospital, and Author of "Chemistry of the Four Ancient Elements," &c. Parker, West Strand, 1851.

ESSENTIALLY this is a lucid treatise on glass and iron; but there are various other materials used in the construction of the "palace of glass," besides either the glass which its names recognise or the iron which they ought equally to recognise: indeed, out of fifty-six ascertained "elements of nature"—as we must not only call them but religiously regard them for fear of the criticism of those only conversant with school books of chemistry—exactly one-half of the number are employed in the construction of the Hyde Park building. The author's subject is, therefore, in one respect, rather an extensive one, but iron, glass, and wood are the chief materials, the first and last not being "elements," but resolvable into them. A great portion of the present little treatise is directly useful to the architect, engineer, and builder; and, indeed, even the more curious and less practical details are indirectly useful; for no one can have a correct idea of these materials unless he be acquainted with the more curious as well as the more useful portion of their history and phenomena.

The Newspaper Press Directory, containing full particulars relative to each Journal published in the United Kingdom and the British Isles, together with a complete Guide to the Newspaper Press of each County, &c. Third edition; entirely revised. By C. MITCHELL; and published by him at his advertising office, Red Lion-court, Fleet-street.

This publication is the only one of its class, so far as we are aware, and it certainly constitutes one of the most readable *Directories* we ever dipped into. The peculiarities and excellencies, as well as the defects, of the various journals, are hit off with an emollient truthfulness evidently derived from close and intelligent examination, and continued observance of the course through which each paper runs. We find ourselves, of course, reflected in this mirror of the press, and it is pleasant to perceive that we have no ugly deformity to answer for—as some of even our ablest contemporaries have,—and, therefore, and for other reasons, we do believe this to be a truthful mirror, without any visible twist of its own to distort the visages represented in it. There is a considerable mass of miscellaneous information as to the press, besides the Directory itself, and a dissertation on the law of newspapers.

Miscellaneous.

CONVERSAZIONE AT SOCIETY OF ARTS.—The first of the proposed series was held last week in the Adelphi, and was attended by several of the distinguished foreigners at present in London, by the agents of the different foreign exhibitors, by some of the Royal commissioners, the executive committee, and a very large number of members and friends. Nearly half the visitors were ladies. By permission of Col. Jones, the band of the Royal Artillery was in attendance. The large room of the society was decorated with pictures, flowers and flowering shrubs, etchings, objects of art and manufacture, lithographs, &c. Refreshments were liberally supplied, and the overflowing company appeared to enter fully into the spirit of their agreeable *réunion*.

ENFRANCHISEMENT OF COPYHOLDS.—The Bill brought in by Mr. Mullings and Mr. Coles, to extend the Acts for commutation of manorial rights, and for the gradual enfranchisement of lands of copyhold and customary tenure, proposes that, on application to the Copyhold Commissioners by the lord or by two tenants of any manor, the commissioners are to ascertain, by means of a valuer to be appointed by the lord, and a tenants' valuer, the value of heriots, reliefs, and the lord's rights to timber growing on the lands within

the manor. Where the lands to be enfranchised are subject to arbitrary fines, or fines on improved value, or to stinted or other fines, the consideration to be paid for such enfranchisement will be ascertained as by the Lands Clauses Consolidation Act, with reference to lands taken for undertakings or works of a public nature, viz., by two valuers, or by an umpire agreed on by such valuers. To the valuation made there will be added as a compensation of any quit or other rents payable to the lord in respect of such copyhold lands, a sum equal to twenty-eight years' purchase in the amount of such annual quit or other rents. Valuers are recommended to take into account the probable increase in value by the enfranchisement itself.

THE INHABITED HOUSE DUTY.—By the new Act, if it pass as printed, the window duty is to be repealed from 5th April last, and the new house-tax substituted from that date as an assessed tax, under management of the Inland Revenue Commissioners. It has even been officially directed, it is said, that the assessors be instructed not to assess the window duty for the current year. The new bill, however, according to Lord Duncan, cannot be carried into act before the 5th of October. Where the Government may be by that time it is hard to say. We cannot believe, moreover, that they will allow the window-tax to lapse until they have secured the house-tax.

PROSPERITY OF BIRMINGHAM.—The guardians of the poor have sold by auction a portion of some land which cost, in 1824, only 900*l.*, for no less than 5,000*l.* Much other property, including the Infant Poor Asylum and the old workhouse, remains to be disposed of, and such is the demand for property, that it is supposed that the proceeds will defray the cost of the new workhouse, now in course of erection for 1,500 inmates. Pauperism itself, however, is also said to be undergoing a remarkable diminution.

ANTIQUITIES ON THE CLIFF AT WINTER-TON.—Whilst some labourers were excavating on the estate of Mr. W. H. Driffield, they cut across deep-laid foundations and a tessellated pavement of Roman workmanship. The floors are of the richest and most complicated designs, and contain representations of Orpheus playing on the harp and charming the beasts around him, viz., the lion, the stag, the bear, the boar, the pegasus, the dog, the elephant, and the fox; of Ceres, with emblematic ears of corn; and of a nymph, with the cornucopia; besides a great variety of chainwork, knots, frets, vases, and other ornaments, in five appropriate colours.—*Eastern Counties Herald*.

AMENDMENT OF COMPETITIONS.—It will be seen that the meeting called to consider this subject for the 23rd, is postponed till June 6th. Earl de Grey, as president of the Institute of Architects, has issued cards for a conversazione for the 23rd, which perhaps accounts for the change. Mr. Tite will probably take the chair at the meeting in question.*

THE TIMBER DUTIES.—By Treasury order of 16th ult., the alteration of duties in accordance with resolution of House of Commons (since confirmed by Act of Parliament), on the usual condition of parties abiding the ultimate decision of Parliament, was directed by their lordships to come into operation from that date inclusive. It has been decided that the new and reduced rates of duty only are leviable on such timber and wood goods as had not been cleared on payment of duty and delivered until after the resolutions of the House of Commons came into operation.

WIDENING OF PARK-LANE.—We are told that the Commissioners of Woods and Forests have decided upon widening Park-lane from Oxford-street to Grosvenor-gate, to the extent of 8 feet. This desirable step has been taken on the petition of the inhabitants, who have been required by the Commissioners to pay half the expense incurred. It is to be hoped that this thoroughfare will now be paved. Its present condition is not very creditable to the authorities.

* In our paragraph on this subject last week, the word *so* was printed for *or*, which altered the sense; but the error was probably obvious to most persons.

The Builder.

No. CCCXXXIII.

SATURDAY, MAY 24, 1851.



THE Juries have begun their work at the International Exhibition, and in some cases within our knowledge are devoting to it much time and attention. The task is an onerous one: do what they may, the juries can scarcely hope to give entire satisfaction, and we would, therefore, bespeak for them the consideration of those interested in the inquiry. As a matter of course, all the discussions and decisions of the juries are to be considered strictly confidential, and are on no account to be divulged until the award has become final. We may, however, without impropriety, explain what the juries really have to do, and the way in which they are to do it. There are, as our readers know, thirty juries, one for each of the thirty classes into which the articles exhibited have been divided,—and these juries are formed into six groups. Each jury has a chairman, and has elected from its own body a deputy-chairman and a reporter, the duty of the latter being, as the title tells, to draw up a report upon the class of subjects submitted to his jury. These reports will be published, and, if properly made, will describe the state of industry of all nations, and form a permanent record of the Exhibition itself. The juries have to award two medals, the medium size (to be called the "Prize Medal") and the large medal. The small medal has been withdrawn, and will be disposed of by the Royal Commissioners,—probably presented to those who, although unrewarded by the juries, are thought to deserve acknowledgment for assistance afforded by them. When a jury has decided on its awards, these awards will have to be submitted to a meeting of all the juries in the same group for confirmation: they will then go to the council of chairmen, to secure uniformity of action, and will become final so soon as the latter report that they are in conformity to the rules laid down.

The great medal is to be awarded by the council of chairmen only, upon the recommendations made to that body by the juries: each jury must obtain the sanction of its own group of juries to its recommendation of the great medal before the council of chairmen can take the recommendation into consideration. This medal is to be given only for very pre-eminent and indisputable merit; and the number distributed will be small. The medals, we may add, are to be awarded for excellence only, without reference to countries, or to degrees in the same kind of merit. Instructions as to the grounds on which, according to the class, medals are to be awarded, have been given to the juries; but to these we need not refer. The foreign members of the different juries seem to fall very readily into work.

The Exhibition increases in attractiveness, and is daily thronged to the tune of eighteen or twenty thousand pounds per week. Whether or not the crowd will be much greater when it is opened at a shilling is a question, excepting on particular occasions, such as the

arrival of excursion trains.* We do not anticipate that there will be any inconvenient pressure.

Continuing our notice of detached portions of the wondrous collection (the difficulty of grasping which seems to become more, rather than less, difficult on increased acquaintance with it), let us walk over to the north side, to what is called the *Fine-Art Court*. On entering this division,—and in doing so you may notice, though the taste displayed be not the purest, the vases and pedestals by Decesare, Fortunato Testa, and other stone carvers of Malta,—the first prominent object is the *Cradle*, executed by Mr. Rogers, from a design by his son, for her Majesty. It is carved in Turkey box-wood, in the style of the Renaissance, and is an exceedingly elegant production, with nothing for poor baby to knock its head against or tear its hands: and this is more than can be said of some of the most beautiful of the foreign furniture, which is singularly ill adapted for the purpose, although very beautifully executed. There are many other specimens (mostly well known) of the skill of Mr. Rogers, some of them very beautiful.

Close to these are some exquisite carvings by T. W. Wallis, of Louth, to our notion the finest things of the sort that have been produced in modern times. A bird and bough of ivy, beneath his large group of flowers (which he calls *Spring*), should be especially noticed. Until now he has been working almost unknown in his native town, but will not do so longer. "Spring" is cut out of two blocks, and has 1,000 buds and flowers. Notice the bird's nest behind the bramble, and the old bird flying in to feed the young ones.

Near these specimens of carving by Rogers and Wallis, are some works in burnt wood, by J. Mitchell, jun., of Clapham. One is from Rupert's Executioner of John the Baptist,—another from the Chapeau de Brigand, of T. Uwins, R.A.

Here are various specimens of marble enamelling on board, by Mr. Ingram, of Islington, Birmingham, a decorator. These are worked in at 2s. a foot. A white enamelled door, with coloured figures in the panels, also exhibited, deserves attention. The framework of this article is of mahogany. The wood in the preparation, if resinous or knotty, is first freed of these defects by the insertion of new pieces. The whole is then compressed and roughed for the first layer of the enamel, which is ultimately scoured and polished with sand. The only novelty in this process seems to be that the work is done without heat, which is used in Magnus's patent. A specification has been taken out for a patent. A mode of painting in oil, on silk, without previous preparation by size or otherwise, is shown by the same exhibitor, in shape of ornamental slips or panels for interior decoration. Not far off is shown a process by Mr. D. D. Yeo, of Ashburton, of oil painting on velvet, for chair, sofa, and ottoman covers, &c., whereby it is said the velvet retains its elasticity and softness, and can be washed or brushed without injury.

Next comes "red earthenware," in holiday attire,—a vase manufactured by Mr. H. Minton, F.S.A., from a design by Mr. C. B. Allen. Here, too, are various specimens of embossed

* During the first three weeks of the annual exhibition of the Art-Union of London, when a ticket is necessary for entrance, the rooms are crowded. When the exhibition in the fourth week is opened to the public, by advertisement, comparatively few persons come.

leather, hung upon the north wall of the court. Some of the patterns are richly coloured, gilt, and silvered. This art does not make much progress. Amongst them hangs a clever design for a tomb, by Mr. Truefitt, architect, wherein iron and porcelain are brought into use. On the table beneath is a mat machine, newly invented, for wiping shoes, with rows of brushes turned by a crank and issuing through an open grating. Beside it is a carved clock from the Irish bogs, the material of the carving being bog yew wood. An amateur turner, Mr. A. Salomons, here exhibits a restoration and repair of a curious ancient ornament in ivory. It contains some specimens of fine old engine turning, as well as what may be called a novelty in common turning.

Near some bassi relievi, by various designers, is a curious design for a book-cover, carved in card-board, with a pen-knife, by Mr. Walter Blackett, of Islington, architect.

A groom—albeit an Etonian groom—(C. French), exhibits an attempt at carving leaves and flower cup, in the form of a pair of candlesticks. Near these is a noticeable specimen of iron work, in form of a large lily, under a glass shade, by E. Crook, of Carnaby-street.

In the body of the court are a variety of articles in alabaster, exhibited by Mr. E. Norchi, of King William-street, Strand; a Bacchanalian vase; a copy of the Warwick vase in serpentine marble; two vases in agate, after the antique, and 7 feet 6 inches high.

Here also is a model of the "Great Victoria Pyramid," connected with a projected national cemetery on Woking-common, and designed to contain 5,000,000 coffins, and when completed, to be 100 feet higher than the great pyramid of Egypt! A section exhibits 94 stages of catacombs on a base of 18 acres, which, multiplied by the several stages, will realise nearly 1,000 acres, to be redeemed from the cloud-land over head, as the building progresses upwards into the void space above the earth. The material of the pyramid is to be brick, with granite facing, and the approach through a lofty Egyptian portal. Zigzag planes would lead by gradual ascent to the top, and there would be a central shaft with tubes, to ventilate the catacombs. The pyramid is to be surrounded by cenotaphs, columns, obelisks, groves, and terraced walks. Mr. Thomas Willson, of Leicester, architect, is the designer and projector. We have a strong feeling in favour of committing "earth to earth."

Messrs. Bailey and Son, of Gracechurch-street, exhibit a good specimen of casting in iron for gallery fronts, staircases, &c.

Observe, here, a specimen of minute carving,—the hawk and butcher bird, by Mr. James Batsford, of Warwick. This specimen is executed from one small block of lime-tree, and is intended for close inspection as a strict copy of nature.

Some "printing on glass" appears to have rather a crude effect. There is a specimen of enamelled glass, in imitation of glass mosaic, by Mr. H. Ethrington, of Pimlico, draughtsman; and in another part of the fine-art court, is a display of glass mosaic, in tables, pier and console tables, candelabra, and pedestals, with crests and armorial bearings, by Mr. G. H. Stevens, decorative artist in mosaic, Vauxhall-gardens.

Beside these mosaics are two slabs for tables, exhibited by Prince Albert. These are de-

signed by Mr. L. Gruner, in the Cinque Cento style, and executed by Mr. T. Woodruff, at Bakewell, in Derbyshire stones, in imitation of the Florentine Mosaic. The stones, varied in hue, are inlaid on a black ground, in shaded figures of birds, flower forms, vases, serpents, scrolls, circles, and discs. Crossing the floor of the court, we note some sombre engravings on black marble, by Mrs. Rayner, of Berners-street, and near them a specimen of the mode of transferring prints to steel plates, by Mr. S. Russell, of Gravesend, and a little further on some illustrations of the application of white marble, as a material on which to paint miniatures, exhibited by Mr. T. Carriek, of Montague-street, the inventor.

Amongst the models of buildings is one, in the pith of the common rush used for rushlights, of the west front of Exeter Cathedral, made by a lady—Mrs. Kingdon; and there are others,—of the Royal Arch, Dundee, an odd vagary; Tynemouth Castle and Tintern Abbey (coloured in *natural tints*), by Captain E. Morgan, Royal Artillery; Farm, by Mr. H. S. Merrett, of Fetter-lane, architect; Tudor Villa—an English home of 19th century, designed by a lady, and with many lady-like touches about it, but made by Mr. E. Sayers, of Wandsworth, builder; a Temple, by Mr. H. Fulton, designed to show a new order of architecture, with some mysterious instructions for turning it inside out attached to it, which were apparently intended for those who unpacked it, and not for the public; York Minster, by Mr. John Middleton, of Darlington, architect; St. Paul's Cathedral, by Mr. H. Scollick, of Birmingham, cut with a penknife out of card-board, and composed of 50,000 pieces; another of St. Paul's, on a larger scale, and also in card-board, by Mr. T. Wilby, St. Bartholomew's hospital; proposed County Courts at Newcastle-on-Tyne, by Mr. R. Grainger; chapel on plan of the choir of St. Mary Temple, by Mr. Wm. Bardwell, of Westminster, architect; another of York Minster, cut with penknife out of card-board, by Mr. James Dickenson, Limehouse; Royal Exchange, London, and The Monument, in cork, by a cork cutter in Eastcheap, Mr. T. Smith, jun.

In the nave, opposite the Fine Art Court, are also models,—of St. Nicholas's Church, Hamburg, as now being built, by Mr. G. G. Scott, architect—a large one exhibited by Mr. Stephen Salter, of Hammersmith, as modeller; Church of St. Nicholas and St. Mary, recently erected at Wilton,—architects, Messrs. Wyatt and Brandon—same modeller; County Assize Courts, recently erected at Cambridge—same architects and modeller.

A little farther west is a very large model of St. Stephen's Church, at Leverbridge, near Bolton, built entirely of *Ladyshore terra cotta*, of which material are also composed the principal portion of the interior fittings, as the pulpit, organ-screen, benches, &c. Mr. E. Sharpe, architect. The model is of the same material.

Other models in this part of the nave are, one of the Sacred Harmonic Society's orchestra, of 700 performers, at Exeter Hall, and one of Dinting Vale Viaduct, on the Sheffield and Manchester Railway, Mr. A. S. Jee, engineer. The brass lectern for the choir of Hereford Cathedral, designed by Mr. Cottingham, and manufactured by Mr. Thomas Potter, South Molton-street, is also here, together with the brass tablets by Messrs. Waller, which we

overlooked when speaking of some other brasses close by.

While rambling through courts and galleries, before quitting the building, after some hours' hard work, we could not help drawing out our note-book again, to add a notice of the splendid electro-deposit for the House of Lords of the warlike figure of Geoffrey Earl of Gloucester, by Westmacott. The mould whence this extraordinary electrotype was taken was a negative, made, it is said, of a composition of gutta percha, gelatine, &c., into which, of course, was poured the copper solution whence the deposit was made. Foreign artists, it seems, unanimously admit this figure to be a triumph of art: the statue can now be made and sold in any number at 200 guineas each. Mr. Henry Elkington was the electrotypist. There is also in the same division (west end of south gallery of west nave) a similar electrotype of the death of Tewdric, King of Gwent, modelled by Mr. Evan Thomas.

A little farther along this gallery, by the way, (at Garrard's) may be seen Mr. Brassey's testimonial—a large silver-gilt salver, with miniature portraits of eminent engineers, &c.

The following communications relate to the same all-engrossing subject, the Great Exhibition.

Examples of Cement outside.—In connection with the Great Exhibition, I would beg to call your attention to a few things, the first of which purports to be a trial of the strength of Portland cement by means of a beam erected in hollow brick and cement. If this were all the constructors would certainly be entitled to due credit, as far as the breaking weight is concerned, when the requisite trial comes to be made; but if we look a little farther, we shall soon see that no less than four courses of the brickwork of the said beam are interwoven in every course, and under every brick, with strong hoop-iron, making the whole experiment a mere farce. I really must protest against this on the part of others, who have given this cement a fair and *bond fide* trial. I really think the Royal Commissioners should have the whole deception at once removed. Their next-door neighbours, who exhibit an enormous flag of the Portland cement, expressly paint on the back, "no iron used." I would next call your attention to a statue of Richard I. or *Cœur de Lion*, erected at the west end of the building, out on the sward, which is such an exceedingly ornamental and artistic work, that I think the Royal Commissioners would erect a monument to their present triumph by the purchase and retention of it; however, if they should object, and Lord Seymour would allow of its remaining, I propose that it be purchased by public subscription. I should be most happy to forward as sovereign as my mite towards the desired object. One more suggestion in conclusion: a granite column has been contributed from the quarries of the Duke of Cornwall, which, after the Exhibition, will be useless. Now, I would propose the erection of this on Constitution Hill, as near the spot as possible where the lamented Sir Robert Peel met with the sad fall which ended in his death. The column is pretty, appropriate, and ornamental, and I think no monument could be better placed than where the lamentable accident occurred. The sentiment embodied in the idea of the eldest son of Her Majesty erecting a monument to her Prime Minister, to me seems truly English.—H. B.

Waterproof Bricks and Tiles.—The many evils arising from damp houses, induced me some twenty years since to turn my attention to that important subject. The hollow brick presented itself to my notice, but I found (under ordinary arrangements) it was a conductor of damp, and, therefore, abandoned the idea (other parties have since introduced the hollow brick to the notice of the

public): after various experiments my effort were crowned with success, the result being a patent for waterproof bricks and tiles, so that our dwellings can be made dry and warm, clean and healthy. I have exhibited specimens of this invention in the Exhibition of all Nations sec. 3, class 27.

After a very careful investigation, I find—

One Malmes brick absorbs	62 ounces of water.
" white Sussex "	58 "
" second "	52 "
" red facing "	51 "
" picking "	50 "
" stock "	27 "

Bricks, after being waterproofed, will not absorb TEN GRAINS. The properties are not affected by the atmosphere, and therefore it should supersede all means used for resisting damp, such as stucco, cements, hollow bricks, &c. The expense of waterproofing bricks is so small, they can be used for building dwelling-houses, baths, tanks, reservoirs, railway tunnels, and every description of work where it is necessary to keep out water and resist damp.

J. T. S.

EXPRESSION IN ARCHITECTURE.

As the most accurate knowledge of the alphabet and grammar of a language is not literature, but a step in literature, from which the scholar proceeds to prose or verse composition or to rhetoric, so in architecture a knowledge of orders and styles is but a step to the study of those principles and laws of design, by the exercise of which the student is enabled to express his ideas in stone or brick with a greater or less distinctness; and as in the former we must do no violence to the essential spirit of the language, but duly respect its idiomatic peculiarities of structure; so in the latter we should use the elements with a just appreciation of the genius of the style which we have adopted.

This subject is not the less momentous that many celebrated writers on architecture have said but little, or been altogether silent upon it. Some architectural writers, it is to be feared, knew little of the philosophy of the art, however gifted in other respects. Many who from mathematical skill were eminent in the structural department, had not the poetical soul; and it is necessary that we make their distinction, if we would profit fully by their works. Wren's geometrical and constructive talents, it is probable, greatly preponderated over his artistic feeling. To make a truly great architect requires, I suspect, a very rare concurrence of qualities—one which the world has seldom seen. Plato, when he declared that a great architect was a rarity in Greece, needed probably no extravagant notion of what constitutes one, to lead him to the conclusion.

That the subject of expression has been so slightly recognised by modern architects is surprising, when we consider how manifold and diversified are the uses of our edifices. The definite expression of the divers ideas of their destination is a quality parallel with the development of the story in a history or scripture piece, or of the subject or sentiment of a poem. That there is scope in architecture not only for the exercise of imagination and feeling, by which genius may charm the eye and move the heart, but that it is capable of reflecting various shades of purpose, we need only look back upon the origin and history of the art to be assured.

The principle of expression was broadly recognised by the Greeks in their original institution of, and division of their system into, the different orders, and by the Romans and revivalists in their mixtures and modifications. The Greek orders are themselves so many different signs or characters of expression, as representatives of positive qualities, and, along with the different proportions of intercolumniations and arcades and pediments as adjusted by them or their successors, the various dimensions of apertures according to the order, and the congruity of the parts of each order, the character and ornaments of which admirably correspond to that of its proportion and forms, and to no other, assert and prove how capable are the necessary and general forms of architecture of receiving in

their æsthetic distribution and decoration a progressive gradation of character, and of developing all the requisite qualities from masculine grandeur and sublimity to feminine elegance and grace. The ancients adapted their edifices to their destined purpose, and gave them their decorative character in unison with that purpose. The embellishments of the temples harmonised with the nature and functions, or expressed the qualities of the deities to which they were dedicated. The temples of Jupiter, Minerva, Mars, Hercules, were, according to Vitruvius, to be of the Doric order, which bore striking analogy to the characters and actions of these divinities. The temples of Diana and Juno were Ionic, the order in which elegance and majesty are blended; while Flora, Venus, and the Naiads were honoured by the Corinthian, the elegance of its exquisite and delicate members, ornaments, profiles, flower and foliage ornamentation rendering it a fit representative of such exquisite conceptions. Probably, even in their general forms, the nature and office of the deity was considered, and expressed symbolically in their plans. The temples of Vesta were circular. The Pantheon, consecrated to all the gods, symbolised completeness or entirety by its rotundity. Why we must not employ the ornamental resources of architecture indiscriminately, or give the same character or degree of richness to every building alike, two reasons might be assigned: 1st, the innate love of variety requires a diversity of beautiful forms for its gratification; 2ndly, the sense of propriety dictates that each building should have a character appropriate to its use.

The word "beauty" is often used to express the entire merit of a building, including mechanical excellence, solidity, truthful adaptation or fitness, and the rest; and certainly a building cannot be perfectly beautiful, or give full satisfaction to the mind, unless faultless in all mechanical as well as æsthetic and artistic qualities. But the term "beauty" is generally confined to the quality or property in an object that, independent of fitness, excites pleasing or agreeable emotions. A building may be erected with attention to accommodation and stability only, and if these be obtained, it possesses a species of beauty, and excites proportionate admiration; but this is not beauty in the æsthetic sense, or what is generally understood by the word, and the absence of this quality or property destroys its claim to be considered as architecture, which is very properly defined as "the art of the beautiful in building." It is quite absurd to deny the existence of absolute beauty in the proportions of the Greek orders, independent of that arising from fitness, and to refer the laws of taste to the principle of utility: as well deny the existence of beauty in the human form and face, for the principles that rule there are identical with those of architecture. The evidence of design in an object, the correct adaptation of its form and structure to a definite end, is not sufficient to constitute that object beautiful. That beauty may be distinguished from utility could easily be shown. Take a drinking-cup of the plainest cylindrical form: its vertical section has not one line of grace, yet is this cup as well fitted to its end and as useful as one modelled after the most exquisite antique vase. Nature has recognised the distinction in her construction of animals and other objects. What æsthetic feeling and taste she exhibits in the contour of those parts of the human body, for example, that meet the eye,—I mean the exterior generally; and what seeming utilitarian indifference to beauty in the interior or concealed portions. In one every thing gives place to utility, while the other is cast in the highest moulds of symmetry and grace. There are, indeed, some things, so inauspicious is the nature of their office, that, when adapted fully to it, are incapable of much real beauty of an abstract kind; while in others, on the contrary, utility scarcely militates against beauty at all. Familiar examples might be given of this, and a cabinet-maker or designer would, I think, acknowledge their truth: a chair is an article which, to be of any real use, cannot be made every pleasing in its general shape, nor ornamental

in detail: a loo-table, though more susceptible of elegance of form and embellishment, is still under this ban of ugliness; but on such objects as bookcases and sideboards artistic feeling may have full exercise, and nearly all the resources of decoration may be lavished.

Works of architecture are to be as beautiful as the general form dictated by considerations of utility is capable of, and we are satisfied with such qualified beauty, for admiration of its fitness enters into and blends with our appreciation of its æsthetic properties. There are some forms of objects that are dictated by utility, which would not on any other grounds be chosen; but once chosen as fittest for use, it is the business of the designer to give them all the beauty of which they are susceptible; while there are others, which, though utility has had full voice in their design, and done its utmost, are beauty's own. Some objects of extreme utility seem as if the principles of beauty and elegance alone had been consulted in their formation. The geometrical stair and staircase, for instance, in an important and spacious building, is one of those fortunate creatures of art. Where there is sufficient space, beauty may reign unmolested in the design of the staircase. Beauty, lightness, a fairy-like magnificence and elegance, may at once enter into its composition. There are other objects in which utility appears equally innocent of interfering with the conditions of beauty,—in which both seem to reign supreme: one, though without the sphere of civil architecture, might be named: a first-rate sailing vessel or ship of war in full rig, perhaps the most spirit-stirring sight on which the eye could rest, is as charming an object as if made only to please the eye, and æsthetic grace had been the sole aim of the designer.

Generally speaking, objects that are of great utility in architecture may be made beautiful in form, and are susceptible of a high decoration—or will, of any form, conduce to effective light and shade, as is the case with porticoes, door canopies, balconies, &c.; and there is scarcely any architectural feature that utility demands, that may not be made beautiful by a skilful hand. Convenience and comfort must come before beauty. Beauty is a want of our nature, but the desire for it does not arise until our physical wants are satisfied. We must be comfortable before we can enjoy either the divine poem or the gorgeous picture, or look round with complacency upon the proportions and decoration of our abode. The sacrifice of utility to beauty is, therefore, a reversal of the natural order of things; it is not only an outrage upon taste, but a violation of common sense.

Beauty is an abstract quality distinct from expression—a quality *per se*, and is obtained by two means,—1st, by general form and proportion; and, 2ndly, by ornamentation, or the superaddition of embellishment. And expression of character is neither less nor more than rightly employing these means, properly drawing upon and using the decorative resources of architecture, which becomes a hieroglyphic language in developing and embodying various qualities, as grandeur and sublimity, or richness and elegance, grace and magnificence, and all the intermediate grades. And an edifice cannot be said to be beautiful in the high, intellectual sense of the word unless a truthful and definite character has been given to it. Expressiveness in architecture is as much superior to abstract or æsthetic beauty as what is called intellectual is superior to mere physical beauty, and, indeed, bears striking analogy to that lofty order of beauty which a noble heart and brilliant genius stamp upon the countenance.

Character in a building is a positive quality; a sterling and intrinsic virtue; it informs and instructs, while abstract beauty merely pleases. Truth is "the summit of being," and the marriage of beauty and truth is the ultimatum of art. A well characterised structure, a truthful architectural production, is the representative of a fact, and it becomes thought and feeling in the mind of the observer. It is organised idea and sentiment, and will appear "to share the life of things;" whereas

a building designed without reference to its purpose is an object detached—an intellectual nonentity; having no meaning, it stands for nothing, it represents nothing; it is stone and wood and lime cut off from nature, an out-cast from intellect and law.

Expression in architecture is given by three different means—viz. 1st, By truthful adaptation of form and arrangement of the parts to the destined purpose of the edifice; 2ndly, By form, and proportion, and general style of decoration under the guidance of analogy; and, 3rdly, By allegory, i.e. symbolic sculptural illustration.

The first medium of expression is truthfulness of plan,—the having both horizontal and vertical divisions and subdivisions of an edifice in all respects true to the requirements and necessities of the institution for which it was reared; or adapted to its uses whatever its object or degree of importance; adding nothing irrelevant, omitting nothing that is necessary, and hiding nothing but what decency forbids to be exposed. Exact adaptation of form to purpose is the most direct element of expression, and assists more largely than is generally supposed in characterising the structure. It is an essential,—nay, the foundation of all artistic expression. Utility or necessity called for the building, and the building, if the architect has faithfully responded to that call, will, in the absence of artistic expression, generally hint at the purpose. In most cases where fitness is thus attended to, the expression is in a great measure given,—the character of the edifice is half formed. Without it, the most energetic or judicious employment of the decorative resources of the art is vain: parts which are essential to the use are essential to an appropriate expression; and a cause of failure in giving this quality is a neglect of the principle to which I refer. Essential parts are disguised or concealed, while unessential ones, that must be mute or false in expression, are added. If we were more truthful generally, we should be more expressive. Our roofs, for instance, must generally be inclined, and are inclined, in this climate; but we hide the fact by hipping. There is no sufficient reason for this. A pediment is the natural termination of an inclined roof, but roofs of ordinary houses are generally treated as if the pediment were no feature in architecture, or, at least, as if it were an objectionable one, for there is quite a struggle to avoid it. Now it is not only a recognised architectural feature bequeathed us by Greek and Roman, but one of the most picturesque we have. The picturesque is a useful element of expression in domestic buildings, and truthfulness of treatment in design will assist us to originate it; nay, will itself suggest or produce it.* Whether or not, we should never, for any purpose, hide a necessary feature of our buildings, even to obtain the severe outline of temple architecture. We pay but a poor compliment to Greek art when we sacrifice common sense at its shrine, and make it a mask to conceal our English habits and way of life. The ancients themselves made no such blunders; they availed themselves to the utmost of the labours of their predecessors; but they imitated in the right spirit, and adapted their buildings to their own purposes in all their peculiarities. We need not the affectation of antique temple, or of any class of building whatever. As to the detail, the Greek and Roman mouldings and indivisible ornaments are to be recognised as elements only—as words or letters of the art,—characters of expression—and as such they will suit our purposes; and having the same relation now to the human mind and feeling, and to universal nature, that they had two thousand years ago, they will look as well in London or Liverpool as they did in Athens or Corinth.

* This is almost the only means of doing it. The picturesque is a quality very difficult to create; in which it is vain to attempt to emulate nature. It exists in perfection only in her works, and can scarcely be designed in any degree; and though it is a most desirable species of beauty in domestic architecture, and takes the strongest hold of the affections, it is best, after that truthfulness of arrangement which I have recommended, to leave the rest to time and weather. Those who attempt to design the picturesque generally overdo it, and run into the fantastic and unmeaning.

The second medium of expression is form and proportion, and general style of decoration under the guidance of analogy. The purpose of each edifice will suggest what character of ornament and general proportion, and what degree of decoration it should have. This department of the language of architecture, unlike the former (*viz.* adaptation) is addressed to the feelings and the imagination, and is to excite emotions in harmony with the purpose,—feelings which are sympathetic with the spirit of the place; so that the front of a theatre, for instance, will be a kind of preface,—a prelude in stone, to the entertainment within. Fine-art architecture is not only an æsthetic, but an intellectual arrangement of stone; it is a mental utterance of thought, a reflexion of states of mind, not by speech, but by form. It is a language not to inform the spectator what is the exact purpose of the building as literal speech—our mother tongue—would do; but to suggest—to reflect it, as the mirror of the architect's mind;—to inscribe on it such a character as shall be suggestive of the nature, moral, physical, or intellectual, of its destination. The beauty-elements of a building, if I may use such term, properly employed, awaken in the mind of the observer an undefined image or type of the institution which the edifice is destined to enshrine,—and the expression of the architecture is to the purpose of the building what music is or should be to the words to which it is set,—a harmonious accompaniment to the ideas of its use. It is an analogical and symbolic image of the institution, conveyed in stone and wood from the mind of the architect to that of the spectator.

The word expression implies language; but there are languages besides verbal ones. Language may be conventional and arbitrary, or pictorial and natural. Architecture employs the latter kind—a beauty-language, or one the signs of which are lines and forms, that agreeably but variously affect us, which find a response in the breast. Architectural expression is by form and proportion, and by embellishment, literal and symbolical. True works of architecture speak to us just as nature does. In nature form exists by and through the essence—the spirit creates the form, and the idea of its use must create the building—its qualities must be represented on the same principles as in the works of creation. The laws of beauty and expression are derived from nature. "What is the perfection of a thing?" asks Von Schelling, "Naught else but the creative life in it, its power of asserting its own individuality." And to excite various feelings and impressions by means of stone and wood, the mind of the architect must look

"Upon the speaking face of earth and heaven
As her prime teacher."

"And imitate that spirit of nature which, working at the core of things, speaks by form and shape as if by symbols."

The heart is variously stirred,—very different are the emotions which different climes and aspects of nature awaken in the breast;—at one time the heart is swelled by a sense of grandeur from her sublimer features; at another, softer emotions, thoughts "weak as womanhood," are raised by her more graceful lineaments, chiefly where the hand of man has been; and such varied enjoyment and emotion is common to the lovers of nature in all countries and seasons. In the wide plain which the horizon alone bounds,—on the ocean shore,—in the mountain pass,—varied emotion is excited and instruction yielded in a greater or less degree by a communion with nature; and not only is the sense of beauty satisfied, but the heart thrills responsive to every grade of beauty's scale between the points of grandeur and of grace. A true structure, therefore, may be considered as one that is in full-voiced harmony with its purpose after the manner of nature herself, whose life and movement, grace or delicacy, grandeur or majesty, has been emulated. The idea of the designer was in accordance with the purpose, and it is clothed with a form of decoration expressive of it.*

S. H.

* To be continued.

WHAT OUR TRANSATLANTIC BRETHREN ARE "A-DOING OF."

Planting Forests!—In giving some account of our English plantations, and their value and importance, the *Newburyport Herald* says, "Our timber forests have been esteemed of small value, and an incalculable amount of timber trees have been wasted in years back. Gradually, however, timber of all descriptions is growing scarcer and more valuable, and before many years the man who wishes to leave a fortune for his children and grand-children, can do it in no surer way than by planting suitable land, at easily accessible points, with good timber trees."

Steam Paddies.—In a deep cut on the track of the Northern Railroad, says the *Home Journal*, there is a mighty arm at work—shovelling. From the magnitude of its proportions, the strength displayed in its operations, and the slow dignity of its motions, it reminds one of an elephant. It is designed to supply the place, or rather perform the work, of some mammoth Irishman with his shovel. Its proper cognomen is Excavator. Steam is its motive power. The engine and the principal portion of the machinery are contained in a small house, placed upon car-wheels; and, when transportation is necessary,—by a single touch of the engineer the power is directed to the propelling of these wheels, when the station-house at once becomes a formidable locomotive. From the roof of this locomotive "house" ascends the chimney, or smoker. But the part which most attracts the beholder's attention is that connected with an upright shaft, capable of making about three-fourths of a complete revolution, from the top of which proceeds a horizontal arm or crane, whence chains and levers go to the "scraper." The motions and results of this part of the machinery are analogous to those of a huge arm and hand grasping an immense scoop, the whole wielded by a giant of colossal strength. One scoop-full fills a car, and two cars suffice for a horse-load on a railroad track. The scoop is drawn back by the flexion of the elbow, and is placed at the bottom of the bank. The extensor muscles of this powerful limb now commence their action, and push it forward and upward, scraping and gathering, in its progress, sufficient dirt to fill it: then it is slowly carried round, describing a considerable arc of a circle, till it is placed directly over a car stationed to receive its contents. This motion may represent that of the shoulder-joint. The bottom of the scraper is a trap-door, which very instinctively flies open, and out drops an avalanche of dirt, and the arm slowly wheels around for another dishful. The prominent edge of the scraper is armed with teeth, which may make our analogy a little more complete, by allowing them to represent fingers and nails—to scratch with.

This apparatus has its *sensorium commune*, and the human hand and arm are no less obedient to the mandates of the will, than is this combination of wood and iron, chains and cylinders, to the will and direction of a very greasy, smutty man, standing upon a semi-circular platform about the upright shaft above described. Here he touches first one spring, or nerve, with one hand, next another with the other hand, then a third with the foot, like a piano-forte or organ player, and straightway these talismanic signs are conveyed, with telegraphic precision, to parts and portions most distant, and the commands are instantly followed, or better, accompanied, by the desired movement.

A Stray Lighthouse.—At a late customhouse sale of unclaimed bonded goods, according to the *Courier and Enquirer*, thirty-two large packages were set up by the auctioneer in one lot, "supposed," as he said, "to contain a lighthouse." This being the only intimation bidders had of the contents, offers were dull, and the lot was knocked down, at five hundred dollars, to a German of the name of Stephen Lutz, who, being in the china and glass business, was probably led to make the highest offer by the prospect of obtaining material of certain and immediate value (as old metal, we presume). On opening the largest package a large wheel of copper was found, adorned with curious devices, and evidently fitted for com-

plicated machinery. Other cases were found to contain the looked-for lenses and immediate apparatus of lantern. The searchers having satisfied themselves that the supposed lighthouse was an actual verity, and that they had all its parts complete, discontinued operations, and from that time to this have received from the few acquainted with their bargain various offers, the highest of which reaches 7,000 dols. This work of art, all the pieces yet come to light serve to show, is of great beauty and value. There are evident marks of its having been forwarded by the French Government to the American. The lot is supposed to have been originally consigned to a naval officer, whose death accounts for its having been unclaimed. It is thought possible that the lighthouse acquired in so extraordinary a manner may prove to be of the value of 30,000 dols. It is a Fresnel light of the first order.

Minot's Ledge Lighthouse washed away.—In a recent storm the iron pile lighthouse, erected in 1847-49, on the outer Cohasset rock, about 17 miles from Boston, broke down and was carried away, and two assistant keepers drowned. Although three structures on the same principle had been erected in England previously, the plan was considered at the time a bold, if not a rash, experiment, inasmuch as the English pile lights were erected in shoal water, where the sea rolls through the piles, and none had been put up where the sea breaks with any great degree of violence, as at Minot's. Various misgivings had moreover been expressed, and one keeper had resigned, and another had fruitlessly complained of the insecurity of the structure. A commission of engineers certainly had examined it, but they "took a pleasant day" to make their examination, and pronounced it to be "entirely secure, and equal to standing the strain of any storm without danger." It is the opinion of the last keeper, Mr. Bennet, an English engineer, that the piles have been gradually weakening by the gales of the past two winters, and that the atoms of the iron have been gradually disintegrating by the constant oscillations, in the same manner as wire is weakened and finally broken by frequent bending. The piles, eight in the circumference and one in the centre, appear to have been all broken off short about the same height from the rock. The cost of this lighthouse was about 39,000 dollars.

A Quarry of Paving Stones washed Ashore.—Baker's Island, at the entrance of Salem Harbour—or rather, so much thereof as is not occupied by the U. S. Government for the Light House establishment—was purchased, not many years ago by an industrious Irishman, who cultivates a portion of the soil, and by supplying ballast lighters, &c., contrives to pick up quite a decent support. On one part of his domain, exposed to the wash of the sea, there was, until the recent storm, quite an extensive reach of smooth sand beach, which, after a late gale had upheaved old ocean to its very depths, was found to be covered with hundreds upon hundreds of tons of paving-stones, enough to supply a fleet of ballast lighters, and bring a small fortune to the lucky landed proprietor. It is truly "an ill wind" that blows nobody any good.

Powers' Statue of Calhoun constitutes a prominent object of interest to the visitor in Charleston. It occupies a very unfortunate position in a cheerless apartment of the City Hall. "It would be unfair to form an opinion of it as a work of art," says a paper quoted by the *Literary World*, "while it stands in so bad a light, to say nothing of its discolouration by the salt water, and its mutilation in the loss of the right arm. The figure, however, is very noble, and the likeness well nigh perfect." By the way, amongst a number of capital daguerreotype likenesses of American celebrities, in the U. S. division of the International Exhibition, there is one of Calhoun: a strange weird-looking mortal he is. Amongst others of lesser celebrity, is one of Mr. Paine, the electrician: whether his visage be a "pseudoscientific" one we cannot say: it considerably resembles that of Mr. William Chambers, the journalist.

Art in Boston.—There may be found in New

York, Philadelphia, and in other cities farther south, artists that have been reared and taught in Boston and vicinity, who are there receiving that remunerative reward for their labours which they failed to obtain nearer home. But a new cause of depression has just been promulgated; one, it must be confessed, which deprives the depressor of full as much pleasure as it does the artist,—the withdrawal of southern patronage and encouragement from our Art-Union, because of their location! That this may work temporarily to the disadvantage of our artists, we do not doubt; but that it can be permanent, we do not believe. A "sober second thought" never comes amiss. But, in the present state of art among us, what ought the community to do, to maintain its reputation for refined taste and judicious liberality? We simply say, as lovers of the fine arts, and desirous of the good name of our city—encourage our own! Boston has more artistic talent than any other city in the United States. Let that talent, then, we say, be encouraged; and let the encouragement come promptly. It is not right that the artists of our city should either be at "starvation point," or receive a penurious support. For the credit of Boston, we hope our wealthy men will extend a fostering hand to the arts.—*Boston Atlas.*

Tunnel at Buffalo.—About the greatest object of interest in the vicinity of our city just now, says the *Buffalo Courier*, is the tunnel of the water works company in the rock under the Erie canal and the black rock harbour to the Niagara river, about half-a-mile beyond the city line. The perpendicular shaft or well is about 8 feet in diameter and 30 feet deep, nearly the whole being through rock. From the bottom of the well, starts the tunnel, which is nearly circular, and about 6½ feet in diameter, running nearly horizontally towards the bed of the river, which is distant about 360 feet. A slight slope upward as the tunnel advances, allows the water which pours into it from springs or crevices in the rock, to run back into the well out of the way of the workmen who are engaged incessantly, day and night, in blasting the rock. They have now proceeded about 280 feet from the well, progressing at about 2 feet per day. Only four miners are able to work at once, changing three times during the twenty-four hours. The work is all done by lamp light. The rock is soft and easily drilled. At the mouth of the well the noise of the blasts is like the discharge of heavy artillery. The water is removed by two large pumps driven by a steam-engine, also used to lift the broken stone from the pit.

Music Hall at Boston.—Designs for a contemplated music hall in Bumpstead-place have been exhibited at the Merchants' Exchange. The work is now fairly commenced, and 30,000 dollars of the stock taken. The charter will be forthwith granted by the Legislature, and we see no reason, says the *Boston Transcript*, why the work of building cannot be commenced within a month. It is hoped, however, that the gentlemen taking the lead in this enterprise will consider the feasibility of constructing the hall in such a manner that it can be used, not only for concerts, but for the production of operas.

HORN HOUSES OF LASSA, THE CAPITAL OF THIBET.—There is a certain district in the suburbs where the houses are built entirely with the horns of cattle and sheep. These odd edifices are of extreme solidity, and present a rather agreeable appearance to the eye; the horns of the cattle being smooth and white, and those of the sheep being black and rough. These strange materials admit a wonderful diversity of combinations, and form on the walls an infinite variety of designs. The interspaces between the horns are filled with mortar. These are the only houses that are not white-washed. The Thibetians have the good taste to leave them in their natural state, without endeavouring to add to their wild and fantastic beauty. It is superfluous to remark, that the inhabitants of Lassa consume a fair share of beef and mutton: their horn houses are an incontestible proof of it.—*Cape Colonist.*

FALL OF A BUILDING, GRACECHURCH-STREET, LONDON.

On Saturday, the 17th, the greater part of a new building of very large size, on the west side of Gracechurch-street, and extending into Ball's-court, Lombard-street, which was just ready to receive the roof, fell to the ground in a shapeless mass, and buried in the ruins a number of the workmen. The building was being erected by Messrs. Bell and Corbett, architects, and was to have been of fire-proof construction. Further particulars will be gathered from the following evidence, given at the inquest held on the bodies of the men who were unfortunately killed:—

Mr. R. Bell said,—"I am an architect. The building which has fallen belonged to myself and Mr. Corbett, who is in partnership with me. I should describe the building as being situated on the west side of Gracechurch-street, between Nos. 16 and 18. The premises were originally the Cross Keys Hotel and Tavern, and some shops in the front, the whole of which have been pulled down, and in lieu of these were about to construct merchants' offices, which were to be upon the fire-proof principle, called Fox and Barrett's Patent. The building was proceeding in perfect safety when I was over the premises on Friday night about half-past six o'clock. Then all was perfectly safe, and we had got nearly the whole of the concrete on the roof, ready for the asphalt covering which was to have been laid upon it. As far as I could judge there was nothing wrong at that time. I did not see the building again till next morning, from half-past 10 till 11, just after the accident, when I found at the centre of the building that the south wall of the staircase had gone down, and drawn with it the floors and the external walls next the church. I did not see anything at the time to account for this. I have inspected the place, and can, I think, account for the cause as it was told me. What I feel assured must have been the case was, that the iron girder crossing the staircase from north to south, girder crossing the staircase from east to west, resting upon it at one end, broke and gave way. That was quite at the top of the building. There was nothing upon it. The weight brought down and broke every bearer successively, and the iron rafters prized out the courses of brickwork throughout. I think the weight of the girder must have been about 35 cwt., or approaching 2 tons. There were other girders, each about the same weight, in the respective stories. These were supplied by Mr. Ford, who was recommended by the patentees, Messrs. Fox and Barrett. I have visited the building every day since its commencement. I did not examine the top girder. I do not know why I did not, though Mr. Corbett attended to the iron work; yet it was equally my duty to attend to it. The contractor was to have it proved before delivery. I tried many of the smaller girders by putting weights upon them. I put about nine times as much upon them as they had to bear. I did not try that which is broken, because there is no room for that purpose on the premises. Part of the north wall standing. The girder was upon the north and south walls. I have since examined the girder, and I find a flaw in it at the bottom part. The girder is 12 inches deep. There are three flanges, one at the bottom seven inches wide. The contractor was to have proved the girder. I ordered the girder to be an inch and a quarter in thickness.

The Coroner.—I understand it is more than an inch and a half thick.

Witness.—It may be. I calculated it to bear thirty-five tons with the weight equally distributed all over it. With six tons in the centre it ought not to have given more than 1-100th part of its own length. If the thickness had been 1½ inch it would have broken with thirty-six tons. I never test with more than one-third it ought to carry. If to bear thirty-six tons, I would test it with twelve tons in the centre. Such a flaw as is in the girder would not be perceptible after being painted, as this was, but it could generally be discovered by striking it with a hammer. I believe a great part of the accident arose from endeavours to have the building extra strong, such as tying the floors to the walls, and the walls together. We purchased our materials from Mr. Reddin, which were of the best kind. The contractor for the whole work was Dennett. He was to do the whole of the brick work, and fix the iron work. He was, in fact, the contractor for the building, excepting providing the materials. The mortar was formed of good lime and sand, and there was more cement used in the building than I have ever known, excepting one at the Temple, which is built entirely with cement. The cement sets quicker, and I think is harder; but I prefer mortar if there is plenty of time for it to get hard. The superintendent of the building is King. I examined

the cement and know it was properly made, as was also the mortar.

Coroner.—It has been said that there was no mortar adhering to the bricks.

Witness.—All walls which are thrown down, whether held together with cement or mortar, generally fall down clean, and that, I should say, accounts for the appearance of the bricks. A large piece of brickwork cemented together, weighing 2 or 3 tons, had been thrown from a height of 36 feet without breaking. I am sure the fall, from what I saw, has not arisen from any defect in the workmanship. Before commencing such a building as this, it is usual to give notice to the district surveyor, and to show him the drawings of what we are going to do. I do not know whether it is the custom of the district surveyor to visit buildings during their progress, but I have seen him there two or three times while erecting our building.

Coroner.—Do I understand that any one can carry up a building without the district surveyor coming to inspect it?

Witness.—We are not generally accustomed to the superintendence of the district surveyor. I have seldom seen district surveyors, except in matters of lights and party-walls. I am satisfied the accident was from a flaw in the girder, and not from defective brickwork. There was no weight upon it, but some scaffold-boards. The wall varied in thickness, but was generally more than a brick and a half; in some instances two bricks. Some parts of the walls were only nine inches thick, that part was a partition wall. I should describe the building as an extra first-rate.

A Juror.—The fact is, in the whole length the wall is only 9 inches thick?

Witness.—Not so; there is as much 18 inches as 9 inches. No district or other surveyor said the building was not strong. I do not see how he could. There was not an atom of concrete bearing on that part of the building which fell. A tier of girders, each weighing about 35 cwt., rested on this 9-inch wall. There were tiers to the work, which stiffened the whole, and each floor was thus like a fresh building. I thought the wall strong enough to carry a greater weight than that iron. I am satisfied that the concrete in the building was set sufficiently to enable us to work. I think the wall was sufficient to carry any weight which could be put upon it perpendicularly. There would not be a great vibration in throwing the concrete on to the iron. The concrete would set in a few days, and become hard in a week. The weight of concrete averaged about 5 cwt. on each joist.

Michael O'Connor said,—"I live at Bankside, and am a labourer. I have been there at work about a month. I was there when the accident happened. I was on the highest part of the highest ladder, close to the iron girder which gave way. The ladder at the bottom part rested on the middle floor. I saw the iron girder on the top floor snap right in half. It was thrown down when it snapped. I think it was in the middle that it rose up. I saw the two parts rise out of the wall. All went down, and I was carried down with it. I do not know whether any weight was upon it. I think ballast was all round it and over it. I think some of the joists were laid upon it.

Mr. Bell recalled.—There were no joists resting on that girder, because all was left open for the skylight. The witness has made a mistake.

Mr. William Parsons, solicitor.—About six weeks ago I went over the building; I went to inspect the fire-proof floors; I saw the superintendent, who pointed out the principle. I explained to him that an iron girder towards the south side was very insufficient to carry the weight. The girder I saw was over the building on the ground-floor.

James Montague, district surveyor.—I have been on the building several times during the progress of the work. I was there on Monday morning; I can give no information as to the probable cause of the accident; I was only told about the iron girder; I do not recollect in my examination noticing any defect in the thickness of the walls; they were brought up in quite sufficient thickness according to the Act of Parliament. Mr. Bell has had large experience, therefore I did not go so often; I trusted to him. The wall carrying the girders is an internal wall, and I think could, though being only 9 inches thick, be quite sufficient to carry all the girders, weighing each 35 cwt., and all the concrete. I did, when there, notice the cement and the mortar; I saw nothing amiss. The bricks were many of them old, but good; and were, so far, as good as new. If I had been building a house for myself, I should not have been afraid to trust these walls. But there is a good plan of making that called strong enough, a little stronger; and I might therefore have been disposed to have made the wall a brick and a half thick.

John Dennett, the contractor for the building, said he had always doubts as to the girders, but

could not say why, only that he thought they were too weak for the weight they had to carry.

Mr. William Tress, architect, said he thought the wall strong enough, and that a 14 inch wall would have stood no better chance than the 9 inch, if the latter had been loaded perpendicularly. It was strutted, cross strutted, and well-tied in through-out.

Mr. Stevens, district surveyor, gave evidence to the like effect.

Mr. A. Ashpitel, architect, said, I have no doubt in my own mind that the accident arose from a flaw in the girder. I told my professional friends at the time that if they looked into the ruins they would find a girder with a flaw in it. The girders are very strong, and would not break with a pressure of less than 26 tons. Mr. Bell said 36 tons, but he has taken Mr. Tredgold's calculations, which are not suited to girders of so large a span.

I well understand the nature of cast-iron. I have seen a great deal manufactured. I have examined the broken girder, and found a flaw in the lower flange, showing that it was defective or bad iron. In the middle there is a hollow place, showing that it is not properly cast or run into the mould. It appears sound all round the hollow part, and this defect may not have been perceived. I do not think it had been fairly proved, not even struck by a hammer. It broke close by the side where the other girder crossed it. I should say it was the top girder which broke. If fireproof buildings are wanted, cast-iron must be used. The girder might have been tested, and borne it. I have known a girder tested and subsequently break while being placed in a cart. A girder may be tested with six tons, and a half ton placed upon it afterwards might cause it to go.

Mr. Woodthorpe, architect, gave his opinion that the building was not weak or defective in construction.

Mr. C. J. Corbett, partner with Mr. Bell in the building, handed in the contract with the iron-founders, and produced a certificate from Mr. John Scott, of Inverkeithing Foundry, near Edinburgh, showing that the defective girder had been duly proved.

The jury came to the conclusion that the deceased "met their deaths from the falling of a part of the building erecting on the site of the Cross Keys' Hotel, Gracechurch-street, which appears by the evidence to have been caused by the accidental breaking of one of the iron girders."

This fearful accident, exemplifying as it does what we have too often had to point out, the heavy responsibilities of architects, and the great care requisite in the use of cast-iron in construction, seems to us to demand further investigation than was thought necessary by the jury. The reputation of Scotch castings will not be improved by this unfortunate occurrence, as the statement now stands. We have received several communications on the subject,* but postpone the consideration of them that we may not do injustice. Our position is often a painful one.

A FEW HINTS ON THE EDUCATION OF THE ARTIST.

AMONG many instances in which the purity of the artist's feeling has been unnecessarily sacrificed to a gross and indelicate matter-of-fact representation of nature, may be classed the study of the naked human form. On this point, it is not wise to affect too scrupulous a purism; still less would it be defensible to say a word in derogation of that noblest of all God's works, the human image itself. It is nevertheless most possible to study the nude form in a gross manner. Nay, perhaps we might even go further, and say that it is almost beyond the reach of human skill to give the undraped figure a perfectly spiritual treatment. There is that about our mortal coil, when it is dwelt upon by the mind, which reminds us too forcibly of sin to be brought before us *per se*, with anything like satisfaction.

One of our greatest modern painters, Etty, took, as might naturally be expected, a view of the subject totally different from that here advanced. "My character has been much misunderstood," he says, "by some, not a few, because I have preferred painting the unsophisticated human form divine, male and female, in preference to the production of the

loom; or, in plainer terms, preferred painting from the glorious works of God, to draperies, the works of man."† No doubt such were the intentions of the painter. It is, however, to be feared that he did not succeed in thereby conveying to his works anything like an elevating moral character. They were, take them at the best, but material in their general aspect, gorgeous colour, and splendid drawing, without, however, conveying to the soul of man a single idea likely to refine or to elevate. What is the cause of this? It is not difficult to guess. The models from whom Mr. Etty studied were men and women of probably low birth. He selected them, we may imagine, with reference to their shape, the form of their limbs, or such like qualities. It is scarcely to be supposed that with such persons constantly before him, he was likely to attain to any thing better than a very low type of human nature. And so it was. In looking to corporeal forms, he forgot the life-giving spirit, and, therefore, when we contemplate his pictures it is scarcely possible not to be reminded of that class from whom most of his models were taken.

This is very sad, but it is, after all, just what an enlightened view of the history of art would lead us to expect. In the early religious painters we have purity of style accompanied by purity of life, and a certain contracted manner, showing a great narrowness of the intellectual powers as contra-distinguished from moral feelings. These are the schools in which we can only study the feeling for art. Strange it is certainly, but no less true than strange, that there is scarcely a religious subject of primary importance, of which the perfect ideal type has not been set forth by Fra Beato Angelico. Nearly the same praise may be awarded to Giotto, and many of the very early Italian schools. And yet these men were profoundly ignorant of anatomical science, and evidently took as much care to conceal their ignorance in this respect as the painters of later days have ostentatiously endeavoured to parade their knowledge. When, after the long period of darkness, which we justly call an age of barbarism, the fine arts began to revive, the first and the only spirit they received was that of religion. The Church—that wonderful power, the moving spirit of mediæval life—absorbed every intellectual effort of the human mind, as it were, within the circle of her own energies. In latter days the object of art has practically been very different—to minister to the luxuries or gratify the critical acumen of the wealthy connoisseur and the accomplished critic. In the first of these æras—the religious æra—the correct drawing of the human figure and the colouring of "flesh tints" was always viewed as subordinate to the general treatment of the subject, and to the effect of the whole design; but as men became better acquainted with anatomy, and began to see the importance of that knowledge to the artist, the execution of the design began to occupy a higher place in the estimation of the world, and the conception to be viewed as entirely secondary. The labour of the early schools was all directed to the glory of God, perhaps without sufficient knowledge. The object of the later schools has unquestionably been, the exaltation of the artistic skill of the individual as displayed in a faithful imitation of the object before him.

It seems, then, obvious that nothing can be a work of greater difficulty than to combine in the same picture results so opposite and principles which appear so contradictory. To attain artistic skill, we should have not merely scientific knowledge of the human form, of the origin and insertion of all the muscles, but we should be able to display these vast stores of knowledge without an undue degree of labour. Deep and pathetic feeling, on the other hand, can only be found where there is simplicity and purity. Its results can be given in no slight or perfunctory manner. It is not to be found in the careless dash of a Rubens, not even in a Murillo or a Vandyke—it demands patience and long suffering. We shall only find it in the simpler times, and a more superstitious age than our own. It demands all the energy of a primitive enthusiasm.

How the young artist may best combine

* Etty's Life, by himself.

these two desiderata—deep pathetic feeling and fulness of scientific knowledge—in a matter so delicate as the study of art, and more especially the naked form, is indeed difficult to decide. And, first, let this be well understood, that practical rules cannot be laid down save in the most general manner: each must do his best—each must follow the line he considers best for his welfare here and hereafter, in a deep, earnest, and thoughtful spirit. All that can be tendered by man to man on such a subject is advice. We cannot ultimately shirk the responsibility of our own actions, and upon each man's own heart the weight of making the decision must rest.

It will probably be thought unwise to abstain from studying the naked model altogether, particularly the male figure. It would, however, methinks, be well in those who desire to attain a style at once powerful and chaste, to confine themselves very much in the first instance to the crayon. There is something in the use of colour which is very attractive to the young mind, but which can seldom be pursued to any length without becoming sensualistic. Michelangelo's greatness merited was, that in spite of his knowledge of the anatomy of the human figure, he was always grand. There is never anything sensual about him. Of all painters he is, perhaps, the most truly heroic.

These remarks have some bearing on the present Exhibition, where we may consider, merely "*exempli gratia*," Messrs. Frost and F. Pickersgill as followers of Etty, and Messrs. Millais and Hunt as representatives of the Pre-Raphaelites. The fact is, that both these schools of art, which, by an extraordinary coincidence, flourish among us contemporaneously, have much to learn from each other. They are both in extremes: both worship nature, and so far both are right, yet the candid observer cannot fail to remark that they view her with a prejudiced eye. The Pre-Raphaelites evidently lay it down as their principle that the merit of the painter consists in overcoming natural ugliness, rather than imitating objects in themselves lovely. This doubtless is an error, but it surely is a nobler fault than to paint with refined skill pictures which aim rather at presenting us with a perfect type of corporeal beauty than a memorial in honour of moral excellence. We must not, however, be too hard upon the artists. The public, as a general rule, make the artists. In the exhibition, we have something for all tastes. Money will do anything in the present day. We have Lee and Cooper for our lovers of rural scenes; *tableaux de genre* of the highest excellence for Manchester and Liverpool; Herbert and Dyce for mediævalists; Grant for fair ladies; and Watson Gordon for intellectual men: "a little of everything"—such is the maxim of the year 1851.

Let us fully understand this, and not attempt to run too violently counter to the spirit of the times wherein we live. It will (or I am much mistaken) give us a respect for antiquity, without weakening an honourable feeling of self-reliance and independence.

THE GLASS PALACE BEATEN.—Dr. Duff, in his speech at the anniversary meeting of the Wesleyan Methodist Missionary Society in London, last week, thus described one of the heathen temples of India:—"In Seringham you have the hugest heathen temple that can probably be found from the north to the south pole. It is a square, each side being a mile in length, so that it is four miles round. Talk of your Crystal Palace! Why, as a man would put a penny into his pocket, you might put your Crystal Palace into the pocket of this huge pagoda. The walls are 25 feet high, and 4 or 5 feet thick, and in the centre of each wall rises a lofty tower. Entering the first square you come to another with a wall as high, and with four more towers. Within that square there is another, and within that again another—and you find seven squares, one within another, crowded by thousands of Brahmins. The great hall for pilgrims is supported by a thousand pillars, each cut out of a single block of stone."

* One of them says, that in justice to Fox and Barrett's system it should be pointed out, as stated by the architects, that their system had nothing to do with the accident.

NOTES IN THE PROVINCES.

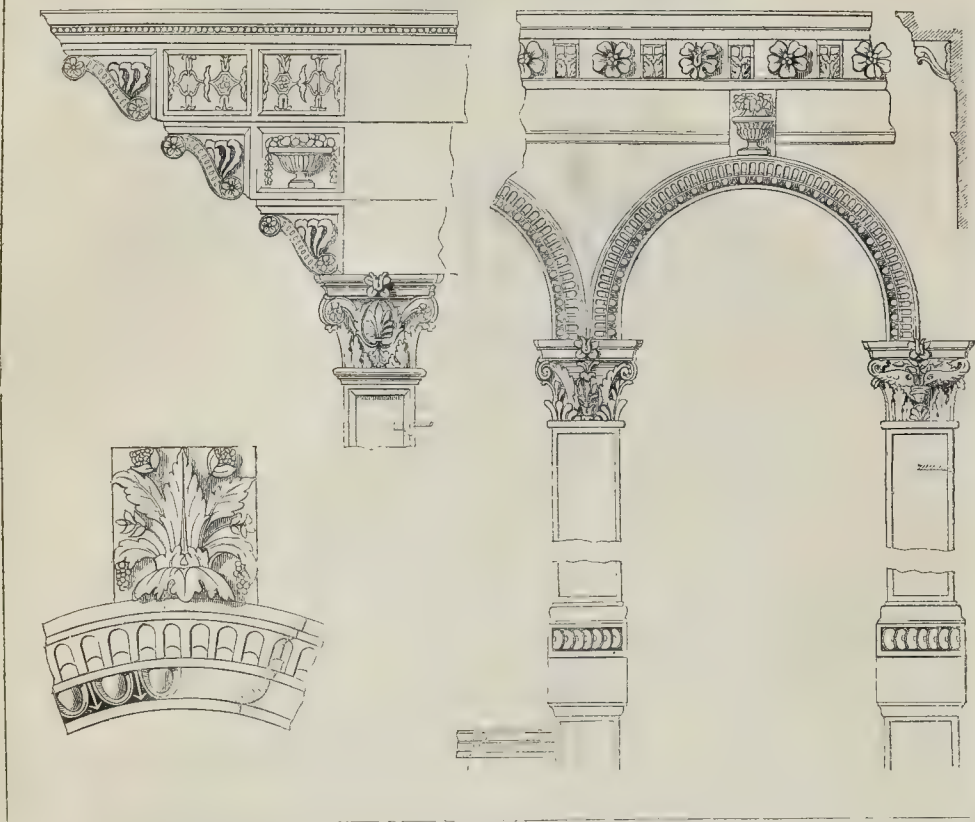
A new chapel at Wombourne, Staffordshire, has been opened: it is built of brick and stone in the Norman style. The length is 53 feet by 26 feet in width, having at the north-west angle a turret containing stairs for a future gallery. It will accommodate 165 adults and 104 children: for the latter a platform, raised a few inches above the aisle level, is parted off at the east end by a screen seven feet high. The architect is Mr. Bidlake, of Wolverhampton; the builder Mr. Derry, under the same architect.—A new school-house, with residence, school, and class-rooms in connection with the Independent chapel, has been commenced at Bilston. The builder is Mr. Hickman.—The Exeter Diocesan Architectural Society held its general meeting on the 8th of May, when the annual volume of the Society's transactions was distributed to subscribers. Papers were read of Mr. Spence (by the secretary) on the manor-house and chapel of Fardelli; by Mr. Ashworth on the Architectural Antiquities of Dartmoor and its border churches; by Rev. G. Cox and Mr. White on Ecclesiastical Architecture.—Wootton Church, Lincolnshire, was re-opened on Friday in week before last. It has been closed about eleven months, and has undergone considerable repairs and additions. The whole of the interior fittings, which were in the very worst state, have been removed; and the windows and stonework generally repaired, new work being inserted where necessary. The nave and aisles have been covered with a new roof, and slated. The chancel has been entirely rebuilt, at the expense of the Earl of Yarborough, lay rector. The interior is fitted up with open seats of uniform size. The pulpit is of Malta stone, and richly decorated. The font is of Caen stone. The open-timbered roofs of the nave, aisle, and chancel, and the seating, are of deal, stained and varnished to imitate oak. The whole work, internal and external, has been executed under the direction of Mr. William Day Keyworth, of Hull, architect.—For years beyond memory there have been hanging in the vestry of Keynsham Church two old pictures, hardly traceable through dirt and smoke. A short time since somebody took to washing them with soap and water, when one was discovered to represent the "Passion of our Lord," and seemed to be so remarkable a picture, that the vestry began to inquire among the parishioners if they knew anything of its origin. One very old woman said she recollected hearing, when she was a girl, that it was painted "by some foreign painter," and after a little recollected his name was "Master Holbein." The old woman knew nothing of art, and her authority is therefore considered a valuable one; besides, the picture is said to be marked by those striking peculiarities which distinguish the pencil of this old master. The vicar at once claimed the pictures as his property. The vestry, however, dispute his right.—Considerable improvements are in progress at the old church of Croydon. The unsightly and incongruous windows which have so long disfigured the clerestory, are in course of removal, and will be replaced by ten windows of correct design, filled in with stained glass, and harmonised with the arcades of the nave and chancel. The whole of the work is under the direction of Mr. Ben. Ferrey. The cost of one of the new windows is defrayed by the Archbishop of Canterbury, and the remainder are contributed by parishioners.—The new district church about to be erected at the sole cost of the Archbishop of Canterbury, at Broadgreen, will be commenced very shortly: it will be in the Early Decorated style, and the materials employed, flint and Kentish rag stone. The architect is Mr. Teulon. There were three contractors, viz., Messrs. Nixon and Hayward, London, 3,350*l.*; Mr. Harris, Croydon, 2,850*l.* (contractor for St. Peter's, now near completion); Mr. Higgs, London, 2,750*l.* The contract has been given to the lowest tenderer, Mr. Higgs. The erection of schools in proximity to the church, by the Archbishop, is spoken of.—The first stone of a new school-room, also to be licensed for Divine service, was laid at Paddock-wood, Breckley, on 9th inst. The

buildings will be in the Early English style, and formed of the Kentish rag, with dressings of freestone, dug in the parish. Mr. John Hooker, of Breckley, is the architect, and the contractor is Mr. Chalkin, of Tunbridge.—At Southampton the Dock Company are extending their works by the construction of an inner dock of 9 acres in extent, with an entrance from the open dock. The works are in full operation, and the new dock is to be opened before the end of the year. The estimate of their engineer, Mr. Alfred Giles, is under 20,000*l.* The Dock Company have also lately erected, at a cost of 7,300*l.* a large sugar house capable of refining 150 tons a-week. This has been at work since Christmas, and is a valuable adjunct to the trade of the port.—St. Sepulchre's Church, Northampton, was struck by lightning on Saturday week. Some of the stones were forced out and thrown to the southern extremity of the churchyard, a distance of several yards, and the western glass face of the clock was shattered. The gas pipe was rent asunder. The spire was found to have been injured to such an extent as to render it inadvisable to chime. A more careful examination on Monday showed that the injury was more severe than had been anticipated, and Mr. Milne, the county surveyor, has stated his belief that a strong north wind is not unlikely to bring the whole spire to the ground. It was already in a dilapidated condition, but the old fissures have been widened, and new ones made. It is proposed to raise a subscription for the restoration of the structure.—In course of five days from the opening of the new baths at Birmingham, 3,000 persons were admitted to the swimming-bath, 400 to the first-class private warm-baths, and 200 to the second. The female department was also well attended. The receipts for the five days exceeded 50*l.*—A sort of monastery is in course of erection at Edgbaston, at a cost of about 12,000*l.*, for Mr. Newman and his priestly confederates of the oratory. The building, it is said, will be very extensive, and contain three stories, and several spacious apartments including two large libraries, one to be used as a chapel till a church can be erected on land immediately adjacent. The plans of the proposed church have not yet been decided upon. It is intended to be on a somewhat magnificent scale, as it will cover, it is said, a space of ground 200 feet in length. The sacristy forms part of the building now being proceeded with.—A case of death, after long and painful illness, caused by drinking water kept in a leaden cistern, has just occurred at Egremont. In this case the cause of illness was not even suspected until it was too late to apply a remedy. The water was then analysed and found to be strongly impregnated with poison from the cistern. Where it is a matter of necessity to use lead cisterns, the most constant care should be taken that the water do not become impregnated with the lead; but this is not to be prevented by merely keeping the cistern "clean;" on the contrary, the scurf deposited on the face of the lead in many cases prevents further action of the water on the lead, and hence further poisoning of the water by the lead. The cistern, however, ought to be kept otherwise extremely clean, especially where vegetable or animal remains tend to accumulate in it.—The committee of the Nottingham Water Works Company have recently made great efforts to render themselves capable of supplying even the remotest districts around the town with an abundance of pure water. In addition to the new works and reservoir, a great covered tank has just been completed on the highest elevation in the neighbourhood, to which the water is to be forced for further supply to the vicinity.—The erection of the new Roman Catholic church of St. Walburge, on the Maud lands, Preston, the foundation stone of which, according to the local *Guardian*, was laid on Whit-Monday in last year, was begun on Tuesday in last week. The contract for the masons' work was taken by Messrs. Cooper and Tullis, of Preston, for 2,967*l.* The architect is Mr. Joseph Hansom. The length of the church is to be 165 feet, width 55 feet, height of walls 35 feet, and to ridge of roof 75 feet. There will be a tower

and spire: the square at the base of the tower will be nearly 40 feet, and the height of the spire nearly 300 feet. A bell—one of a peal—for it will weigh 2½ tons, and cost 400*l.* The tower and spire form a separate contract. Upwards of 3,000*l.* have been subscribed towards the whole cost.—For the enlargement of St. Mary's church, Boston Spa, 800*l.* have been subscribed. Additional sittings to the number of 250 will be made, two-thirds of them free. The contractors for the works are Messrs. T. Noble and G. Roberts, of Clifford. The architect is Mr. Atkinson, of York.—At Kidderminster, while some workmen were lately repairing the flooring of a stable at the back of the Clarence Inn in Coventry-street, it gave way and fell into a vault beneath. An attempt was made to explore the vault, but owing to foul air abandoned for a while, and proper measures taken to purify it. At length, on descending with a light, a vault was discovered, about 9 feet in length by 6 in width, in which were two masses of animal matter, 2 or 3 feet thick, apparently of two human bodies, lying side by side, the remains of an ancient pickaxe, the handle very much decayed, and the iron corroded, though still very heavy, and several very curiously formed pipes. The cellar which immediately adjoins the vault is remarkable for antiquarian remains. It is very ancient, of Norman architecture, arched, and having a doorway and windows in excellent preservation, the material of which the walls, &c. are constructed being of the same kind as that used in Dover Castle. It is said to bear every mark of being the crypt of some church or ancient religious house. The house underneath which these interesting remains exist (though now much modernised) is spoken of in Nash's History of Worcestershire as the oldest in the town. A few yards of a subterranean passage leading from the cellar were explored a short time ago, but further prosecution of the work abandoned in consequence of the soil having fallen into it.—A meeting has been held at Stockton-upon-Tees to consider business relating to the report of the Government engineer on the conservancy of the river Tees. Extracts from the report of Mr. Bald, the Government engineer, were given, from which it appeared that the best situation for the establishment of docks was the town of Stockton, and that the river Tees might advantageously be made navigable to Yarm. Measures to carry out the plan alluded to in the report are to be proceeded with, the Tees Navigation Company and the inhabitants combining together for this purpose.—A curious winding staircase has been discovered on the site of the old castle of Berwick-upon-Tweed. The opening of this staircase, which is admired, it is said, for its fine appearance, is on a level with and behind the sheds at the railway station, and has been cleared out to a depth of about 14 feet, the first landing place being there arrived at, where there is a vault, with the various doors of what are probably so many subterranean passages branching from it. The vault has not yet been cleared out, but it is thought the staircase must go much lower down.—Messrs. Foster and Son, of Keswick, black lead pencil manufacturers, having fitted up their mill with new machinery, introducing several improvements, lately invited their workmen to a supper, in commemoration of the occasion.—The cellar habitations of Dublin are about to be suppressed, and measures are in progress for the opening of model lodging-houses.

LECTURE ON ART.—Mr. Hammersley, principal of the Manchester School of Design, last week delivered a lecture at Warrington under the auspices of the directors of the Mechanics' Institution there, on "Art, as a question of education for the designer and workman, but equally so for those who use the productions of industry." Mr. Hammersley at some length advocated the universality of art, and deprecated any exclusiveness in its pursuit. He urged the establishment of a School of Design in the town.

DETAILS OF CASA VISETTI, VENICE.



CASA VISETTI, VENICE.

(SIXTEENTH CENTURY.)

THIS richly decorated little *palace* (for it is so called at Venice) is situated near the Ponte di S. Antonio. The front given in our illustration faces the narrow canal over which the bridge passes. The two lowermost stories are executed in white marble, and the extreme richness of these is strongly contrasted with the upper story, which is totally devoid of beauty. The base is extremely beautiful, like many of the palaces at Venice—this being the part that most frequently catches the eye of the observer as he glides by in his gondola.

It may be as well to add that this is a true representation of the palace as it now is: and as it has been very recently under repair, those who visited it some years ago will probably discover differences.

J. T. W.

FOREIGN INTELLIGENCE.

Baden Antiquarian Society.—This body has, for some time past, much exerted itself, and elucidated many monuments of the country. The four numbers of its transactions give illustrated descriptions of the monuments at Lichtenenthal, Sinsheim, and of the Roman baths at Baden; and the society have also exerted themselves for the preservation of monuments of architecture, plastic, and paintings. The old church of Lautenbach has been restored, and the sculptures of the convent-church, destroyed by lightning, raised from the mass of ruins which hid them. The carved stalls of the choir of the hospital-church at Baden were restored by this society, as well as other sculptures from the Cathedral of Constance, and the Carolingian Münster at Reichenau, hitherto hardly known by name. At Stühlingen a large

mosaic pavement has been brought to light, and an accurate survey of the Giant's Tower (*Riesenturm*) at Steinsberg will lead to a decision, whether this monument be Roman or mediæval. At Hochausen-on-the-Necker a splendid altar-picture has been discovered, and the enigmatic sculpture examined, which public tradition considers as the sepulchral figure of Ste. Notburg, daughter of the Austrasian king Dagobert. The bust is in the style of Merovingian statues, and the long garment very original.

Vienna.—The Secretary of Public Instruction, M. de Thun, has ordered that an especial department of arts should be constituted within the *ressort* of his ministry, at the head of which is to be placed his brother, M. Franz de Thun, whose art-activity at Prague has been praiseworthy. The committee of the Academy of Arts is quite absorbed in remodelling its rules and regulations, and the preparatory and elementary schools have been already opened under teachers like Rahl, Geiger, &c. M. Bruck, Minister of Public Works, has proposed and obtained funds for the establishment of a *Commission des Monuments*. The great monumental riches of Austria and the other provinces, have become most apparent by the fine exhibition of the architect M. L. Ernst, being his own sketches and pictures of the fine templar Choir of Schönggrabern, the rock-castle of Carlsstein, the residence of Charles IV. German emperor, &c.

Paris Architectural Prizes.—The section of Architecture of the French Academy of Fine Arts have, at their late meeting, decided on the claims of pupils for competing for the great architectural prize of the Roman scholarship, which procures for the successful candidate the assistance of Government for a two

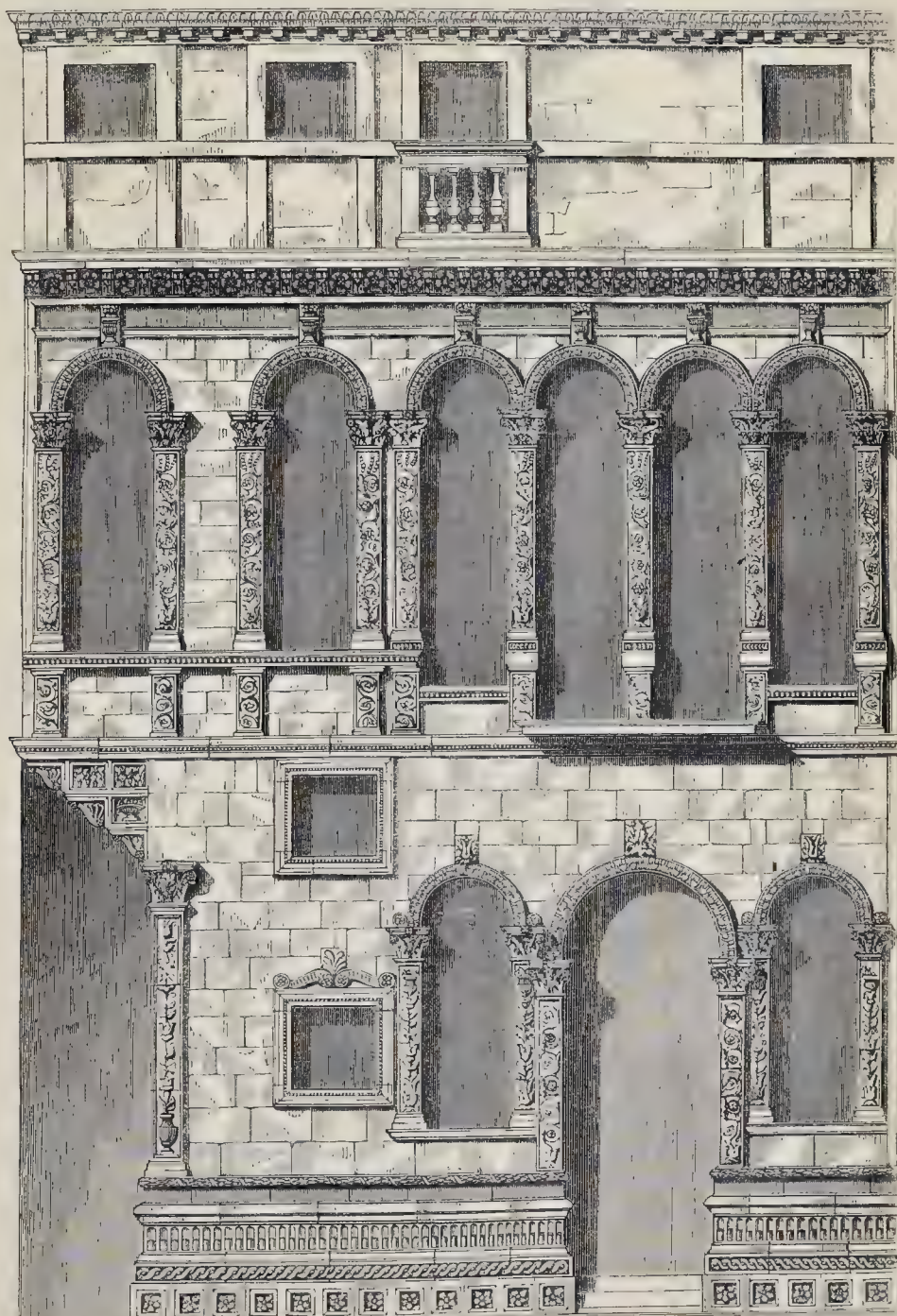
years' study in the Italian capital. The following young artists have obtained the majority of votes:—Messrs. Ancelet, Chaplain, Daumet, A. Diet, Douillard, Ginain, Hue, and Triquet.

Cologne Cathedral.—Here, late restorations begin to require already to be restored. Herr Dombaumeister Zwirner states, that if the temporary roof, and the huge scaffolding connected therewith, be not replaced within three years by final structures, these will have to be renewed. For the completion of this part of the cathedral, he requires 200,000 thalers within three years. Besides the artists engaged in the undertaking, these works possess an especial stone-cutters' lodge (*Steinmetzhütte*), whose pupils range over many parts of Europe, and employ 400 labourers.

An Admonition.—One of the writers on the Paris improvements, which hitherto have been mostly demolition, exclaims, "There is demolition going on around the Hotel-de-Ville, at the Quai des Ormes, at the great halls, on the Place du Palais Royal. In architecture, law, institutions of all kind, it is ever and everywhere but overthrow and demolition. Is it not time to say to ourselves, 'We have enough destroyed,—to work now: let us construct once more!'"

COCKERMOUTH CHURCH.—The result of the poll taken at the vestry meeting held to consider the propriety of accepting or rejecting Mr. Clarke's plan for the rebuilding of Cocker-mouth Church, has terminated adversely to that gentleman; the vote of the meeting by a show of hands having been reversed, on a scrutiny, and decided in favour of Mr. Hay's plan by a majority of forty-five.

CASA VISETTI, VENICE.
[SIXTEENTH CENTURY.]



THE ARCHITECT ACADEMICIANS.

You might, without the slightest impropriety, have been more stringent in your remarks on the Architect Academicians, your little delicacy being due to persons who show themselves wholly indifferent as to the figure their own art makes at the Academy's exhibitions: contenting themselves with the title of R.A., they leave it to the painters to exhibit, for they seem of late years to consider it derogatory from their own dignity to do so. This season there is not a single drawing by any one of them, not even the professor of architecture. They desert their standard at the very time they ought to have supported it energetically, and invited others to flock to it, in order to render the display of architectural drawings one of far more than ordinary merit and interest in this memorable '51 year.

Mr. Barry, for one, can be at no loss for subjects, because, besides that the Palace of Westminster would furnish many that have not yet been represented, it is to be presumed that there must be something worth showing us within such mansions as Bridgewater-house and Cliefden.

It has been said before now—if I mistake not in the "Art Journal"—that architects ought not to be elected of the academy; neither indeed ought they, if they will do nothing for it, after they are received into it. In fact, it almost looks at present as if it were tacitly understood to let the painters have their way in everything, and all but formally turn out architecture from their exhibition. Yet what man of any spirit—what artist with any respect for himself or his art, would consent to accept, or, having accepted, to retain a seat in the Academy upon such conditions—implied or not expressed? Or if there be no such conditions, no restraint, therefore do the Architect Academicians act as if they existed?

Silence is sometimes as significant as words, and architecture seems to have been passed over in complete silence in the complimentary toasts and speeches at the Academy's dinner. The Prince did not so much as allude to it in his speech; though, had he done so, it would probably have been with reference to Mr. Paxton and the "Crystal Palace."

Such being the slights put upon architects, we look to you, Mr. Editor, for vindicating its claims all the more strenuously as fearlessly, and resenting the treatment it has received at the hands of the Academy.

AN ARCHITECT, BUT NOT AN R.A.

RUSKIN AND HIS REVIEWERS—
THIRD LETTER.*

The article on the "Seven Lamps," in the *North American Review*, is stamped by respectable dullness, and so entirely innocent of any forcible remarks, as to call for no other remark here than that it is little more than the echo of the complimentary effusions on the part of English reviewers concerning the same work; although it was reasonably to be presumed that an American would see many things in a different light, and would more especially consider what effect—if any at all—Ruskinism is likely to have upon the architects and architecture of his own country. One piece of information, indeed, we do obtain from that *Review*, since it appears from the title at the head of the article that the "Seven Lamps" has been reprinted at New York, in a *duodecimo* volume of 186 pages,—a form that contrasts not a little with the aristocratic "imperial" livery affected for his books by Mr. Ruskin himself.

The *American* has been soon despatched: *Tait's Magazine*,—that is, its article on the "Stones of Venice," will detain us rather longer, there being some stuff in it which shows that the writer is competently prepared to take up the subject. While he is no very great admirer of Mr. Ruskin's style, which, like myself, he thinks, is occasionally, at least, "in imitation of Mr. Carlyle," he is opposed to and contradicts him upon several points. Instead of taking his cue from the fulsomely laudatory and affectingly sentimental tone in which many others have reviewed Mr. Ruskin's

architectural writings, he does not scruple to accuse him of indulging in "boyish pedantry," and in "vague rhapsody." Among other not particularly flattering remarks, he says: "In sooth, much of this volume is eminently childish;"—to which I myself should add,—and even decidedly silly; from which opinion few, I think, will dissent, if they turn to pages 339 and 341 of the "Stones of Venice," where one would take him to be laughing at his readers, and endeavouring to ascertain how much fooling and absurdity they would tolerate from him. The writer in *Tait* points also to some of Mr. Ruskin's unaccountable antipathies,—as they may very justly be termed, since he himself does not attempt to account for them; wherefore we are justified in concluding that it was not in his power to do so; and, consequently, that his off-hand and wholesale censure of our English Perpendicular Gothic, and of the entire art of the Renaissance is to be accounted as no more than sheer abuse. And it merely bespeaks consummate vanity in Mr. Ruskin to suppose, and insolence to demand, that people should, without any proof or explanation on his part, join him in his sweeping and utter condemnation of all that has been done in architecture during the last three or four centuries. Monstrous, however, for its ruthless destructiveness as that part of his doctrine is, few of his reviewers have protested against it: some have not even noticed it at all, wherefore it may be suspected that it is perfect matter of indifference to them though it should completely upset—as, if adopted, it must do—our present code of architectural taste, and the whole of our actual system in secular architecture.

Mr. Ruskin's morbid and extravagant NATURALISM does not pass unreviewed by the writer in *Tait*, yet it requires to be far more fully exposed; and were that done, I think he would stand convicted of having fallen into a gross and fundamental error—no less a one than that of confounding together the *natural* and the *artificial*, owing to his not discerning what is the proper province of the latter, and in how exceedingly imperfect and limited a degree such an art as architecture admits of anything like "the imitation of nature." When, therefore, we find him floundering about in so stupendous a mistake and its consequences, we are justified in asking whether he ought not to go to school, instead of setting himself up as the teacher of others. The reviewer in *Tait's Magazine* seems to be inclined to think so; for, after quoting Mr. R.'s extravagant notion of our building "a score of cathedrals each to illustrate a single flower!" an idea hardly reconcileable with sanity of mind; he says, "There is not quite difference enough between this passage and nonsense for any reasonable purpose; and the reader who gets nothing but this for his pains, after having accompanied Mr. Ruskin's lectures, may reasonably think that his time has been wasted; and if he intends to devote himself to the pursuit of architectural truth, he will look out for another teacher and guide."

All the more to be regretted, then, is it that he should have been cried up as the very best teacher and guide, and ignorantly, or else treacherously, recommended as such to the public, or to those who are themselves too ignorant to detect, or be on their guard against the various errors and absurdities which constitute the staple of "Ruskinism." That Mr. Ruskin has his lucid intervals, is not to be denied, but it is not every one of our readers that can distinguish between "Philip sober and Philip drunk;" for even some of his reviewers do not seem to have been able to do so. On the contrary, many perhaps admire him most, and think him then at his greatest, when he is at his maddest; and when, in the opinion of the sober, he seems to need, if not exactly "a strait-waistcoat of perpendicular lines," as he tells us our English Gothic was put into, a garment of similar name.

I have not been able to learn whether the "Seven Lamps" has been translated into any other language, or whether his doctrine has excited any attention on the continent. If

his books have reached there, his fanciful mysticism may perhaps have recommended them in Germany, but his opinions—more especially some of those now put forth in the "Stones of Venice"—must be utterly disrelished by German architects. Nearly all of the numerous structures erected within the last thirty years at both Munich and Berlin belong to those styles which Pope Ruskin—for he seems to fancy himself infallible—excommunicates and lays under ban. Therefore his doctrines will probably be stoutly resisted by German and other continental architects, although they meet with scarcely any opposition from professional men here at home, who, if they dislike them—as some most assuredly must do—seem also to despise them as unworthy of refutation; notwithstanding that they are now tauntingly told that they will be compelled to adopt Mr. Ruskin's views and doctrines, in spite of themselves. The only voice that has yet been boldly raised against him by an architect is that of the author of the "Something on Ruskinism," who, if he has done nothing else, has inflicted some well-merited ridicule upon one who browbeats the whole profession, and seems determined to bring them, and their works, and their teachings, into contempt. Are we to submit to the arrogance, or the public to be duped by a man who, setting himself up for a teacher, gravely assures his readers that it is "the function of architecture to tell us about nature!" Surely that sentence alone is sufficient to disqualify him, proving, as it does, how completely unfit he is for his self-assumed function of teacher, since he mistakes the very nature of architecture itself.

ZETA.

THE NATIONAL SURVEYS.

CIVIL SURVEYORS.

AMONG the various benefits conferred upon society by the increased progress of civilisation, there are few more generally advantageous to a nation such as England than a correct survey of the entire country. The principal value of such a survey consists in its entirety, its uniformity, and the accuracy of its details, and these advantages can only be fully obtained by making it a national work, completed under the authority of the Government.

The Ordnance Survey of Ireland, now nearly completed, is at once the most perfect, the most beautiful, and the most useful modern work of this character that has ever yet been executed. This survey—so valuable for all purposes of sanitary improvement, for draining and cultivating land, for laying out roads, canals, and railways, for selecting suitable sites for docks and harbours, and for all other operations of a commercial, agricultural, or mineral character, calculated to increase the wealth of the nation and promote the circulation of capital and the advancement of civilisation,—has already occupied the Government upwards of twenty-five years, and is not yet quite finished.

According to the same rate of progress the surveys of England, Scotland, and Wales will take upwards of seventy years for their completion, by which time the entire face of the country will probably be changed, and the survey rendered, in a great measure, useless.

At the present time the suspension or completion of the various railways, &c., has thrown out of employment a large number of that deserving but ill-used class of persons, namely, engineering surveyors, who have for the most part raised themselves above the ordinary level of the profession solely by their own energy and talent, and upwards of 2,000 of whom are at the present time in a state of partial destitution, many of absolute want, and most of whom would gladly accept of employment at two or three pounds per week, and a trifle for travelling expenses. If but one half of this number were employed, at the public expense, in the Ordnance Survey of Great Britain, the work might be efficiently completed in eight or ten years, and the money thus expended become the means of relieving the wants of a highly meritorious class of the community as well as conferring a lasting benefit upon the nation. While thousands,

* See p. 312, ante.

and even millions are annually thrown away in the several departments of the army and navy, and in various branches of the civil service, would it be too much to call upon the Government for an annual grant for the completion of this important work?

If the surveyors of the United Kingdom were to convene public meetings, and present memorials to the state by means of deputations, or through members of Parliament, embodying these sentiments, perhaps some inducements might be held out to the members of her Majesty's Government to cause them to listen to the prayer of the requisitionists, and bestow some little attention upon the matter; but as long as both they and the public are silent, the same dilatory policy will still be persisted in, and both the nation at large and the parties alluded to continue to be deprived of the advantages of the contemplated work.

E. E. M.

RAILWAY JOTTINGS.

GREAT exertions are being made to complete the Oxford, Worcester, and Wolverhampton line, and a large number of men are employed on the works. At Cassington, about four miles from Oxford, upwards of 200 are employed in excavating and constructing the line.—The Rugby station is being enlarged. Between 50 and 60 labourers are employed levelling a large piece of ground on the Rugby side of the Trent shed, for the purpose of building an engine shed and other offices. Mr. Dunkley is the contractor.—From the traffic returns of week before last we find an increase in the receipts of the following lines over those of the corresponding week of last year:—London and North-Western, 1,080*l.*; London and South-Western, 1,800*l.*; Lancashire and Yorkshire, 3,900*l.*; Bristol and Exeter, 800*l.*; Brighton, 2,660*l.*; Lancaster and Carlisle, 575*l.*; Manchester, Sheffield, and Lincolnshire, 1,810*l.*; Great Northern, 6,030*l.*; East Lancashire, 1,000*l.*—It has been announced that from 1st inst. parties were to be allowed to inspect the tubes of the Britannia Bridge under guidance of an officer of the Chester and Holyhead company, from 8 a.m. to 8 p.m., Sundays excepted. A correspondent, "R. M.," suggests, with reference to the recent fatal accident at Frodsham tunnel, that a bell ought to be attached to every tender to announce the access of danger in various circumstances, whether in a tunnel, in a fog, or by night, to be used whenever the whistle is incapable of sounding the alarm.

STATISTICAL SOCIETY OF LONDON.

NATIONAL DEBT.

On the 19th of May, Mr. T. J. Brown, assistant secretary, read a paper on the national debts and revenues in proportion to the population and extent of area of the various states of Europe. The data of this paper were obtained from the "Almanack de Gotha," a work of Oberhausen, "Reden's Statistical Journal," "Ritter's Statistical Geography," another by Rielter, and the "Conversations Lexicon," published at Leipzig by Brochhausen. The total amount of debt borne by the fifty-eight European states was shown to be 1,753,278,127*l.* of which the eight republics sustain three-twentieths, and the monarchies the remaining seventeen-twentieths. Every geographical square mile in Europe is burdened with an average of 9,740*l.* of the public debt, Hamburg sustaining the *maximum* of debt in proportion to its area, and Russia and Turkey the *minimum*. And in proportion to the population of Europe, an average of £6.15 per head was indicated; in this case the Netherlands sustaining the *maximum* and Russia the *minimum*.

The revenues of the European states yield a total of 207,301,752*l.*; of which 53,386,293*l.* is derived from the republics, and 153,915,459*l.* or three-fourths, from the monarchies; Spain holding the worst position as regards the amount of revenue opposed to the national debt, the interest upon which, at 5 per cent., would consume the whole revenue; whilst Prussia requires only a fourteenth of its revenue to be so applied. The paper was purely

statistical, and proved that it is not the amount of debt that undermines the state credit, but the want of the natural resources to cover the required interests.

NORTH LONDON ARTIZAN SCHOOL FOR DRAWING AND MODELLING.

The distribution of prizes took place on Wednesday at the North London School for Drawing and Modelling. The school has now passed through a twelvemonth of its existence, and accommodated from time to time above six hundred students. The school is gradually paying its way. The masters, working *con amore*, have much work and very little pay. The prizes consisted of valuable books on art, contributed by Mr. S. C. Hall, and were distributed by the Rev. Mr. Laing. Short and appropriate addresses were delivered by the chairman, and also by the head-master, Mr. Cave Thomas.

IN THE CLASS OF FIGURE—FEMALE SCHOOL.
The first prize was awarded to Miss Isabel Scott; the second to Miss S. Mottram; to be mentioned with praise, Miss Annie Essex.

MEN'S SCHOOL.

The first prize was awarded to Mr. Montague Scott; the second to Mr. W. Mathews; to be mentioned with praise, Mr. Alfred Essex.

IN THE CLASS OF ORNAMENT—FEMALE SCHOOL.
A prize was awarded for the best shaded drawing to Miss Helen Byfield; a prize for the best outline drawing to Miss Eliza Bouton; to be mentioned with praise, Miss Fanny Harrison, Miss Esther Cons, Miss J. N. Harwood.

MEN'S SCHOOL.

For the best shaded drawing the prize was awarded to Mr. G. Jessup; a second prize was awarded to Mr. E. Mullett; to be mentioned with praise, Mr. Gardner, Mr. Valentine Linnett. Sir Charles Eastlake has written upon this drawing, "If completed, might have been No. 1."

MODELLERS' CLASS.

In this class it was exceedingly difficult to decide, so closely has the prize been contested; it has, however, after a very careful inspection, been awarded to Mr. G. Robertson.

STONE-WARE PIPES FOR CONVEYANCE OF WATER.

It has been said that earthenware pipes would long have been used for the conveyance of water under pressure, had it not been for the difficulty which presented itself in making the joints good: it is certain that there have been substances used which have answered the purpose, but these have generally been found too expensive, and again difficult in application on a large scale. Having had occasion recently to give my attention to this matter, I have pleasure in laying before you the result.

I have found that a joint made of a good quick-setting Roman cement is not only the best, but the cheapest which can be used, and these joints will sustain any reasonable amount of pressure.

I have set several lengths of stone-ware pipes, with the cement properly worked in with care, in a similar manner to what a plumber would make a lead joint, and have tested these in a hydraulic press, and have subjected the same to a pressure of 150*lbs.* on the square inch. Now, more than this is not needed; for, what these pipes are more applicable for, is not so much a service pipe, as a main or mains from the reservoir, for it is here where the purer body is so much needed, as the water in some degree lodges in the main so much longer, and consequently when the body of the pipe is impure, as is the case with iron, the water cannot fail to be impregnated with it.

I have found a difficulty in the testing of some of these pipes when being fitted in the hydraulic press, with the tightening of the discs, causing the collar or socket to crack entirely off with the pressure from end to end, but I attribute this to the socket not being formed with the pipe itself, as I have not been subject to the same casualty with those manufactured with the socket attached under Spencer's patent, which certainly for this purpose is valuable.

As regards the expense of these pipes, when

proved, they are not one-third the price of iron.

I trust, before long, to see water companies taking up this matter with spirit, and through this medium supplying that greatest of blessings, water, in a purer and more wholesome condition.

M. B. NEWTON.

ACOUSTICS.—ANTIGUA.

The following is an extract from a letter, dated Antigua:—

"They say 'Acoustics' are not well understood by architects, as no recognised principle has yet been discovered. But, whether it was by accident or design, the hearing in this cathedral is perfect, and clergymen tell me they speak as easily in it as in a room. There is not the slightest echo. It strikes me that the mode of building may have something to do with it. To guard against earthquakes, the uprights and principals—in short, the framework of the building—are left within the walls, and then the outside is stone, whilst the inside is board, which covers the framework. Perhaps this wooden lining may act as a sounding board throughout, and its distance from the wall may deaden the echo. Might not something of the same kind be tried in the Houses of Parliament, if it be true that the voice is lost in them?"

The cathedral is built of stone, and lined entirely inside with pitch pine-boards. Distance from the wall to the board, 1 foot. The following is the inside measure to the boarding:—

Length of cathedral, 157 feet (including chancel).
Breadth, 52 feet.
North transept, 27 feet deep, by 46 feet wide.
South transept, 27 feet by 46 feet.
Height to the top of the cornice, above the plate, 23 feet.
Inside of the roof or ceiling, which is circular from the floor to the top of the arch, 33 feet (or nearly).

NOISOME REEK OF THE THAMES.

The river is the source from which three-fourths of the water supply is deduced, and doled out to the inhabitants of this great city: it is the grand medium of mercantile traffic, and it is also the great sewer, or *cloaca maxima*, for two millions of citizens, and for as many more of the population inhabiting the precincts of the paternal stream and its tributaries.

So vast a body of water as flows down the bed through a course of some 100 miles may be considered to be but little tainted with the sullage and drainage that are discharged by numerous sewers and creeks in its course: above Staines the colour of the water seems to indicate no very serious vitiation of the main current: however, let a trial be made, by taking a row in a wherry at eventide, about sunset, and the sense of smelling must be very obtuse indeed if powerful evidence be not registered on the olfactories of the abominable contaminatories which are mixed in our cup—the only diluent that is accessible to the mass of the people.

Our tea is infused in it; our viands cooked; our toddy mixed; our milk watered with it; our beer brewed of it; and every liquid aliment commingles with the filthy *exuvia* of the foul and more foully increasing tide: we lave in it; the body linen of the multitude is steeped therein; and when wrung out the deicated essences of poison envelop the breathing pores of the wearers. In fact, this corrupt element—which, in the dread epidemic, bore disease in its course—enters into every modification of our sustenance, and we are, despite ourselves, enveloped in its influence, so that the water of life is not the tributary of life, but of death.

Having been often overpowered by the *fatid* smell of the stream when steaming between Hungerford and London-bridge, I eschewed that mode of transit to the city, and set it down to the account of the Sanitary Commissioners, to their labours for the expurgation of Belgravia, or to the Buckingham-stairs mud, or to the Fleet ditch, with the other excrementary canals which yield their rich tributes to the tide. Long have I discontinued those

tranquillizing and cheering amusements afforded by a boat and sculls; but with a view of experimenting on the quality of the river breeze, which formerly we called "a fresh," I took a skiff, and with three or four friends shoved off at Battersea at 7 p.m., determined to reach Kew-bridge and return for a supper at the comfortable bridge-foot inn (Surrey side).

The reach at Battersea was muddy, and the air heavy and dark; every creek before we came in sight proclaimed evidence of new malaria, and, strange though it seem, each contributed a fresh variety of narcotic essence, plainly discernible as the effluvia from corruption of a varied pest—dye stuffs, decayed vegetation, gas, bone, oil, and other countless gradations, till approaching the Bishop's Palace in the broad Fulham reach, all the horrors of Pandora seemed to be amalgamated in one streaming vapour.

The stream rushed as usual under the beams and bulk of Putney-bridge, and here a short reprieve was granted to the senses for about 300 yards, when again a vapour, thick and offensive as the Stygian lake, enveloped us, until, sick and disgusted, we took the shore at Hammersmith, and were glad to walk to Kensington rather than submit to the ordeal of a return by foul water, more foul in the heavier shade of night.

This description may appear overcharged, but it is true; and any one who doubts it, needs but to try the same row at the same hour to be convinced of the real presence of the horrible reek.

It may be considered very useless, or even mischievous, to find fault with matters as they are; and so it would be if there were no mode of amending the evil complained of; but there is a mode. The clear blue waters of the Rhone, those of the St. Lawrence, and other great floods, are the themes of admiration and delight: travellers describe them, and are in raptures; but on the great lakes from which they flow the population is scant: still the former river is muddy enough hundreds of miles before it reaches the Gulf of Lyons.

Along our Thames numerous towns discharge their sewage, and no care has hitherto been taken to conserve the parent stream: the works (Azote) which have been established at Blackfriars (by Mr. Moffatt), show that such conduits of filth may not only be diverted, but turned to profit.

There are not very many creeks and main-sewers, and these being the main cause of pollution, might be turned to account on the now established principle of azote manufactory; whilst the numerous factories, mills, and depositaries of nuisances along the river banks might be obligated to consume their own waste, by applying the deodorizing process, and converting it into a marketable commodity, as the factories of Macclesfield and other towns are forced to consume their own smoke. What the municipal authorities could effect in these communities in that respect might be enforced in London with equal justice with regard to the sewage discharge into the river.

However it is accomplished, the conservancy of the Thames cannot be much longer delayed, for the increasing stercor will, in a few years more, render it wholly intolerable; and, with regard to the water supply for the inhabitants, it is already utterly unfit for that purpose. No process of tank reserves, or expurgation by subsidence, can make it a wholesome diluent for food, cooking, or washing.

Statistical returns prove that longevity is increased just in the ratio of the purity of water supply; and the returns of the Sanitary Board sufficiently demonstrate that the fearful scourge of cholera followed the course of Thames pipe-water in a ratio exactly in proportion to that point of the stream (higher or lower) whence the companies derived their sources; Brentford being less fatal than Hammersmith, Hammersmith than Fulham, and that again less than the lower reaches; but the mortality was traceable along the open sewers, and in those neglected districts where there was no vent, and where cesspools abounded, and the ravages were still more remarkable.

The corporation discuss this subject, the

Senate debates on it, and numerous parochial boards amuse themselves in disquisitions on filth and foul aquatics; yet we are none the nearer to pure water supply, and but little advanced in a system of general sewage. Those companies which have been doling in scant measure a disgusting commodity at a high price, are, as it would appear to be, incorporated in one grand and imposing executive.

The subject must be taken up by the public, or there is little chance of redress; for the spirit of jobbery seems to pervade all bodies constituted by Acts of Parliament, and the influence of wealth finds more sympathy even in the Legislature than the true interests or wants of the people.

Q.

Books.

A System of Apparatus for the Use of Lecturers and Experimenters in Mechanical Philosophy. By the Rev. ROBERT WILLIS, M.A. London: John Weale. 1851.

WHEN the Rev. W. Farish was elected Jacksonian Professor of Experimental Philosophy in the University of Cambridge, he devised a system of mechanical apparatus, consisting of the separate parts of which machines are made, so adapted to each other that they might be put together at pleasure in the form of any machine required. When Professor Willis succeeded Mr. Farish in 1837, the apparatus had become useless as a representation of British machinery, and he was compelled to reject it; but seeing the advantages of the idea, Mr. Willis availed himself of the modern facilities for machine-making, and carried it out in a more complete manner. The book named at the head of this notice is a description of the system, written and illustrated in such a way that all the parts may be constructed by lecturers themselves or their ordinary workmen. Professor Willis has a peculiar aptitude for the construction of apparatus and models, as all will admit who recollect the models which served for the illustration of his lectures on ecclesiastical architecture at the Royal Institution, Albemarle-street, in 1847. It is stated in the book, to which we are referring, that the system of isometrical perspective now so commonly employed, was first developed by Professor Farish. The system had been previously used, but, Mr. Willis thinks, never explained.

An Inquiry into the Operations of Running Streams and Tidal Waters, with a View to determine their Principles of Action; and an Application of those Principles to Improvement of the River Tyne. By THOMAS JOHN TAYLOR. London: Longman, Brown, and Co.: Newcastle, Lambert. 1851.

THE improvement of the Tyne is a subject much agitated in the locality, and has led to statements of very contradictory character. Mr. Taylor's ultimate object in the book before us is a proper settlement of that special question, but for this purpose he seeks to elicit fixed rules or principles, and has thus rendered the volume useful to others than those interested in the Tyne.

He enforces—that has been lost sight of by some writers—that it is the flood state of rivers which is their really governing state, and shows how a few large floods in a twelve-month may constitute themselves the law-givers, as it were, of a river.

"There is not in nature," he says, "any such thing as a feeble stream. It will be recollected, that an inch of rain is equal to a fall of almost exactly 100 tons of water on every acre; wherefore brooks, regarded as insignificant, and which collect the water of only a few square miles of basin, may yet, during heavy rains, discharge very considerable volumes of water, and are then possessed of corresponding, and, indeed, surprising power. I have at this moment in view a brook which, in drouthy weather, does not carry more than 500 gallons per minute: it has an average fall of 30 feet to the mile, and a run of 6 miles. In a flood state I have known this stream convey 22,500 gallons per minute, and it has higher floods than the one I happened to

measure. However, let us calculate its power at the rate of discharge mentioned, which was ascertained more towards the head than the outfall of the stream, so that the rate of discharge may be considered as below the average for the whole length of course.

The total fall is 180 feet: the quantity is 22,500 gallons, equal to 225,000 lbs. per minute: the co-efficient for a horse-power is 33,000 lbs. Whence

$$\frac{180 \times 225,000}{33,000} = 1,227 \text{ horses' power.}$$

The whole of this large force is absorbed by the resistance of the bed, excepting only that small remainder which gives motion to the current; but it is not the less on this account a living and actual power in operation, doing its full work as an aggregate. We may conceive the entire force as distributed over the bed, every 100 yards of course absorbing nearly 12-horse power, and every 8½ yards employing 1-horse power; and thus Nature breaks her large forces into smaller ones, which do her bidding gently.

We may take an example of this kind from the Tyne itself. It is not unusual for this river, during a land flood, to discharge 35 millions of tons of water in 24 hours, being equivalent to a net quantity of half an inch of rain over the entire extent of its basin. The highest sources are about 1,200 feet above the sea level; but the mean elevation of the basin may be taken at 500 feet. Now 35 million tons in 24 hours are 25,000 tons per minute; and a horse-power being 33,000 lbs., equal to 14½ tons, we have

$$\frac{25,000 \times 500}{14.5} = 850,340 \text{ horses' power.}$$

A flood which rose, at its highest elevation, a few inches above the floor of the house at Ryton island, discharged, according to my calculation, upwards of 70 millions of tons of water in 24 hours (70,383,909), to which may be added the waters at the same time extending over the Haughes, estimated at 9,874,286,—in all 80,258,195 tons, or say 80 millions of tons in 24 hours."

"The gross power of the fall of Niagara is, according to Blackwell's observations, equal to that of nearly seven millions of horses: others, from different data, make it as high as ten or twelve millions, and even more. In fact, taking into account the constancy of its operation, the effort of this great cataract will bear a comparison with that of the entire adult labouring population on the face of the globe."

Such of our readers as are interested in the operations affected by running waters, and in the conservancy of rivers, may consult with advantage Mr. Taylor's book.

The Book of Almanacs, with an Index of reference, by which the Almanac may be found for every Year, whether in an Old Style or New, from any Epoch, Ancient or Modern, up to A.D. 2000. Compiled by AUGUSTUS DE MORGAN, Sec. R.A.S., &c. London: Taylor, Walton, and Maberly. 1851.

FERGUSON, the mathematician, in "Select Mechanical Exercises," gave tables for expeditiously calculating the time of any new or full moon within the limits of 6,000 years, and Francœur, in "Theorie de Calendrier," imagined the plan of uniting the thirty-five almanacs, and indicating the proper one for each year by an index. From these hints Professor de Morgan has constructed his Book of Almanacs, intended, in matters purely chronological, "to supply the place of the old almanac, which is never at hand when wanted,—of the older almanac, which never was at hand,—of the future almanac, which is not yet at hand,—and of the Universal Almanac in every shape."

Briefly, the work is intended to enable any one, without calculation, to place before himself the almanac of any year of old style, or of any year of new style, from A.D. 1582 to A.D. 2000; to enable the reader to decide on the moon-light of any month; and to give short means of calculating always within two hours the times of new and full moon for any

month of any year from B.C. 2000 to A.D. 2000.

Lo! the wondrous and unerring regularity of the works of nature. And,—"Nature is but the name for an effect, whose cause is God."

We need scarcely say for how many purposes these tables will be found valuable, or that the name of Professor de Morgan is sufficient assurance of their correctness.

The Family Tutor and School Companion—The Family Friend. London: Houlston and Stoneman. 1851.

We can cordially recommend these serials to such of our young friends as would usefully invest a few pence weekly, or to their overlookers who would do it for them. The first will be a welcome aid to many strugglers.

Penny Maps. Chapman and Hall, Piccadilly.

THE tenth part of this very cheap atlas has been published, and contains the Austrian Empire, Egypt and Arabia Petrea, Nubia and Abyssinia. The names of places are very clearly printed.

Miscellaneous.

IMPROVEMENTS IN THE METROPOLIS.—The seventh report of the commissioners appointed to inquire into and consider the most effectual means of improving the metropolis, and for providing increased facilities of communication within the same, has been presented to both Houses of Parliament. The commissioners report that the parishes of St. Paul, Covent-garden, and of St. Martin's-in-the-fields, having declined to contribute in any way to the progress of these contemplated improvements, and the branch line to Hart-street having been proposed more for the convenience of the locality than for the advantage of the public, all further proceedings having reference to the formation of this line should be suspended, until the parishes in question, or one of them, shall come forward with a reasonable contribution in aid of the same. The commissioners are also of opinion, that the opening of a line of communication, leading diagonally from the junction of St. Martin's-lane, Cranbourne-street, and Long-acre, into King-street, Covent-garden, would both improve the condition of the district locally, and would also give to the public greater facilities in traversing an intricate and very populous portion of the town, and they recommend the execution thereof upon the following basis; viz., that assuming the first cost of the proposed main street to be, as estimated by Mr. Pennethorne, 55,763*l.*, the necessary funds for carrying it into execution should be advanced by the Government; that, assuming the net or ultimate cost of the improvement to be, as estimated 29,116*l.*, such cost should be borne as follows:—By the public, 16,146*l.*; by the Duke of Bedford, as his Grace's individual contribution, 10,000*l.*; by the Duke of Bedford, as a contribution from the parish of St. Paul, Covent-garden, 3,000*l.*

BANQUET TO THE FOREIGN COMMISSIONERS OF THE INDUSTRIAL EXHIBITION.—On Tuesday, the 20th, the Metropolitan Commissioners gave a grand entertainment at the Castle Hotel, Richmond, to the Foreign Commissioners then in London, and who must have been well pleased with their reception at Richmond, where laurels and flags of all nations were displayed in great profusion. Cheers were not wanting any more than expressions of "welcome," and a congratulatory address from the inhabitants was read on the beautiful lawn belonging to the hotel. About 200 persons sat down to dinner, including many foreign ministers. Lord Ashburton occupied the chair, and animated speeches were delivered by the Baron C. Dupin, Lord Granville, the Belgian Minister, and others. The day was beautiful, and all passed off well. A little mistake was made by those who managed the dinner, in terming it an entertainment given by the Council of Chairmen of the Metropolitan Committees. It was contributed to by the Metropolitan Commissioners generally.

A WORD ABOUT CONTRACTS.—I have frequently of late seen advertisements for tenders in your paper with the following clause:—"The committee do not pledge themselves to accept the lowest or any tender if not approved." Now I cannot help thinking this a mean and dishonourable way of proceeding. It would seem the committee, not satisfied with obtaining plans in the usual shabby way of offering a paltry premium (5*l.* probably), must put ten or twelve builders to the expense of estimating the cost of carrying out the design without the slightest certainty of being remunerated for their trouble. It would be a very small contract where the expenses out of pocket would be less than 5*l.* without any allowance for the contractor's own time. What right have they to tax the pockets of contractors to the amount of 50*l.* or 60*l.* to ascertain the costs of their works, and then free themselves of all liabilities, should the amount be more than they are inclined to spend? I need not point out how they ought to act in procuring designs, that has been done already; but when they are obtained they should be satisfied by a competent surveyor what the cost would be; and then, if their intentions are honourable, let them, if they must have competition, obtain tenders stating what per cent. profit upon the prime cost the contractors will undertake it for, the said cost to be computed by the surveyor employed by the committee, and agreed to by the contractor.

STAIRS' ELECTRIC LIGHT.—Public curiosity has been much excited to be made acquainted with the report of the committee who were appointed, so far back as August, to inquire into the adaptation of this light for general illumination. The committee having terminated their labours, the 9th inst. was the first time the exhibition took place of the apparatus, constructed with a view of testing the self-sustaining power of the mechanical arrangement adapted for the continued development of the light, the sustaining power of the battery, and the cost of the whole. At four the light was set in action, it being understood that it was to burn for five hours and a quarter without interruption, that being the period at which the committee had expressed themselves satisfied that it could be continued for any definite length of time. From four o'clock to six the light continued to burn with increasing brilliancy, giving successively a light, adjudged equal, the first half hour, to 200 candles, at five to three, at half-past five to 400, and so successively till the electric fluid came into its fullest action at half-past six, when the light, by the instrument used, developed the immense number of 700 candles, which intensity of light was steadily kept up till the experiment concluded at a quarter past nine o'clock. Coloured prints were brought from the influence of the direct sunbeam to that of the ray from the electric light, in which not the slightest difference of shade of colour could be observed. The light of each was then passed through the prism which still further established their identity, as their point of junction could not be ascertained, thus proving its immense value to the manufacturer and exhibitor of goods. Before the company separated, a portion of the solutions produced by the action of the battery were drawn off and precipitated, and a white powder produced, which was represented to be of a commercial value sufficient to pay the whole expense of producing the light.—Condensed from *Manchester Courier*.

TO PREVENT OAK FROM SPLITTING.—In answer to the request of your correspondent "J. M. H." for information as to "what will prevent oak mullions, or any other work left of its natural colour, splitting from exposure to the sun and wind." I would suggest to him that such a result would only be obtained by rendering the wood entirely free from moisture, and then immersing it in linseed oil, or some similar material. The first step might be insured by submitting it to the process of the Desiccating Company, whose office is in Gracechurch-street. It would thus be especially prepared for the immediate absorption of the oil. I have had oak, British elm, and ash, served in this way to my entire satisfaction.

OLD SUB.

DELIVERY OF WATER THROUGH PIPES.—I send you the following results of calculations made with reference to the queries of your correspondent "Aquarius," in a recent number of "The Builder." The diameter of the pipes at the point of delivery should be 2 inches. At the low level in the intervening valley 1½ inches, and no where less than 1½ inches. These, it is to be observed, are the bores required by theory, and suppose the piping to be laid without any sharp turns either in a vertical or horizontal plane. To allow, however, for accumulation of deposit, corrosion, &c. in the pipes, I should recommend the last 8,000 feet to be laid 2½ inches, and the remainder 2 inches.—A. W. MAKINSON.

EDUCATIONAL INSTITUTION AT BOLTON.—A correspondent states that the Committee of the Church Educational Institution at Bolton, who advertised for designs in *THE BUILDER* some time since, have decided in favour of the design of Mr. R. H. Potter, of London. The style is decorated.

INSTITUTE OF ARCHITECTS.—On Monday next a conversazione (the first of a series) will be held, when the President of the Institute, Earl De Grey, will present the royal gold medal to Professor Donaldson.

MARKET-HOUSE.—STOCKPORT COMPETITION.—The premium of 50*l.* offered by advertisement, for the best design for a Market-house, Stockport, has been awarded to the two designs, bearing the motto "*Haut et bon*," and found to be by Messrs. Stevens and Park.

ADMISSION TO WESTMINSTER ABBEY.—The dean and chapter have appointed two interpreters to assist the ordinary officers of the edifice in explaining its chief features. There is no charge for admission.

THE ARCHITECTURAL ASSOCIATION will hold a conversazione at Lyon's Inn-hall, Strand, on Friday, the 30th, when a paper will be read. This meeting is intended to be the first of a series, and is open to any provincial architects and others who may be in London.

TENDERS

For the City of London Consumption Hospital. Mr. H. Ordish, architect.

Cubitt	£13,427 0 0
Lee	13,200 0 0
Carriss	10,614 0 0
Piper	10,568 0 0
Myers	10,420 0 0

Industrial Schools, Highgate. Mr. Selwin, architect.

Janson	£4,444 0 0
Lawrence	4,354 0 0
Novell	4,883 0 0
Haward and Nixon	4,337 0 0
Appleford	4,290 0 0
Plozman	3,978 0 0
Kirk	3,970 0 0
Holland	3,766 0 0
Myers	3,729 0 0

TO CORRESPONDENTS.

"N. H. R." "F. and B." "An Old Surveyor" "M." "N. B. S." (we have not yet seen the design) "R. T. J." "W. P. M." "G. F. jun." "J. B. W." (under our mark) "Sir W. J." "Baron G." "B. T." "Mr. A." "L. L." "Lover of Science" "R. J. S." (we have not seen the book) "J. A. W." "Old Subscriber" "W. Y." "Mr. S." "H. H. R." "J. H." "J. B." "J." "R. W. K." "A. E." (sent in error) "J. P. S." "X. Y. Z." "Q. in corner" (the liability would depend on previous arrangement) "A Builder" (Paving Commissioners' Clerks are sometimes very pompous persons. We have a London specimen at this moment in our eye, and may one day exhibit him).

Books.—Notice of various Books are unavoidably postponed.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor." All other communications should be addressed to the Editor, and not to the Publisher.

ADVERTISEMENTS.

ROYAL ACADEMY OF ARTS.—TRAFFALGAR-SQUARE.—THE EXHIBITION OF THE ROYAL ACADEMY IS NOW OPEN. Admission free on Eight o'clock till Seven, one Shilling. Catalogue One Shilling. J. P. KNIGHT, R.A., Sec.

THE NEW SOCIETY OF PAINTERS IN WATER COLOURS.—The Seventeenth ANNUAL EXHIBITION of this Society is NOW OPEN at their Gallery, 53, Pall Mall, next St. James's Palace, from 9 o'clock till dusk. Admission is free. JAMES FAHEY, Sec.

COLOSSEUM.—Change of Panoramas.—The original and extraordinary PANORAMA OF LONDON, painted by Mr. Perin, will be EXHIBITED with the other splendid scenes of the Exhibition, entirely re-modelled, daily from half-past Ten till Five. The grand PANORAMA OF PARIS by NIGHT, by Danson and Son, from Seven till half-past Ten. The most admired scene from Two till Five, and during the evening, when the conservatories, a flood, &c., are brilliantly illuminated. Admission, day or evening, 2*l.*; children and school half-price. CYCLOPAMA, Albany-terrace, admission is a grand moving Panorama of Lisbon and the Gardens, so on in 1735 is exhibited daily at Three, and in the evening at half-past Seven and Nine o'clock, illustrated by appropriate music on the new grand organ. Children and school half-price.

Athenaeum Club House, which has stood the test of years without any visible effect. FREEMAN and RICHARDSON

The Builder.

No. CCCXXXIV.

SATURDAY, MAY 31, 1851.

THE work which has been recently published by Mr. T. Hudson Turner, called, "Some Account of Domestic Architecture in England, from the Conquest to the End of the Thirteenth Century,"* contains much curious information, and shows, amongst other things, how slowly improvements go on, and what little advance has really been made since the last-named period: in some respects, indeed, there has been positive retrogression. The work consists of 287 pages, and contains a large number of engravings. Although it purports to commence from the Conquest, the author sketches, in his introduction, the progress of domestic architecture in England previously, so far as the scanty materials to be found will serve. The villas and town houses of the Roman colonists were generally built on the same plan that prevailed in Italy,—the Roman and all other people copied one another, and changes, more apparent to us than themselves, were made imperceptibly and at long intervals,—and he does not consider that domestic architecture was carried to any considerable pitch of refinement by the Romans in England. Some of the remains of villas (with pavements and wall decorations) found in this country would justify a better opinion in this respect than Mr. Turner entertains: foundations have been opened indicating buildings of great extent and magnificence. That the multitude were ill-lodged we agree with him in believing; and in this respect it is, namely, the extension to the many of advantages enjoyed by the few, that advance has been made in modern times. When the Saxon came, he found better buildings than he had been used to, or than he was able to imitate when others were needed. A hall for feasting his retainers was his great need: this was mostly built of wood and thatched with reeds, or roofed with wooden shingles. The fire was kindled in the centre, and the lord and his "hearthmen" (expressive term), sat by it while the meal was there cooked.

The reader of Saxon history will remember the beautiful comparison made of one of King Edwin's chieftains in the discussion of the reception to be given to the missionary Paulinus, and which was recently quoted by Mr. Wright in the *Art-Journal*. "The present life of man, O king," he says, "seems to me, in comparison of that time which is unknown to us, like to the swift flight of a sparrow through the hall where you sit at your meal in winter, with your chiefs and attendants, warmed by a fire in the middle of the hall, whilst storms of rain or snow prevail without: the sparrow, flying in at one door, and immediately out at another, whilst he is visible is safe from the wintry storm; but after this short space of fair weather, he immediately vanishes out of your sight into the dark winter from which he had emerged."

Internally the walls of the hall were covered

with hangings or tapestry, which were called in Anglo-Saxon *wah-hragel*, or *wah-rift*, wall clothing. These appear sometimes to have been mere plain cloths, but at other times they were richly ornamented, and not unfrequently embroidered with historical subjects.

During the greater part of the Saxon period houses were generally built of wood, and a carpenter is described as "making houses and bowls." London, indeed, was mainly a city of wood up to the Great Fire of 1666.

Saxon buildings doubtless exhibited some coarse decorative features:—

"The introduction of painting is commonly said, on the authority of Bede, to have taken place in the seventh century; but his words may be understood to refer only to the northern parts of the kingdom: indeed, it is probable they allude simply to the first application of that species of decoration to ecclesiastical buildings. It is obvious that people who possessed a sufficient knowledge of colours to enable them to paint one class of objects were likely to apply the same skill to another; and it seems incontestable that the Saxons painted their vessels in very remote times. That exterior ornaments were sometimes given to domestic buildings in Saxon times, scarcely admits of doubt: the 'pinnacled hall' is a phrase which occurs in the poem of *Béowulf*: from another passage in the same work, we may gather that the roof of a Saxon hall had a high pitch, and was sometimes covered with a better material than thatch: 'he went to the hall, stood on the steps, and beheld the steep roof with gold adorned.' It hardly admits of reasonable doubt, however, that some edifices, both ecclesiastical and domestic, were built during the latter centuries of Saxon dominion, of stone, and in imitation of the Roman, or rather Romanesque style."

Mr. Turner does not attach much importance to the drawings on Saxon MSS. as authorities:—

"Notwithstanding the great difference in style perceptible among them, it is obvious that the artists generally worked after certain admitted standards of design, which seem to have been furnished originally by the Greek school, to which later additions were made from time to time. This conventional style of drawing lasted till the twelfth century; and there is little difference between the architectural details in works of that age and those which occur in writings two centuries older. Occasionally also we may perceive a strong tinge of Saracenic character in Saxon delineations of buildings: this may be remarked, particularly in a drawing representing the Annunciation, in the celebrated *Benedictional* of St. Ethelwold, where the blessed Virgin is seated under a porch, covered by a dome, wholly in the Arabian style.* On the other hand, many of the architectural decorations in the same manuscript, as the acanthus-leaved capitals and bases of columns, are drawn with a grace and freedom to which there could have been no parallel in any English building extant, when those drawings were made, in the latter half of the tenth century. Still, although too much credit is not to be given to early illuminations, they frequently present minor details which were undoubtedly taken by the artists from objects which surrounded them; and the impression left on the mind, by a careful comparison of various examples, will be, that much of the Romanesque style prevailed in some domestic buildings erected in this country in the ninth and tenth centuries. Indeed, it is not easy to perceive that a substantially-built Saxon hall could have materially differed from a Norman hall of the same period, any more than a Saxon house could have differed in its arrangement from a Norman house. The chief difference was, probably, that the latter had an upper story, a feature which seems to have been uncommon in England until late in the twelfth century."

When speaking of the absence of a chimney

in Saxon drawings, he says, "that useful invention appears to have been then unknown in England, as indeed it was in many parts of Europe, until the fifteenth century." The chimney, however, cannot be said to have been unknown in England till that date, or indeed several centuries before, as Mr. Turner himself afterwards points out, but although known it was used only in special cases. Most of our readers remember the fire-places and chimneys in Rochester Castle (twelfth century), at the Castle, Hedingham, Essex, and numerous other places. Thus, in a very interesting series of extracts, from records called the "Liberate Rolls," preserved in the Tower of London, which are given by Mr. Turner at the end of his book, and which refer to the architectural works, &c. executed by order of Henry III. (1216 to 1272), the orders for the erection of chimneys constantly occur. For example, in 1236, the king orders the sheriff of Wiltshire to "cause a certain penthouse to be made (at Clarendon), from our queen's chamber unto the said queen's wardrobe, which is beneath the new chapel, and a chimney in the same wardrobe;" and in the same year he tells Walter de Burgh to "make a certain penthouse, with a chimney, at the head of our hall at Brill." Again, in 1238, he tells his bailiff "to make a certain chimney in our great wardrobe at Woodstock;"* and so throughout the records.

The Normans applied the Roman manner of building to their more important houses, as well as to ecclesiastical structures,—to which the Saxons had perhaps confined it. They continued to build town-houses of wood and clay:—stone houses of this period, such as we know of at Lincoln (the "Jew's House") and Barnack, were exceptions rather than examples of the general manner of constructing dwellings. Of their materials for building our author says:—

"The stone quarries which appear to have been most generally used in the twelfth and following century, were those of Caen, Boulogne, Pevensey, Corfe, Reigate, Folkestone, and that of Egremont, in Cumberland. There were of course numerous other quarries which were used for buildings in their immediate neighbourhood, but those mentioned above supplied materials to all parts of the kingdom. Thus parts of Windsor Castle were built of Egremont stone, both in the reigns of Henry the Second and of Edward the Third; considering the difficulty and expense of bringing it by sea in those early times, this material would appear to have been then greatly esteemed: at present it is believed the Egremont quarries are scarcely known in the south of England. The stone commonly called 'Kentish-rag' was, under the same name, extensively used early in the thirteenth century: in 1282 the gaol of Newgate was repaired with 'Kentish-rag'; at that time a boat-load of it cost from 7s. 8d. to 11s. 7d. The material used for finishing, and for the mullions of windows, is usually termed free-stone, and was brought, in all probability, from Corfe. Caen stone appears to have been mainly employed for ashlar-work, as at the present time. The free-stone of Maidenstane, or Maidstone, occurs in one record of this period, relating to a private building in London."

In the thirteenth century lime was sold by the bag as well as by the hundred-weight: in preparing it for mortar it was mixed with

* In this year the king orders the constable of the Tower "to cause the walls of our queen's chamber, which is within our chamber, at the aforesaid Tower, to be whitewashed and pointed, and within those pointings to be painted with flowers; and cause the drain of our private chamber to be made in the fashion of a hollow column, as our well-beloved servant John of Ely shall more fully tell thee."

* Oxford and London: J. H. Parker, 1851.

* *Archæologia*, vol. xxiv. p. l. x. p. 50.

sand, and occasionally with pounded tile,* a fact which he thinks ought to tend to correct the haste with which some antiquaries pronounce fragments of mortar in which that ingredient appears, wherever they may occur in mediæval buildings, to be of Roman origin.

Plasterers and whitewashers (*dealbatores*) are mentioned in the "London Assize" of the year 1212: Westminster Hall was whitewashed for the coronation of Edward I.

And then as to masons:—

"Among the workmen employed in ancient times we find the masons, or *cementarii*, separated into classes as early as the beginning of the thirteenth century: they were cutters and sculptors of free-stone; layers, or, as they were termed vernacularly, '*leggeres*,' and setters; they worked either by the piece, or at fixed daily wages, with an 'extra allowance in some cases, as '*metesilver*,' but at the highest fixed rate of daily pay no '*metesilver*,' or corrody was given. Besides the plasterers and whitewashers, to whom we have already alluded, there were mud-stickers, who filled up the frame-work of timber houses with mud-clay; and besides the usual assistant labourers were excavators and barrowmen. In extensive buildings the various operatives worked in gangs under foremen: such gangs sometimes consisted of twenty men, whose foreman was called a *vintener* (*vintenarius*), an appellation which was given, in France, in after times, to the corporals of foot companies."

The iron used in architectural construction in early times is usually termed "Spanish iron;" the same material continued to be imported till a comparatively late period. Yet the extensive iron works of the forest of Dean, and the bloomeries of Furness, in Lancashire, were in full operation in the thirteenth century. There is also another sort of iron mentioned in accounts of the thirteenth century: it is called "Osmund;" the signification of the term is not very obvious, though we may presume it to be the name of the place of manufacture.

The architectural designs were probably made on vellum; the masons' moulds were cut in wood; the Lewis (called in early accounts a *Loves*), and the crane, were well known in the thirteenth century; and most of the appliances were then what they now are.

Lead was extensively used for roofs and gutters in the twelfth century. As to metal work, architecturally applied, Mr. Turner says:—

"From an early period, in fact from the tenth century, it may be remarked that in all drawings and paintings in manuscripts, iron work on doors presents an ornamental character: the bars of the hinges project almost entirely across the panel, and are more or less floriated. The scutcheons of locks are frequently ornamented. Padlocks, however, appear, according to Necham, to have been an ordinary apparatus for securing doors; he says, 'let the door have a pensile lock.' Nail-heads are rarely represented, in early drawings, on the surface of doors; and it may be that no attempt was made to render them ornamental until a later date: we find that in the nineteenth of Henry II., 25,000 great nails, with heads, were supplied for the king's house at Winchester, by the borough of Gloucester, which, from its vicinity to the iron forges of the forest of Dean, was the Birmingham of the middle ages. As in the case of lead, it may be observed, that much of the smith's work, as in bars, hinges, &c. was done upon the spot. In this and succeeding centuries the various classes of workmen having been assembled, their employer found the rough material, and it was worked by the side of the structure to which it was to be applied. This mode of proceed-

ing naturally resulted from the generally straitened means of the artificers of early times, the imperfect division of labour, and also from the trouble and cost of obtaining manufactured articles from the few great towns which then existed in this country.*

The walls were frequently plastered and covered with tapestry. There is satisfactory evidence of the style in which houses were built in the twelfth century:—The citizens assembled, in the first year of the reign of Richard I., enacted certain regulations "for appeasing the contentions which sometimes arise among neighbours touching boundaries made or to be made between their lands, so that such disputes might be settled according to that which was then provided and ordained. And the said provision and ordinance was called an Assize." We learn from this remarkable document, that in ancient times, that is, in times anterior to the year 1189, the greater part of the city was built of wood, the houses being roofed with straw, reeds, and similar materials. The frequent fires which took place owing to this mode of building, and more particularly the great conflagration in the first year of the reign of Stephen, which spread from London-bridge to the church of St. Clement Danes, destroying in its progress the cathedral, compelled the citizens to adopt some measures to avert the recurrence of such a calamity. Therefore, says the Assize, "many citizens, to avoid such danger, built according to their means, on their ground, a stone house, covered and protected by thick tiles against the fury of fire, whereby it often happened that when a fire arose in the city and burnt many edifices, and had reached such a house, not being able to injure it, it there became extinguished, so that many neighbours' houses were wholly saved from fire by that house."

It is clear from this statement that up to the first of Stephen, houses in London were constructed much as they had been in the earlier Saxon times, almost wholly of wood; but from that period a change began to take place, the inhabitants were encouraged to build of stone, and, to that end, various privileges were conceded to those who adopted the new fashion.

This assize forms an early Buildings' Act. In the buildings of the thirteenth century,—

"The flooring of rooms on the ground story was sometimes boarded, but there is little doubt it was in general nothing more than the natural soil well rammed down, over which litter was strewn. There is a writ of Henry III. ordering a room on the ground-floor in Windsor Castle to be 'boarded like a ship.' Upper rooms were in general floored with wood. It was not until the middle of the reign of Henry III. that paving-tiles seem to have been applied to domestic buildings; and even then they do not appear to have been of a decorated character: apartments in the royal manor-houses are directed to be paved with flat-tile (*plana tegula*). Towards the close of this reign ornamental tiles are first mentioned (*tegulae pictae*), but they were not extensively used. That large halls were not generally provided with wooden floors, except at the dais, is sufficiently clear from an expression which sometimes occurs, that 'the tables were fixed in the ground.' The space below the dais was sometimes called the 'marsh' of the hall; and it was, doubtless, often damp and dirty enough to deserve the name. An idea of its condition, even in a

royal residence, may be gathered from an order to widen the doorway of the hall at Winchester to admit the entrance of carts. On all points, however, relating to the internal finish of ordinary domestic habitations, it must be confessed we are quite in the dark; the only positive information now accessible relating exclusively to the royal dwellings; but, if, as is most certain, wainscoting and wooden floors were commonly used in them, it is an obvious inference that such conveniences must have been within the reach of the wealthier classes of the community."

In design, the domestic buildings of this period are very admirable. Mr. Turner's book we can cordially recommend.

PRESENTATION OF THE ROYAL GOLD MEDAL OF THE INSTITUTE OF BRITISH ARCHITECTS TO PROFESSOR DONALDSON.

THE first of a series of conversazioni was held on Monday evening last, at the rooms of the Institute, in Grosvenor-street, when the Earl De Grey, president, attended, and presented the above-mentioned honorary distinction to Professor Donaldson. The gold medal of the Institute, it will be remembered, is placed annually at the disposal of the council, by the munificence of her Majesty; and is to be awarded, subject to her Majesty's approval, to an architect, or writer on architecture, whether British or foreign, whose merits may seem to the council to entitle him to the honour. Last year the medal was awarded to Mr. Barry, R.A.

After a brief apology for intruding a matter of business on an evening more properly dedicated to social communication,

His lordship, the president, proceeded to address Mr. Donaldson. The present, he said, was the first opportunity he had had, since the award of the gold medal, of attending to present it in person to that gentleman. He had the greatest possible pleasure in doing so, a pleasure which he knew was shared by every man who heard him. From year to year the munificence of our Sovereign placed that tribute at the disposal of the Institute, to be awarded, not always to the same person, or for the same subject: it had before been given to foreigners, to gentlemen of this country, not members of the Institute, and last year he had the honour of giving it to one of their own brethren. The Council had always additional satisfaction when, with justice to others, with equity and impartiality, they could confer it on a member of that body; and he was happy that they had done so on the present occasion. It might be presumptuous in him to say anything of Mr. Donaldson's professional merits, but he had a right to speak of him as a member of the Institute of British Architects. For himself, he had come among them many years ago, wholly unformed, and unfit for the post he held, except in an anxious desire to do his duty. Mr. Donaldson was at that time Honorary Secretary to the Institute: from that gentleman his lordship had received the greatest assistance; and certainly the services which he had rendered to the then infant Institution were most essential. It was then a novelty; and though many members of the profession were well disposed towards it, they had anxious doubts how far it might succeed, and at all events had no very ardent desires or anxious aspirations on the subject. Mr. Donaldson, however, had not only an ardent desire for its success, but a resolute determination that, so far as it depended on himself, it should succeed; and his expectations had been fully realized. It was true they were not now so splendidly located as they some day might hope to be; but he would ask any man to look at the faces which then surrounded him, and to say if their presence was not a proof that the Institute had succeeded; and he had no hesitation in saying, if there was one man in the kingdom to whom it was mainly indebted for that success, it was Mr. Donaldson. It was, therefore, a matter of congratulation to the members of that Institute to award to him a prize which would prove to

* Thus in the items for mortar, in the account of the repairs of Newgate in 1293:—"In the purchase of broken tiles, 2s. 4½d. In four sears and four bags of lime, 7s. In twelve cart-loads of sand, 2s."

* Of course, more complicated works in iron, as locks, were not executed in the way described above. The "Locksmiths" seem to have been a superior and independent craft from an early time; working, also, as in later days, as bell-founders.

his friends, his family, and his successors, the high estimation in which he was held by his professional brethren; and a prize which he might feel as much pride in accepting, as they did in offering it. Nor were they the only persons who had appreciated Mr. Donaldson's services: he was a corresponding member of the French Institute, and Professor of Architecture to one of the more recent, and he hoped one of the more enlightened, institutions of the present day. He had been severely afflicted for some time; and, therefore, had no opportunity of knowing the wish of his colleagues to present to him this medal; and their gratification was increased by seeing him again in health and vigour. His lordship, in conclusion, again expressed the extreme pleasure, satisfaction, and happiness he felt, in being the medium of conveying to Mr. Donaldson a testimony of the esteem and regard of his professional brethren.

We need scarcely say this address was received with great applause.

Professor Donaldson, on rising to acknowledge the honour conferred upon him, was greeted most warmly by the meeting. He should have been glad, he said, if, with propriety, in receiving this medal, he might have sat down without speaking a word; for words were quite inadequate to express his sentiments on this occasion; but he should be sorry if his silence were to lead to any misinterpretation of the gratitude he felt for the high honour conferred upon him, and more especially in receiving it at the hands of his lordship, who had ever been the great friend of the institute. It was now nearly twenty years since many members of the profession were led to reflect that architecture and its professors had not that position in society to which they were entitled. The members of the three "learned professions" had peculiar advantages; and surely architects were entitled to the like distinction. It was true the members of the professions referred to, devoted many years to most important studies, and came into the world after gaining honours and distinction; but, in what respect were the architects behind them? They also had to pass years in learning the inferior departments of their profession; and also many years abroad in the study of the principles of ancient art. Such sacrifices, such privations, and such dangers (for travel was not devoid of danger), entitled them to an equivalent position in society. With that feeling the Institute was proposed; his lordship, their President, shared that feeling, and placed himself at their head; and they had consequently achieved the utmost success. In speaking of a topic of the day, which was every one's mouth, he might, perhaps, compare that Institution to the Great Exhibition, not certainly in the nature of the rooms they occupied, but in their diversified contents; for the honorary and corresponding members of the Institute had sent, for the instruction and delight of the members, most interesting contributions; books, prints, and drawings, of the greatest value, from every country of Europe, and indeed almost every part of the world. It had been said that architects had not rendered full justice to the designer of that wondrous edifice; but justice was not done to the profession in the accusation. He, like all his brethren, was ready to acknowledge merit wherever it was to be found; and certainly the highest credit was due to Mr. Paxton. It must be remembered, however, that Mr. Paxton was a man of one idea. Brought up as a gardener, he constructed with the greatest ingenuity a building for the reception of that noble plant the Victoria Regia; and finding in that a construction capable of extension, he multiplied that idea till he produced the great building which had been so successful. No one could deny that this was a happy idea; nor considering the scientific skill of Messrs. Fox and Henderson, the valuable suggestions of Mr. Barry, and the artistic taste of Mr. Owen Jones, it must be felt that to such a combination we were indebted for the most successful edifice of modern times. One further subject he would beg to mention. He had been engaged for many years in the

instruction of the junior members of the profession; and feeling a peculiar pleasure in being so associated with the freshness and ardour of youth, he could not but feel a deep interest in their welfare. It had, therefore, produced in him great sorrow, as it was deeply regretted by the council of the Institute, that the younger branches of the profession had not responded to the appeals made to them by the council and the members. They would do well to imitate the course of study pursued in the learned professions, the younger members of which gained university and other honours, which were afterwards of the greatest value to them. They might be assured that the designs submitted to them in competition for the Institute prizes were worthy of their most careful study; and nothing could be more gratifying, as an assurance of their future success, than the ability to say that the members of that body,—their seniors in the profession,—had rewarded their early studies. Such honours had a most impressive effect upon the minds of others, whilst they enabled their recipients to offer themselves with greater advantages than others could, in any situation in which they might wish to place themselves. They, the senior members of the profession, had done all they could; but they must look to their successors to maintain and elevate its character in the sight of Europe. He feared he had pursued the subject too far, but he could not avoid impressing these views upon the generous energies of the younger members of the profession. He would conclude by expressing his deep sense of the honour conferred upon him by the selection of his name on this occasion by the Institute, and by the confirmation of that selection by Her Majesty and the Prince Albert. He should ever retain a deep sense of gratitude for so high a distinction, and his best efforts would be always at the service of the Institute, to promote its interests, and confirm its successes.

A liberal display of drawings, prints, and illustrated books, attracted the attention of a crowded meeting; and we may especially mention a very choice collection of autographs exhibited by Mr. Robert Cole.

MATTERS CONNECTED WITH THE GREAT EXHIBITION.

Portland Cement Beams.—The exhibitors of the Portland Cement Beam, mentioned in a communication signed "H. B.," in our last number (p. 324), write as follows:—

"In noticing the beam of hollow bricks and Portland cement which we have erected in the outside court of the Great Exhibition, your correspondent discovers that no less than four courses of the brickwork of the said beam are interwoven in every course and under every brick with strong hoop-iron; which induces him to stigmatise the whole experiment as a mere farce, and to suggest that the Royal Commissioners should have the whole deception at once removed. He then refers your readers to a large slab of the same cement, made by another firm, very near to our beam, and recommends it to their inspection; but had he been an impartial critic, he should have read the notice affixed to the beam, which is to the effect that this beam, constructed of Portland cement and hollow bricks, is identical in size and general character with one built of common bricks and Roman cement by Messrs. Francis, White, and Co., in the year 1836, at Nine Elms, and which, after standing eighteen months, was broken down by a weight of 50,000 lbs. The notice also refers to General Pasley's work on Cement, p. 164, which describes that beam as built at the suggestion and under the advice of Mr. Brunel, who having, in the year 1835, built one himself, in which he employed a quantity of hoop-iron, prescribed to Messrs. F. and Co. the dimensions of this beam, and the way in which the pieces of hoop-iron, fifteen in number, should be disposed. Everybody knows the extent to which iron bond is now used in walls to give them additional strength, and while we fully allow that it would be an interesting experiment to try the strength of a beam so bonded against

one without iron, it is clear that such was not the intention of the present experiment. Our object was to test the strength of Portland against Roman cement, and the only way to do this was to build a beam under the same conditions as the Roman cement beam above referred to.

With this explanation we leave you to judge whether it be right to pronounce this experiment a deception. The substitution of hollow for common bricks in this experiment, only serves to give additional interest to it, though it places us at some disadvantage in respect of the surfaces to be cemented."

We get the following from the *Expositor*.

"The Boiler-House.—To supply steam for the gratuitous use of exhibitors of 'machinery in motion' the commissioners erected a boiler-house without the Great Building, on the south side of 'Rotten-row,' at a distance of 155 feet from the north-west angle of the Palace. The whole length of the boiler-house is 96 feet from centre to centre of columns, and the width 24 feet, the principle of construction being the same as that adopted in the 'Industrial Palace'—cast-iron columns at intervals of 8 feet and 24 feet respectively, and 24-feet trellis-girders, forming the framework of the structure; while, instead of close boarding as an inclosure, 9-inch brick walls are substituted. The building is divided into three compartments by two cross-brick walls of one brick and a half in thickness, which support a capacious cold-water tank. The largest compartment, at the east end, is for the boilers, being 50 feet in length; the middle compartment, intended for stores, 20 feet; and the western compartment, also for stores, 26 feet in length respectively. From the level of the ground to the top of the trellis-girders is 22 feet 2 inches. Over the boiler department the roofing will be of corrugated iron, whereas over the western division Mr. Paxton's 'ridge and furrow' roofing, exactly similar to that of the great building, is in the course of construction. The tank is formed of cast-iron plates, bolted together by means of internal flanges, in the ordinary way. It is 21 feet square, and 4 feet 6 inches in depth; consequently will contain rather more than 55½ tons of water. There are altogether five boilers, all set in brick-work: the largest one is in the middle, and is from the works of Messrs. Galway, of Manchester, consisting of two large horizontal tables or cylinders communicating with each other at 4 feet 10 inches from the front of the surface, and at the other end four vertical tubes of 8 inches diameter, passing from the lower to the upper part of the boiler, and 10 conical tubes for the same purpose; the whole length of the boiler being 13 feet, and the diameter 2 feet 4 inches. The smaller boilers, two on each side of that already mentioned, are of the high-pressure multitubular construction, as used for locomotive engines, being 3 feet 8 inches in diameter, and consisting of 41 horizontal tubes, each of 2½ inches diameter: a cast-iron bracket is riveted to each side of the boiler, to secure it to the brickwork, the flame first acting on the bottom and sides of the boiler, which is supported intermediately by two cross walls, and returning through the tubes towards the chimney, which is fixed at the furnace end of the boiler. The chimney is constructed of iron plates, riveted together, being circular, of 16 inches clear diameter, and 21 feet high. The pipes to convey the steam into the 'machinery in motion' department are of cast-iron, of 8½ inches diameter internally, connected together by flanges in the usual way, and coated externally with felt. The underground channel for these pipes is formed by a foundation of 3-inch paving, on which are built dwarf 9-inch sides of brick, in cement, 21 inches high, the whole being covered at top by two planks, the lower one of 4 inches and the upper one of 3 inches in thickness respectively."

"Effect of the Exhibition on the Operatives.—The *Times* makes the following remarks:—"It is a question of deep and general interest how the Exhibition will tell on the masses, particularly on those who are somewhat prepared by the nature of their employments. All has been done that can be done, and it now only remains to await the

result. Among millions there will, of course, be a great deal of ignorance and dullness. To the end of time the cobbler will always be a poor creature beyond the reach of his last. His criticisms, if he criticizes or notices at all, will not be worth much. But within the range of his last they will be invaluable. If it can be done, it will be worth while to watch the mechanics in the machine-room, the silk weaver in the Lyons or British galleries of manufacture, and the other artisans mustering in the several departments, to hear the hum of their remarks, and measure the depth of their admiration. How much is there for an English workman to learn! What walls of prejudice, what masses of stupidity, to be removed! When shall we hear the last of that national boast, so well-timed in the matter of hardware, so ill-timed when we come within the regions of taste, that English workmanship is indestructible? How long will men vaunt the eternal ugliness of their handiwork? The material character of the Exhibition, which utterly excludes philosophy, literature, pure science, and even some of the fine arts, seems to forbid some more romantic speculations, which nevertheless will not wholly be suppressed. Though this be substantially a mechanical and artistic competition, yet it is difficult not to ascribe to it a far higher destiny. The games of antiquity were little more than races and wrestling matches in themselves, but round that simple nucleus all the arts and sciences were soon found to assemble. We can hardly doubt that this great Olympiad of art, that has hitherto been so successful, so splendid, and so glorious, will exhibit an ever-expanding circle of useful and noble influences. That is the work which we hope to see beginning in good earnest this day—the gradual raising of our industrial classes from among lamentable incultivation, ignorance, and moral debasement."

THE PUBLIC MEETING ON ARCHITECTURAL COMPETITIONS.

THE Architectural Association has now for a long period exerted itself to bring about some practical decision of the profession in relation to this subject. A public meeting has been convened, and the undersigned have been deputed to communicate with certain architectural societies and architects, with a view to interest them in the matter.

While thus engaged, they have had many opportunities of becoming more or less acquainted with the *animus* of the profession on this topic. Many gentlemen approve of the attempt to reform the system, and advocate the adoption of the Association's code of Regulations, or something similar to it; while others, either by open confession or tacit indifference, look with despair on all efforts to ameliorate the system, the inherent evils of which seem insurmountable. A third party denounce the *system of competition itself*, as an unclean thing, which respectable members of the profession ought no longer to tolerate. These last (were a movement in that direction indicated) would evidently lend their aid to establish what may be termed an *anti-competition society*, pledging its members to abstain from all public competitions whatever; not because they fail to recognise the advantages of fair open competition in architecture, but because they see no prospect whatever of its attainment; and feel satisfied that, in the main, the custom of gratuitously tendering his services to the public is alike fatal to the respectability of the architect, and the advancement of the art he cultivates.

While, therefore, the undersigned feel that if the system itself is to be perpetuated, and its attendant evils simply mitigated, no better course can be advised than the (temporary) adoption of the code of the Architectural Association, they hereby desire to record their own private impression that it is perfectly competent for any architect attending the meeting at Lyon's-inn to propose the *absolute abandonment of the system of competition altogether*. One thing is quite certain, that some practical, decisive step must be taken by

the professional body, or matters will perhaps become by this very movement utterly irremediable. As regards the Architectural Association, it *merely provides an arena for the public meeting*: its committee are prepared if need be to submit a set of resolutions affecting the amendment only of competitions; but as to the conduct of the meeting, the Association is actually pledged to nothing, simply pointing, as it has uniformly done, to the report of the Institute; which, it must be borne in mind, does by no means over ardently recommend the continuance of a system which, as has been before stated, many respectable members of the profession, when pressed for an opinion, do utterly repudiate.

One curious fact may be mentioned in addition. It is this: that they who have, in the columns of *THE BUILDER* and elsewhere, been the loudest in bemoaning the unfairness of this or that particular competition case, have been the tardiest in coming forward with suggestions for even mitigating the evils of the system they deplore.

W. B. COLLING, } Hon. Secs. of the Architectural Association.
J. P. SEDDON, }
W. YOUNG, } Hon. Sec. of the Competitions Committee.

The hon. secretary of the Institute of Architects says, in reply to a letter addressed to the Institute by the Association,—"The council fully appreciate the importance of the object the Architectural Association have in view in their proposed meeting of the Profession to consider the mode of regulating the terms of competition designs, and they trust that it will be the means of eliciting some useful suggestions. With reference to the portion of your letter which solicits an opinion on the subject, the council are not prepared at present to offer any suggestions beyond those contained in their published report on competitions, to which they beg to call your attention, as the subject was at that time (1839) fully considered; but I am desired to add, that the council will at all times give due attention to any proposition they may be favoured with which has for its object the amelioration of the evils of public or other competitions for architectural designs, and which their professional brethren may think proper to submit to their consideration."

We earnestly invite our readers to attend the meeting, and to aid in effecting its important object.

PICTURES PURCHASED BY THE ART-UNION OF LONDON.

The following is a list of the principal pictures purchased by the prizeholders up to the present time:—

"Don't be afraid—You shan't fall," J. Tennant (from S.B.A.), 157l. 10s.; "The Diversion of the Moccoteiti," R. McInnes (R.A.), 136l. 10s.; "Bonnyville, on the road from Geneva," J. D. Harding (R.A.), 89l. 5s.; "Dorothea," J. G. Middleton (N.I.), 84l.; "Who's there," T. H. Maguire (R.A.), 80l.; "Scene in Glen Beg," T. M. Richardson (W.C.S.), 73l. 10s.; "Lady Jane Grey," J. G. Middleton (N.I.), 70l.; "Seven for sixpence," J. F. Herring (S.B.A.), 70l.; "Landscape and Cattle," G. Cole (S.B.A.), 52l. 10s.; "A Scene in Knowle Park," W. F. Witherington (R.A.), 60l.; "Stacking the Autumn Hay Crop," G. A. Williams (N.I.), 60l.; "Poor Mariners," T. Danby (B.L.), 60l.; "Heidelberg on the Neckar," F. V. de Fleury (R.A.), 50l.; "Arcadians," G. Patten A.R.A. (R.A.), 50l.; "Above Richmond, Yorkshire," J. W. Allen (S.B.A.), 50l.; "Saturday Night," T. Clater (S.B.A.), 50l.; "View of the Black Mountain, Bredalbane," Copley Fielding (W.C.S.), 52l. 10s.; "Entrance to Burlington Quay," A. Clint (S.B.A.), 40l.; "Bull's Close, Edinburgh," J. Drummond (B.L.), 40l.; "Tower on the Vrydag's Market at Ghent," W. Callow (W.C.S.), 40l.; "Interior of a Highland Cottage," J. H. Mole (N.W.C.S.), 31l. 10s.; "On the road from Foligno Spello," W. Oliver (R.A.), 25l.; "The View Hollos," G. Morley (R.A.), 20l.; "Highland Peat Gatherers," J. H. Mole (N.W.C.S.), 26l. 5s.;

"Cattle on the Moors," G. Cole (S.B.A.), 20l.; "Near Stockbridge," G. Cole (S.B.A.), 20l.; "The Village Smithy," G. Dodgson (W.C.S.), 20l.; "Near Crawley, Surrey," J. W. Allen (S.B.A.), 20l.

CONVERSAZIONI AND FRIENDLY MEETINGS.

Lord de Grey's Conversazione.—On the 23rd Lord de Grey, as president of the Institute of Architects, received the members of the Institute at his house in St. James's-square, and invited a large number of the aristocracy of rank and talent to meet them: we ought to add, too, of beauty; for the President, continuing a course which he was the first to take in meetings of this character, did not forget the ladies. The tables held many collections of sketches by David Roberts, Lake Price, and others.

The following members of the Institute, and gentlemen invited by the Institute (noted down without any attempt at arrangement), were present:—

Messrs. John Gibson, Barry, E. Blore, Mons. Gourlier, Mr. C. Knight, Rev. R. Burgess, Dr. Dickson, Messrs. Milne, S. Smirke, Donaldson, C. B. Thurston, W. A. Boulois, C. Mayhew, H. Oliver, Prof. Miller, Messrs. Rich. Redgrave, J. Peacock, J. Fergusson, R. Cole, J. Noble, Henry Hodge, R. Wallace, H. H. Burnell, R. C. Baxter, H. Williams, E. Scott, R. J. Withers, A. R. Dobson, C. Fowler, Boys, Garling, Sibley, Nicholls, Peter Leigh, C. C. Nelson, Geo. Judge, J. P. Boyce, W. Laxton, W. P. Griffith, G. H. Drew, Fuller, F. W. Porter, Wadmore, Hopkins, Baker, Kendall, Sir Frederick Madden, Messrs. Geo. Scharf, Inman, Toynbee, Phipson, G. Pownall, Very Rev. R. H. Froude, Messrs. L. Stride, W. Beck, G. Godwin, Salvin, Warton, Fulljames, T. H. Wyatt, F. Byass, Charles Landseer, H. A. Renton, E. T. Parris, W. Lindley, J. H. Foley, E. H. Martineau, H. Ashton, W. Twopenny, S. Wood, R. P. Pope, Rev. John Barlow, Messrs. Errington, Grogan, Mylne, Buckley, Banks, Lewis, Whichcord, Mocatta, T. J. Francis, John Martin, Moore, Geo. Jones, W. C. Marshall, J. Leitch, Thos. Landseer, Rich. Bell, J. Y. Akerman, B. Ferrey, J. G. Crace, Mosley, A. Allom, C. Barry, jun., J. R. Gowans, G. Vulliamy, B. Green, Harris, Dighton, Leicester, Roach Smith, Bury, Penrose, Stow, J. G. Hurlstone, Crofton Croker, W. Wyon, Thos. Smith, H. Roberts, T. G. Hall, Murray, Maclure, Knowles, Pettigrew, Williams, Good, jun., R. Forster, S. H. Christie, J. Bellamy, G. A. Burns, C. B. Greenough, John Bell, C. Fowler, jun., Butcher, J. Pennethorne, Fenton, John Davies, C. Eales, Salvin, jun., G. L. Taylor, Goodridge, H. Howell, Norton, &c.

The Engineers' Conversazione.—Mr. Cubitt, F.R.S., as president, received a very numerous party at the Institution, on the 27th, when numerous models and works of art filled every corner of the house. H.R.H. Prince Albert was present.

Lord Lonsborough's Conversazione.—On the 21st, the Earl and Countess of Lonsborough opened their house in Piccadilly to a large number of guests, amongst whom art, science, and literature were all worthily represented. While Lord De Grey's evenings are distinguished by collections of drawings and works of fine art, and the president of the Engineers' soirées by models and inventions, Lord Lonsborough gives a peculiar feature to his rooms by collections of rare antiquities and objects of vertu.

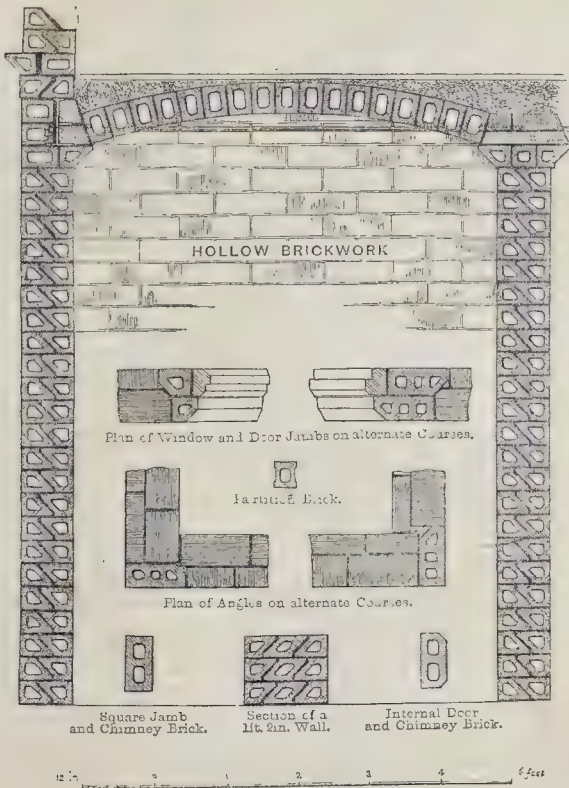
Lord Rosse's Third Conversazione will be held on the 31st inst. The second (on the 17th) was very numerous attended.

The Conversazioni at the Society of Arts have been well conducted and very fully attended. On the 28th, the rooms were crowded, and there was a very interesting collection of objects of interest.

The Lord Mayor's Conversazione.—The Lord Mayor and Lady Mayoress have issued cards for a gathering of literary, artistic, and scientific men, both foreign and domestic, on the 4th of June.

PRINCE ALBERT'S MODEL HOUSES.

MR. ROBERTS, ARCHITECT.



THE MODEL STRUCTURE PLACED BY THE "SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES," IN THE GREAT EXHIBITION.

PRINCE ALBERT'S MODEL HOUSES.

AND THE MODEL STRUCTURE PLACED BY THE "SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES," IN THE GREAT EXHIBITION.

To make our illustration of the model houses erected in Hyde Park complete,* we now give an external view of them, and to elucidate the hollow brick construction, as patented by Mr. Roberts, we add a sectional view of one compartment of the model structure placed by the "Society for Improving the Condition of the Labouring Classes," in the Exhibition of the Works of Industry of all Nations.

The structure will be found by those who would seek it, on the north side of the building, towards the west end, in class 27. The bricks used in it, we may say, are from the following places—the straw-coloured from Aylesford, near Maidstone; the red from the Buxley Works, near Esher; and the glazed, of a grey tint, in the central compartment, were made by Mr. Seagar, Vauxhall, of a clay from the North of Devon; the light-coloured glazed at the Staffordshire Potteries.

The section is also illustrative of the construction adopted in Prince Albert's Model Houses,—the span of the arches being there increased over the living rooms to 10 feet 4 inches, with a proportionate addition to their rise. The external springers are of cast iron, with brick cores, connected by wrought iron tie rods.

The advantages derivable from the use of hollow bricks are, dryness and warmth, as well as economy of construction—considerations which recommend them as a preventive of the evils that result from the absorption of moisture by common bricks and other porous materials.

For agricultural buildings, and for inclosure, park, or fence walls, they are particularly adapted, as well as for the ordinary dwellings of the labouring classes, for schools, and for houses generally of moderate height, and with the usual weight of roofs and floors, rendering internal battening unnecessary. Their strength may be adapted to circumstances, and where necessary be rendered equal to that of solid bricks.

When used for partitions, or for roof and floor arches, they are fire-proof, deaden sound more effectually, and are considerably lighter than solid brickwork. As a lining to stone or flint walls, they supersede the necessity for battening, and the consequent risk of fire and dry rot is avoided. For cottage floors they are also well adapted.

By the form adopted in the patent hollow brickwork, a perfect bond, running longitudinally through the centre of the wall, is secured; all headers and vertical joints, passing through it are avoided; internal as well as external strength is obtained; and every facility given for the fixing of floor-plates, and other timbers; whilst, by the parallel longitudinal cavities, ample security for dryness is afforded, and great facility presented for ventilation, as well as for the conveyance of artificial heat, and for the transmission of bell-wires, and pipes.

When passing through the machine, or in the process of drying, any number may be readily played at the ends for gables, or marked for closures, and broken off as required.

* See p. 311, ante.

in use; or they may be perforated for the purpose of ventilation. If nicked with a sharp-pointed hammer, they will break off at any desired line; and the angles may be taken off with a trowel as readily as those of a common brick.

The bricks for the quoins and jambs may be made either solid or perforated; and with perpendicular holes, either circular, square, or octagonal, those in the quoins may be so arranged as to serve for ventilating shafts. Stone will be found equally applicable for the quoins and jambs, and the appearance of the work be thereby improved. Hollow bricks may be made, with any good tile machine, in the same manner as ordinary draining pipes, and at about the same cost in proportion to the quantity of clay contained in them. They are more compressed, require less drying, and with much less fuel are better burned than ordinary bricks, even when waste heat, or that in the upper part of the kiln, only is used.

The saving in brickwork effected by the use of the patent bricks, when made at a fair price, is said to be from 25 to 30 per cent. on their cost, with a reduction of 25 per cent. on the quantity of mortar, and a similar saving on the labour, when done by accustomed workmen. The process of drying is much more rapid than in common brickwork, and the smoothness of the internal surface of walls built with the patent bonded bricks renders plastering, in many instances, quite unnecessary, whereby a further saving is effected not only in the first cost, but also in the subsequent maintenance. If glazed on the outer face, as may be done with many clays, a superior finished surface is obtainable without plaster.

THE ARCHITECTS' BENEVOLENT SOCIETY.

We have before now urged upon our readers the claims of this association on their support.

Such a society, carefully framed and frugally administered, should especially recommend itself to the favour and support of those whom the successful pursuit of their profession has enabled to afford their sympathy and their brotherly assistance to less favoured fellow-labourers in the same field. Even to those whose pecuniary means are moderate, it will be a source of satisfaction to know and feel that by an annual sacrifice, so small as scarcely to be inconvenient to them, they may supply the means of dispensing most valuable and effectual relief.

Literary men, artists, and many other classes and professions, dependent for their livelihood on profits of uncertain attainment and precarious tenure, have formed themselves into societies of this nature with the happiest results; but Architecture, the eldest sister of the Fine Arts, has yet to be moved to associate in this good work. She has had the good fortune to be made subservient, in many noble monuments of piety and charity, to the benevolence of others: it is time that she should give proofs, in her corporate character, of the same beneficent spirit. No society, framed on these principles and specially devoted to the interests of the architectural profession, had been established; and it was in order to remove this reproach that the present society has been formed. It needs only a slight acquaintance with the profession to satisfy us that such an institution is urgently required. The frequency of private applications for individual relief too certainly proves its necessity, and the sad experience, which brings too often under our notice the struggles of genius and talent with undeserved misfortune, forces upon us the necessity of soliciting the co-operation of the profession.

It is proposed to found the Architects' Benevolent Society on the most liberal basis. Although a preference seems to be due to those who have contributed to the funds of the society, it is not proposed to incorporate into its regulations any such indispensable condition of assistance. A case of real distress, combined with a fair moral character, is to be the sole recommendation.

In the mode of administering relief, and of

inquiring into the merits of each application, no needless exposure of the name or circumstances of the applicant will be permitted. A limited number of members, forming a council of management, chosen by the great body of subscribers, will be charged with the duty of conducting such inquiries.

The amount and character of the relief to be administered must, of course, depend on the means placed at the disposal of the society. That such means may be large and liberal is our earnest hope and sanguine expectation.

Although it is on the architectural profession throughout England that the establishment and success of such a society must mainly depend, we are not without a hope that it will find friends in other quarters. Architecture, ancient and modern, has lately attracted a very remarkable degree of attention and interest among the lovers of art for its own sake, who have prosecuted the study of it, of its history, of its development, and its varied features, with a zeal that has needed not the stimulus of professional emolument.* Earnestly we plead the cause of this infant institution.



"Except the Lord build the house, their labour is but lost that build it."

THE LATE FATAL ACCIDENT IN GRACECHURCH-STREET.

CAST-IRON IN CONSTRUCTION.

HAVING had considerable experience in smelting and the manufacture of iron in all its branches—both wrought and cast-iron—I beg, as an impartial man, to offer the benefit of my experience, and to direct attention to facts of which I was an eye-witness, and which induce my opinion that it is impossible to place reliance upon the testing of cast-iron. What is found sufficient under one set of circumstances, is totally inadequate in others. It is affected by so many causes, frequently of the most subtle description, and is liable to so many imperceptible faults as to render it unfit

* The following are the rules of the society:—

1. That the object of the society be limited strictly to benefit those engaged professionally in all branches connected with architecture, excluding only such as have in any way been engaged in, or are deriving emolument from the executive department.
2. Annual subscribers of one guinea, or donors of ten guineas in one donation, to be members, whether professional or otherwise, and will be entitled to vote and take part in the proceedings at the general meetings, and in the election of officers and councils.
3. The president, treasurer, and honorary secretary, to be elected annually by the general body of the subscribers at the annual general meeting, and to be *ex officio* members of the council.
4. The trustees to be elected by the members of the society at their first general meeting, and to be *ex officio* members of the council.
5. The council to consist of not more than fifteen, nor less than twelve members, exclusive of the president, treasurer, trustees, and honorary secretary, and to be elected at the annual general meeting, one-third of whom are to go out in rotation, but are eligible for re-election.
6. The council to be empowered to appoint the assistant secretary, and such other officers as they may find necessary for the efficient working of the society, and to fix their salaries and remunerations.
7. The council to inquire into the qualifications and merits of the applicants for relief, being guided therein by the rules and bye-laws of the society, and to regulate and control generally the affairs of the society.
8. The qualification of a candidate for relief shall be the attested fact that he has been duly educated in an architect's or surveyor's office, or that he has produced any valuable invention or any work of art, useful to the profession.
9. Subscribers to the society to have in all cases a preferable claim to relief.
10. Two auditors to be appointed at the annual general meeting. A detailed statement of the accounts, when audited, to be delivered annually to every member.
11. An annual general meeting of the society shall be held on the second Wednesday in March, for the purpose of receiving a report from the council; for the election of officers; and for the general purposes of the society.

to be depended upon for the strength of buildings, though a good material for many purposes—especially of light and ornamental character—when judiciously used. In casting very large and solid masses, it is impossible to get the metal into the mould exactly at the same instant all over, and consequently to preserve an equality of temperature in all parts during the process of cooling.

Now, as regards what I have witnessed, and my opinion as to what might probably be the cause of the accident in Gracechurch-street: I managed the Cleve Hill Ironworks for a number of years, in the course of which time we had many heavy castings to provide for the use of our new works. Amongst these was a roll-bed of great weight and strength, in the form of a large picture-frame. I cannot state its exact weight: it was from 9 inches to 1 foot wide, and from 7 to 9 inches deep or thick outside, with a bevel inside like a picture frame.

The component parts of this casting were—equal parts of Old Park, Lylleshall, and Cleve Hill pigs—with two or three charcoal tough pigs—which was our custom. This casting was a great weight, about the substance described: it was cast about the month of October: it lay in the hot sand three or four days to cool: it was then taken out and dressed, and was an excellent casting: it was removed about 100 yards from the forge-doors: it remained there for three weeks and a day, or three weeks all but a day, I cannot say which, when I saw three gentlemen sitting upon it—a light warm shower of rain drove them away. In about half an hour afterwards I was in the same place again, and hearing a great report like a cannon, my eye caught a large portion of the casting in question leaping, or as if hurled away a distance of four or five feet from the other part. One of the angles was completely removed, so that two sides were broken at the same instant. When examined not the least flaw or crack could be discerned, but, on the contrary, the edges which had burst asunder were clear and clean, and the iron was of as good a grey quality as a man could desire to see. It was broken from some unknown powerful action, some chemical process aided by air and moisture, inducing contraction or expansion.*

The accident was so unaccountable by ordinary causes, that had I not witnessed it as I did, we should have offered a reward, under the conviction that it must have been broken maliciously.

It is worthy of remark, that this cast had no flaw whatever in it; and I have known many instances of castings in which flaws were visible enduring test, and proving stronger than others of the same form and weight which were altogether free from apparent blemish.

I slightly examined the broken girder at the incident in the City, and am disposed to think, that when the wet concrete was put on, an effect somewhat similar to the shower of rain in the instance referred to, might have produced the unfortunate result, without reference to the weight put upon it, since what happens in one instance may occur in others, and, as I conceive, is liable to all, more or less, according to the quality of the iron, and the circumstances attending its use.

The above facts clearly prove that testing cast iron, in the way so much talked of, is not to be relied upon.

JOSEPH GEORGE.

Another correspondent says,—“I feel assured that the accident resulted from the operation of ballasting or concreting the roof, and which was effected by hoisting the concrete in barrows, and wheeling over the slight girders thus creating vibrative action, each loaded transit not only shook every joint of the green brickwork, but had the tendency to act wedge-like, at each deflection, which, added to the expansion of the concrete, no doubt snapped suddenly one or more of these slight girders, thereby their ends acting as levers in the brickwork, prizing the whole of it inwards in the direction shown by its fall.”

H. H. R.

* We have seen vessels of cast-steel split in much the same way, without any observable change even of temperature at the moment.

PALACES AND SENTRY-BOXES.

UNDER this title a weekly publication* has given insertion to some satirical remarks with respect to the paltry wooden boxes for the sentinels which have been stuck up at the new entrance gates to Buckingham Palace. "Was not a single architect," it is asked, "or other artist to be found capable of designing so very simple a matter as a mere sentry-box? Could not even the School of Design furnish an idea for something that would not positively disgrace the chief entrance to a royal palace?" It will, perhaps, be said that these wooden affairs, mean and ugly as they are, are but trivial blemishes, and that no one is obliged to notice them. True: yet why should there be any blemish of the kind, or a speck of meanness at all? More especially as such meanness is perfectly gratuitous, and amounts to a display of paltriness and deformity for the nonce, where there was opportunity for exhibiting something both novel and ornamental. Recesses for the sentinels might easily enough have been formed within the piers themselves, and greater importance and significance been given to the latter, in consequence.

We shall, no doubt, in due time behold our wonted ligneous configurations for sentinels figuring offensively as well as defensively at the new gates of the British Museum. What occasion there can be for sentinels there at all, when there is to be railing, or for railing if there are to be sentinels on guard, it is difficult to discover.—ZETA.

ARTISTICAL AND OTHER INTELLIGENCE FROM ABROAD.

Dresden.—*Art honouring Literature.*—Baron Gutschmidt has erected here a house in the Venetian style, as a commemoration of the jubilee of Goethe's birthday. A memorial tablet graces the front, whereon the dates of the poet's nativity, &c., and the well-known verses—

"Knowest thou the land!"

are engraven. A fresco representing Mignon at the feet of the harpist, painted on gold ground, graces the façade of the house, whose numerous balconies, commanding the river, raise a recollection of the Lague city. Baron Gutschmidt is also the builder of the fountain near the Post, a towering structure in the Gothic style. Having contributed so much to public contentment, the worthy baron lives in a little room, quite retired and economical.

Hamburg Art-Union.—The Kunst-Verein of this commercial city opened their eleventh annual exhibition on the 17th of April, in the great saloon of the arcades of the *Echange*,—a most cheerful and cheering combining of the useful and beautiful. The catalogue comprises 158 subjects, amongst which are nine pieces of sculpture, all made by men of Hamburg. A Calame, of Geneva, has exhibited some surprising Swiss scenery,—the top of the Jungfrau, with ice resplendent in the morning sun. By Louis Asher there is a cartoon from the play of *King Lear*.

The Great Fountains of Versailles.—The extensive work of repair on the aqueducts, the reservoirs, the pipes, and the basins of the *Parterre d'Eau* of the Parc of Versailles are nearly completed, having been begun nearly a year ago. The Municipality intend commemorating the completion of the work by a festivity. Ulterior work will be yet undertaken concerning the distribution of water from the machine of Marly.

Paris.—*London Impulses.*—Colonel Morin, director of the Conservatory of Art and Trades in Paris, is putting up a steam-engine in the adjacent church of the former convent, for imparting movement to the many engines and machines in the Museum, which, hitherto, could be but half studied and understood for want of motion. The restoration of the ancient refectory, built by Pierre of Montreuil, is now being completed in the *Musée*. It was he, also, who built the Sainte Chapelle in the Palais de Justice, in the reign of Saint Louis. The refectory will present all the ancient

paintings, gildings, sculptures, and illuminations (*enluminures*). It is in these ornamented spaces, that the fine library of the Conservatoire will be placed. A new entrance also in the Rue St. Martin has been constructed, as well as a new building for the amphitheatre of the Schools of Design, Geometry, and Mathematics. In the great Museum an ornamented entrance has been made opposite the huge staircase, considered the finest in France. As the impulse for exhibition is at its highest acme, the *Garde-meuble* magazines, formerly the repositories for regal furniture, &c., have attracted notice. It seems that an inventory thereof had been printed in 1791, and many bronzes, pictures, &c., surrendered to the public collections; still, there are, at present, "preserved in coarse sacs, placed on shelves of equal coarseness, the insignia of Charlemagne; the crown, the sceptre, &c." Considering the rarity of art-objects of the Carolingian period, these things ought to be placed elsewhere, according to the opinion of the French press.

Industrial Museum, Paris.—The London impulse extends rapidly and progressively. The Palais de la Bourse, although of huge dimensions, has become, of late, insufficient for its many usages, and the Chambre and the Tribunal du Commerce were much in want of room for their library, &c. All this will be now remedied by the occupation of the Hotel des Commissaires-priseurs, at the corner of the Rue Notre-Dame-des-Victoires, which the Chamber of Commerce and the Common Council of Paris have conjointly purchased for the sum of 400,000 francs. As the ground-floor of this building contains a great saloon, an Industrial Museum is to be formed, destined to receive collections of all foreign produce, which would thus become an object of study in the most central part of Paris.

NOTES IN THE PROVINCES.

WROXHAM Church has recently been repaired and restored to some extent. Four of the old wooden framed windows have been replaced in stone, at the cost of Mr. E. W. Trafford, who has also filled the tracery of the large west window in the tower with painted glass by Wailes. Mr. Blake Humphrey, Mr. W. Burroughes and others have also contributed ornamental and useful works.—The Roman Catholic Chapel at Witham, lately founded, is from a design by Mr. D. C. Nicholls, of York-terrace, Camberwell-road, in the pointed Gothic style. It is to consist of a nave and chancel, the former 55 feet in the clear by 22 feet, with a height of 30 feet 10 inches to the roof in the centre; and the chancel 15 by 14. The main entrance will have a porch of carved stone. The chapel will accommodate 200, and the cost will be 665*l*.—The sea had lately encroached so much on the high road from Worthing to Lancing, on the Sussex coast, that the road has become almost impassable, and it has been necessary to change the route of the mail.

A new church, to be dedicated to St. Stephen, was founded on Tuesday in last week, at Tunbridge. It is to be in the early English style, with an open roof, and consist of a nave, chancel, south aisle, and tower at south-east corner; a north aisle being intended to be erected at a future time. The nave will be 72 feet by 24 feet, and the south aisle 82 feet 6 inches, by 15 feet 9 inches; the tower 20 feet square at the base, with organ loft and spire, the extreme height of which will be 128 feet. The walls will be built with rag stone, lined internally with dressed facings of sandstone from Southborough quarry. The building will stand due east and west. Mr. Ewan Christian, of Bloomsbury-square, is the architect, and Mr. John Vincent, of London, clerk of works. The contract for the covering in of the roof has been taken by Mr. George Punnett, of Tunbridge, for 2,037*l*. 2*s*. 5*d*., but the whole cost of the building, when completed, is estimated at 3,500*l*. The amount contributed before the laying of the foundation-stone was 2,165*l*. 9*s*. The ground for the site, one acre of land, has been given by the Rev. C. Hardinge, with an additional half an acre adjoining for the erection of a parsonage

house, as soon as the funds will admit of it.

—It is now said that the tower of Sherborne Church is so unsafe that great apprehension is entertained that it may give way at once. The church has therefore been closed. A sum of 800*l*. is said to be requisite for extra scaffolding on this account. At a recent vestry it had been announced, that for the repair of the central part of the tower, and the whole of the arches of the tower and nave, Mr. Staples was willing to make a contract for 3,500*l*., which sum has since been realised, but as the original estimate for repair of the church has mounted from 5,000*l*. up to nearly 20,000*l*., there is some fear of the work not being finished very soon. The committee, it is said, wish to appropriate a sum of 500*l*. set apart for external repairs towards the extra scaffolding said to be necessary.—A few weeks since the directors of the Bristol Athenæum advertised for plans and estimates for a new building intended to be erected for the uses of the Athenæum: we hear that upwards of twenty architects have forwarded competition designs, which are now exhibiting in the Athenæum Reading-room, Corn-street. The prizes to be awarded are, 20*l*. for the best design, 10*l*. for the second, and 5*l*. for the third best design. There is also exhibited a wood model for an Athenæum.

—A school for children of both sexes is in progress of erection at Kidderminster. The building is from an ornamental design of old English character, by Mr. Christian, but it is not intended to carry out the design in its entirety at present—the portion drawn for an infant school being still untouched. The building is of brick, with stone dressings, and a high pointed roof, surmounted by a wooden cupola. The two school rooms are each 40 feet by 18 feet, and are separated by a moveable partition. As a part of the style, and for the purpose of obtaining a great height for the school rooms, the roof will be an open one, and the principal timbers exposed.—The foundation stone of St. George's Church, Darlaston, was laid on Wednesday week. It will be of Brewood-stone, in the early English style of architecture, and consist of a nave 69 feet by 22 feet, north and south aisles, 69 feet by 13 feet each; chancel, 18 feet by 17 feet; a robing-room on the north side of the chancel, a south porch and a tower and spire at the north-west angle. The church will contain accommodation for 473 adults, 321 of which will be free sittings, and there will be 200 for children. The estimated cost of the whole, including a fence wall round the church-yard, is about 3,000*l*. The funds for the erection were obtained by grants from the Lichfield Diocesan Church Building Society, The Incorporated Society for Building Churches, Her Majesty's Church Building Commissioners, the Ecclesiastical Commissioners, the late Sir R. Peel's Fund, the Memorial Fund of the late Sir R. Peel, and a remainder through private subscriptions. Messrs. Johnson and Son, of Lichfield, are the architects, and Messrs. Higham, of Wolverhampton, the builders.—The guardians of the Leicester union have accepted a tender to light the workhouse with gas for 10 years, at 2*s*. 9*d*. per 1,000 cubic feet.—The number of visitors at the new Corporation Baths, in Kent Street, Birmingham, continues to increase daily. Last week it was stated that there had been 3,000 up to the afternoon of the fifth day; on the twelfth day the total amounted to 10,352, arising from each class as follows:—swimming baths, 8,374; first class mens' warm baths, 940; second class mens' warm baths, 618; second class cold baths, 173; first class cold baths, 73; female department, 274. During the three hours they were open on Sunday morning, no fewer than 874 bathers paid for admission. The total receipts had reached 125*l*.—The parsonage to the newly-built Christchurch, Frieze-land, Saddleworth (Mr. George Shaw, architect), has just been completed, together with schools and masters' house in same style—that of Edward II.—Several farmers at Croston have lately bored artesian wells, and they find water in abundance at the depth of 63 feet. About nine feet below the upper surface is clay or marl; and after the boring is complete, an

* "The Mirror of the Time."

iron tube of about three or four inches in diameter is inserted as far as the clay, when the water rises through the tube, and affords the copious supply of about 90 gallons per hour of pure spring water. The tubing is of little cost, and the whole work does not take more than two days.—It is intended to build a new workhouse for the Ormskirk Union at a cost of about 4,500*l*.

—The successful competitors for the 50*l*. prize offered by the town council of Stockport for the best plan for a new market-house, has been awarded to Mr. J. Stevens, of Macclesfield, and Mr. G. B. Park, architects.—The foundation stone of a new Dominican convent has lately been laid at Woodchester, by Mr. William Leigh, of Woodchester Park, near Stroud.—A new Primitive Methodist chapel is about to be erected at Burnley. It will be 57 feet by 48 feet inside, with a gallery, and a school-room underneath, of same dimensions: estimated cost, including cost of land, &c., about 2,000*l*.—During the last twelve months upwards of six hundred dwelling-houses have been erected in Preston, and the local *Guardian* says, that judging from the extensive preparations that are being made on all sides, it is more than probable that a much larger number will be built during the present summer. Nor does the supply seem likely for some time to come to equal the demand, especially in cottage property, for houses of that class are frequently let before the brick-work reaches the first floor. Cottage rents have for some time past been advancing in all parts of the town.—A working builder, at Preston, complains of a humiliating evil which ought to be remedied in more places than Preston: he says, in allusion to an arrangement of ten years' standing, that work should be left off on Saturdays at 4 p.m.—"We are kept at the offices of some of the most respectable builders so long that we appear more like beggars at a soup kitchen door than respectable mechanics;" thus not only placing them in a humiliating position while waiting for money, not their masters', but their own—and well and hardly earned, too, beforehand, but wasting the few spare hours devoted to economical marketing on the part of their wives, and to leisure or reading on their own.—The public baths erected at Preston were inaugurated on Thursday week, by the mayor and corporation. The total number of baths, when completed, will be 63,—16 first-class and 31 second-class for men, and eight of each class for women. There is also one large plunge bath, fitted up with separate dressing-rooms. There will be 38 separate compartments for washing. The bath-rooms occupy a space of 302 square yards, including the passages and entrances to each. The total length of piping in the establishment is 8,500 feet, and the whole has been fixed, together with about 350 valves, since March last. Mr. Armstead was the builder: the boilers and iron mains were supplied by Mr. Clayton; and the zinc baths and connexions with the iron mains have been executed by Messrs. Melling, of Rainhill.

THE NORTHAMPTONSHIRE ARCHITECTURAL SOCIETY.

THE annual spring meeting of this society was held at Coventry on Wednesday week, in conjunction with the Warwickshire Archaeological Society. The meeting took place in St. Mary's Hall, and was numerously attended, by ladies as well as gentlemen. Beside various other interesting objects, numerous Roman, Romano-British, and Early Anglo-Saxon remains, mostly sepulchral, were exhibited by Mr. Bloxam, who read an interesting paper on such remains as were recently discovered in Warwickshire. Mr. C. H. Bracebridge, who occupied the chair, delivered the opening address. The Rev. W. Staunton read a paper on "The Priory and Conventual Church;" and the Rev. G. A. Poole another on "The Churches of Coventry" generally.

Mr. Poole regretted that a city such as Coventry had not been more fully illustrated. Of the Cathedral, he remarked that what remained, and which he took to belong to the north transept, was inferior to Lichfield. In

alluding to the modern church attached to the ancient spire of the Grey Friars, Mr. Poole protested against the attempts to deprive Rickman of his reputation as the father of the architectural spirit of our day. St. John's Church was consecrated in 1350. It was commenced in 1344, but the style of the clerestory showed that the whole of that part was not completed till at least fifty years later. The chance of Trinity Church is Late Decorated; the rest Perpendicular; the ground plan cruciform. It contains a good Perpendicular font. The most ancient part of St. Michael's was the south porch, which was about the date of 1230. Next came the south aisle, about 1340. The steeple was begun in 1373, and finished in 1395. Two years ago it was a wilderness of galleries and monstrous incumbrances. Now it had been well cleared out, and the pillars freed from the coats of paint with which they had been covered. Until lately the apse was choked with old churchwardens' atrocities. Now churchwardens were made of better stuff. St. Michael's has always been reckoned the largest parish church in the kingdom. With all its beauties, however, it had many faults, among which one of the principal is that the ground-plan has hardly two parallel lines. The additional south aisle is cut in two by the porch. The exterior is devoid of any striking character, always excepting the tower and spire. The spire is without a superior in England. Its needle-like form springs up without obstruction from crockets or entases. The next most beautiful spire is that of Louth; but it is crocketed, which takes away from the appearance of height. Coventry was finished 135 years before Louth. Mr. Poole added, that he was a boy when he first saw the spire of St. Michael's, and it affected him to tears. He had not thought of architecture for many years after that, but it was possible that it was that "vision of loveliness" which first implanted in him that love for the pursuit which had led him to devote to it every hour which could be spared from more important duties.

Votes of thanks having been carried and acknowledged, a large party assembled in St. Michael's Church, where Mr. Poole pointed out its principal characteristics. Thence they proceeded to the remains of the White Friars, and inspected its ambulatory and dormitory. It is now occupied as a poor-house.

At six o'clock an ordinary for the occasion, at the "King's Head" Hotel, was attended by about forty guests.

An excursion to Kenilworth and Warwick Castle took place on Thursday, the Rev. C. H. Hartshorne undertaking to lecture on the buildings on the spot.

IRISH ARCHITECTURAL AND OTHER WORKS.

TWENTY-THREE agricultural model schools are to be erected by the Commissioners of National Education, according to the drawings furnished by their architect, and they will be distributed as follows:—Ulster eight, Munster ten, Leinster two, Connaught three.

The Ecclesiastical Commissioners intend having sundry works executed at the church of Knocknumackly, county Down, and are receiving proposals for same.

The tunnel under the Blackrock-road, on the Cork and Bandon Railway, is so far advanced that trucks run through it to the Cork station; and the Goggins Hill tunnel, 1,000 yards long, is bored through. The ribs of the metal arch over the fourth and last span of the Chetwynd Valley viaduct have been fixed on the piers: the superstructure of cast and wrought iron weighs 1,000 tons: there are four spans of 110 feet each, and the arches rise ninety feet over the mail-coach road.

The Dublin graving dock, lately commenced, will, it is considered, circulate from 80,000*l*. to 100,000*l*. among the local tradesmen.

Upwards of 800 men are stated to be employed upon the extensive works of the Waterford and Limerick Railway by the contractor, Mr. Dargan.

Two additional buildings, to accommodate 600 paupers, are to be erected on the work-

house premises at Thurles, and a fever hospital is to be built on the ground at the rear of the present building. The drawings, &c., have been furnished by the architect to the Poor Law Commissioners.—Mr. Wilkinson.

The old lunatic asylum at Cork is to undergo a course of alterations, for the purpose of converting it into a cavalry barrack.

The works on the Londonderry and Coleraine Railway are progressing. The mound across Rosses Bay is considerably advanced.

The report of the Ecclesiastical Commissioners states that a sum of 2,030*l*. has been applied to complete the rebuilding of St. Nicholas and Ballymodan churches, in the diocese of Cork; also Ramoon and Croagh churches, in the diocese of Limerick. The new church of Achill was erected by private subscription, the Commissioners contributing 200*l*. The church of St. John, at Limerick, is being rebuilt, and is intended to accommodate 1,000 persons. A new church in the parish of Guilcagh Lismore, is in progress of erection: the cost will be 1,200*l*. contributed by the Marchioness of Waterford: the Commissioners' architect made the drawings. Grangeorgan church, in Dublin, has been enlarged at an expense of 357*l*.

The churches of Ballywater, Dentrileague, Lambeg, and Billis have been constructed to accommodate about 600 each, and have been erected by private subscription.

The board of guardians of Clonmel Union have determined upon the erection of a new workhouse, and are receiving proposals for the execution of the works according to the drawings of the architect to the Poor-Law Commissioners.

The contract for the alterations lately made to Maynooth College amounted to 23,500*l*.; for drains, excavations, &c., 1,775*l*.; extra work, 834*l*.; incidents, 25*l*.; besides the sum of 5,728*l*. 17*s*. for alterations, additional accommodation and maintenance of the apartments for president, vice-president, professors, and resident officers, students' rooms, the several halls, chapels, dormitories, kitchens, &c.

The trustee chapels of Newbliss, in the parish of Kileeven and Cushindon, in the diocese of Connor, have been erected by private funds.

The Catholic Church Committee of Wexford are prepared to receive proposals for the erection of the walls of two churches in that town.

The contractor for the viaduct over the river Boyne (fully described some time since in *THE BUILDER*) has not yet been decided upon by the directors of the Dublin and Belfast Junction Railway, although tenders for the execution of the works have been received from respectable parties more than three months since.

The Newry viaduct consists of eighteen arches, varying from 25 ft. to 40 ft. span, and some of the centre ones are between 80 ft. and 100 ft. above the stream that runs underneath.

The Commissioners of National Education intend erecting twenty-three model agricultural schools, which are to be distributed as follows: in Ulster, eight; Munster, ten; Leinster, two; Connaught, three. The drawings for the same have been furnished by the commissioners' architect.

The Banbridge Gas Company intend erecting new gas buildings, manager's and retort houses, according to drawings furnished by Mr. Thomas Jackson, architect, of Belfast.

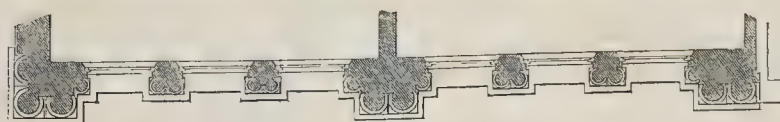
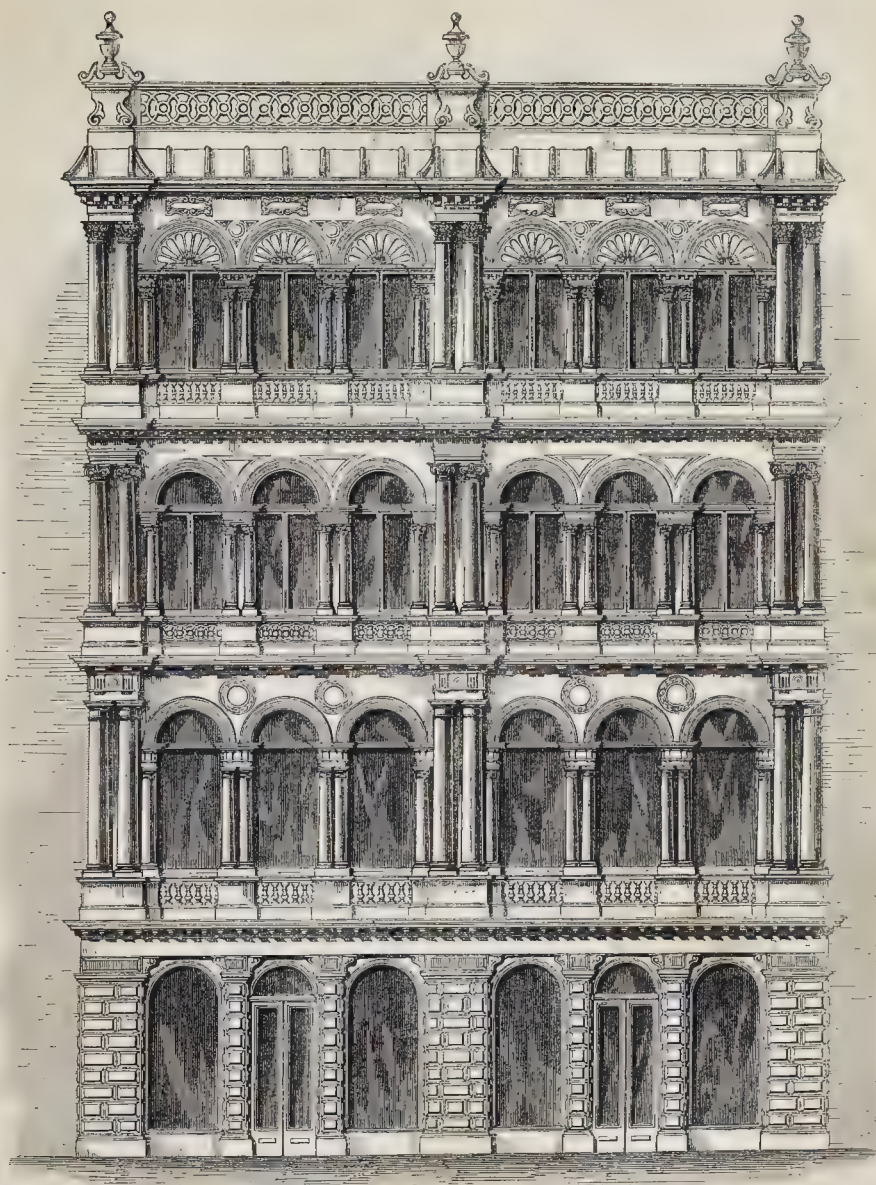
Mr. Andrew Egan, of Tuam, has been declared the contractor for the new workhouse at Glennamady, at 5,600*l*. He erected the Mount Bellew Workhouse.

STREET ARCHITECTURE IN MANCHESTER.

To show our readers what is being done in the provinces, we give an engraving of the elevation of a house just now built in market-street, Manchester, Messrs. Starkey and Cuffley architects. The front is wholly of stone. A greater height in the ground story and less equality in the height of the other stories would have improved its effect.

SHOP ARCHITECTURE IN MANCHESTER.

MESSES. STARKEY AND CUFLEY, ARCHITECTS.



PLAN OF FRONT WALL.

MATERIALS OF PROJECTING EAVES :
METROPOLITAN BUILDINGS ACT.

OBSERVING that the communication published in your paper of the 17th inst. on this subject is unnoticed in your last issue, and is calculated to mislead, I will venture to state my opinion, that the point settled, as referred to in this case, and to which you have doubtless contributed, is that "projecting eaves" are not "cornices to overhanging roofs," within the meaning of the Act, and consequently are not "parts of external walls" (as has been held), and not liable to the rules in Schedule K, but are "parts of the roofs," and as such, under the rules concerning roof coverings, Schedule G, must be covered with slates, metal, or cement, &c.

This surely is highly proper, and cannot be a hardship in any case: it has been my practice, and that of several others, for years past in the suburban metropolitan districts (where this has ever been a vexatious question), and I am not aware of complaints: on the other hand, I think soffits of match boarding should not be allowed, and are clearly, as Mr. Collis says, contrary to the Act; but his information could not, I suppose, be entertained at the Board, being laid under Schedule E, instead of Schedule G.

A DISTRICT SURVEYOR.

RAILWAY JOTTINGS.

A NEW project is about to be started for the construction of a great central station at Smithfield, with extensions to it from all the great metropolitan lines. The proposed capital is 3,000,000*l.* It is estimated that the undertaking will yield an income from all sources of 892,187*l.* and deducting 92,187*l.* for working expenses (rather a small proportion according to Herapath) there will remain a profit of 300,000*l.*, or 10 per cent. on the capital invested.—The Liverpool goods station of the London and North Western line has been recently covered in to the extent of about double the previous area, to accommodate the immensely increased traffic.—On the 1st inst. an express train commenced to run from Aberdeen to London, *via* the Scottish Midland, Scottish Central, Caledonian, and North Western lines, in less than 17 hours. The distance is 542 miles, which gives an average speed of 32 miles an hour. But from this have to be deducted 40 stoppages, averaging 5 minutes each, amounting to 8 hours 20 minutes; so that 13 hours 34 minutes was the time in which the train was actually in motion. This gives a velocity of fully 40 miles an hour.—The York, Newcastle, and Berwick Company are said to have had a clause introduced into a recent Parliamentary Bill of theirs, authorising the company to reduce the speed of "cheap trains" from twenty to twelve miles an hour. It seems to be considered that time is "of no consequence" to those who cannot afford to pay high fares, whereas it is precisely these to whom time is, in most cases, vitally valuable. A man with independent means could afford to journey leisurely, and to defray the increased expenditure incidental to lengthened delays, but it is far otherwise with the usual occupants of "cheap trains," and such checks on speed as those just alluded to, can only tend to re-contract the public habits of locomotion within the narrow limits of the old jog-trot coaching system, and to render "cheap trains" themselves profitless to the companies, because useless to the public.—More serious accidents have occurred since the recent one in the midst of a tunnel. On Tuesday, in last week, a fatal one took place at another tunnel, that of Clay Cross, in much the same circumstances, one train being delayed and another running into it shortly after. The want, or at least neglect, of signals in such cases is something strange. If tunnels present obstacles to the working of one class of signals, why are not others adopted? A correspondent of a contemporary suggests the erection of two signal posts at each end of the tunnel, one close to the entrance and one as far distant as can be conveniently obtained, the whole of them to be turned at once by a powerful

lever or any other mechanical power (not worth elucidating to practical men) placed every forty or fifty yards' distance through the tunnel. We can see no difficulty even in the arrangement of signal lamps in connection with such posts, and worked by the trains themselves in passing, so as to show, with the help of a few wheels and weights, and by the lowering and raising of the lamp, or otherwise, the precise time up to half an hour or even a whole one, since the last train had passed through the tunnel; and in cases of detention in the tunnel or after passing through it, such signal might be temporarily arrested so as to give warning of the detention or stoppage of the train. In the recent case at Clay Cross, most of the passengers of an express train were more or less seriously injured, and several killed.—The masons employed on the Irish Great Western, near Westmeath, have struck work for an advance of wages from 18*s.* to 21*s.* a week. The line was to be opened on the 1st of August, and it is said that the workmen have taken advantage of this, and expect to compel the contractor, Mr. Dargan, to comply with their demand on that ground alone; but that they are likely to lose their "half loaf" in place of getting their "whole one."

MONTS DE PIÉTÉ FOR THE POOR.

YOUR correspondent "Quondam" no doubt has the good of society at heart, but he unfortunately falls into the common error of accepting prejudices for facts. He imagines that the French Mont de Piété is an excellent thing, and English pawnbroking a very atrocious one. Neither supposition is correct; and, whatever may be the faults of the latter, British enterprise is in this, as in nearly every other branch of commerce, far in advance of its continental neighbours.

Few things have been more exaggerated and misunderstood than the terms "profit" and "interest," as applied to pawnbroking. "Quondam" commenced his strictures upon this "grinding system of heartless exaction," by representing it to be 30 per cent. with *et ceteras*. In his last letter he moderates his tone, and curtails the rate of interest to 20 per cent. Yet even this is exaggeration: it is only upon a part of his loans that he receives that amount, while upon the remainder the charge is only 15 per cent. All round it would, perhaps, average 17½ per cent. It is the fashion to regard this charge as mere interest for the money lent: if it were so, I confess it would be enormous; but it is not. A Pawnbroker's money is lent out in small sums—frequently of a few shillings only—and the profit which he receives has to cover warehouse room, the labour and judgment of his servants, the special taxes to which his trade is liable, &c. If we adopt the case supposed in "Quondam's" second letter, of a poor man who is obliged to pawn his roomful of furniture, it will be obvious that, upon the most moderate computation, the warehouse room they would require is worth 6*d.* per week, and that the labour of taking them in, stowing them away, and bringing them out again when redeemed, would be considerable. Yet all that the pawnbroker would receive for the supposed loan of 5*l.* would be 1*s.* 3*d.* per calendar month (or about 3*d.* per week) and 4*d.* for the ticket. Although this is, perhaps, an extreme case, the principle holds good all through his business. The labour of his assistants is of a highly skilled class, and consequently expensive: they must be good judges of the value of all kinds of property, from a diamond necklace to a turn-up bedstead: they must be good clerks and accountants, and as they have unlimited access to their employer's till, they must be eminently honest and trustworthy. The services of such men are valuable, yet none of them can value, book, stow away, find, and deliver more than 100 pledges a-day. From this it will be seen that interest for capital forms but a part, and a small part, of the charge.

Another error into which "Quondam" falls is that of supposing pledges to be unconditionally forfeited at the end of a twelvemonth. It must be obvious that some limitation of

time is necessary, at the end of which, if a pledge is not redeemed, it must be sold. One year is the term selected for this purpose, not only in England, but on the continent. Yet even at the close of this period, if the pledger desires it, the pawnbroker must, without fee or reward, preserve the goods for three months longer. If it be still inconvenient to redeem, there is scarcely a pawnbroker who will not gladly hold it over for another twelvemonth upon payment of the arrears of interest. Supposing, however, that it is forfeited, the owner's interest in all pledges for 10*s.* and upwards is preserved to him, inasmuch as they must be sold by public auction, and the surplus, if any, rendered to the pledger upon demand. The reason that this rule has not been extended to the lower class of pledges is, that few of them would realise enough to pay the expenses of such a sale without trenching upon the pawnbroker's claim.

"Quondam" says that upon inquiry among his friends he cannot find any one who is aware that pawnbrokers calculate their rate of interest by half months. He forgets, however, that it is not *fashionable* to be well informed upon this subject. Not only is the interest so calculated, but the pawnbroker is bound under a heavy penalty to place a table of his rates of profit in a conspicuous part of his shop. "Quondam's" statements about ticket-money are calculated to mislead. There is no such charge where the loan is under 5*s.* One half-penny is charged where the amount advanced ranges from 5*s.* to 10*s.*, and above that sum they rise according to a graduated scale up to 4*d.*, which embraces all loans between 5*l.* and 10*l.* All these facts may be verified by reference to the Pawnbrokers' Act (39 & 40 Geo. 3, c. 99), a statute which not only imposes overwhelming penalties upon any infraction of its provisions, but affords the greatest facility for proving an offence, even to the length of compelling the pawnbroker, by the production of his books and tickets, to furnish evidence against himself.

In reference to the destruction of pledges by fire, it is undeniable that the pawnbroker suffers great hardship, but this is owing to the law of insurance under which the pawnbroker is debared from insuring anything more than his own advances and interest, inasmuch as neither he nor any other person is permitted to recover more than their own particular interest in the event insured against (14 Geo. 3, c. 48, sec. 3). Recent events have also shown that fireproof buildings are not an infallible protection to the goods deposited in them.

The Mont de Piété affords but little relief to the borrower, when compared with the free-trade system of our own country. As an instance of this I may mention that, during a visit to Paris in 1846, I felt desirous of investigating this subject, and, among other things, I visited a commissioner of the Mont de Piété, and pledged a gold watch (such as would cost from 18*l.* to 20*l.* new, but, as a second-hand article, would, "in trade," be worth about half that), a gold pencil-case, and signet-ring. Upon returning to London I pledged the same articles with an English pawnbroker. The following is the amount of the loans made in each case:—

	By Mont de Piété.	By English Pawnbroker.
Watch	80 <i>f.</i> (3 <i>l.</i> 4 <i>s.</i>)	8 <i>l.</i> 0 <i>s.</i>
Pencil and ring ..	10 <i>f.</i> (0 <i>l.</i> 8 <i>s.</i>)	0 <i>l.</i> 17 <i>s.</i>

Had I been in distress, it is pretty clear which system would have afforded me most relief.* Nor was the advantage of cheapness with the Frenchman, for I actually had to pay more for the small loan than for the large one! This arises from the commission-fees being the same for one month as for twelve. Thus, in the case of a loan of 100*f.* (4*l.*), the fees would be 3*f.*, and the interest for a month 75 c., making a total of 3*s.* English. In London, the charge for 4*l.* for one month would be only 1*s.*, and 2*d.* for the ticket; total, 1*s.* 2*d.* Of course, the commission-fees are only charged once, so that upon loans of long duration the French system is cheaper than

* It is only fair to say that, upon redeeming the goods, I explained my motives to the officer of the Mont de Piété, who then told me that, had I pressed for an advance, he would have let me have another 80*f.* on the watch.

the English, but for short periods it is dearer. The Mont de Piété of Paris also makes no loans of less than 3*l.*, and, therefore, according to its method of valuing pledges, it stands to reason that much of the poor man's property must be excluded altogether.

But the charges of the continental Monts de Piété vary. In some parts of France they are as high as 15 and even 18 per cent. In Brussels, the interest is 15 per cent. on small loans, and 12 per cent. on large, exclusive of commission-fees; and yet the net profits are very small.

In conclusion I may add, that the scheme which "Quondam" is now advancing is no novelty. A Bill for the establishment of Charitable Pawn Offices was, in the year 1843, brought before the House of Lords, and referred to a select committee, which, after careful investigation, reported unfavourably, and the Bill was abandoned. The pawn-brokers cannot suffer from such institutions, which would stand no chance if exposed to open competition; but it is only fair that the public should understand these things, and that their minds should be disabused from the misrepresentations with which this question is commonly invested. BARDI.

Books.

Instructions for Cleaning, Repairing, &c., Oil Paintings. By HENRY MCGFORD. Third Edition. London: Winsor and Newton. 1851.

THIS is a very sensible little volume, containing, in addition to practical instructions for cleaning, lining, and restoring paintings, some remarks on the distribution of works of art in houses and galleries, their care and preservation. Mr. McGford has given long study to works of art.

The Crystal Palace—its Architectural History and Constructive Marvels. By PETER BERLYN and CHARLES FOWLER, Jun. Gilbert: Paternoster-row. 1851.

THE connection of Messrs. Berlyn and C. Fowler with this undertaking during the greater part of its progress, constitutes the special claim of this volume to attention on a subject on which so much has already been said and written. They are thus in a position to trace, in a more detailed and consecutive manner than others have done, the history of the design and execution of the building up to the period of its completion. The volume is profusely illustrated with engravings, amongst which are the two designs selected by the committee of the Royal Commissioners previous to the adoption of Mr. Paxton's, namely, that of Mons. Hector Horeau, and that of Messrs. R. and T. Turner; as well as the committee's own design. Having ourselves already said much from time to time on the subject of the present building, it is unnecessary to re-enter into any of the details here consecutively arranged; but we will quote the following portion of the introductory matter:—

"A great deal has been lately said upon the want of distinctive character in almost all the buildings of the present day; and it is certainly a striking fact that in scarcely any of our important modern structures does the exterior appearance in any way lead the spectator to form an idea of the purposes or arrangement of the interior, the former being apparently governed by fancy, or the fashion for some particular style, while the latter only is accommodated to the peculiar requirements of the case. Thus we have porticoes which do not shelter from the weather, or in which no one is allowed to walk; Venetian palaces appear piled upon a substructure of plate-glass; baronial castles prove to be model prisons; and richly-decorated mansions, from the time of "Good Queen Bess," or fanciful Italian villas, are made to serve for the accommodation of paupers.

The ancients appear to have been more careful in this respect, so that the form and external arrangement afforded in most cases a ready key to the purposes of their structures. Their temples, their fora, theatres and amph-

theatres, baths, and other public edifices, seem each to have been stamped with their own characteristic features, at the same time without in any way producing a monotonous uniformity among the different examples of the same class of building.

Now, if this criterion of excellence be applied to the remarkable building recently erected in Hyde Park, it will be found that the constructive arrangement of the interior is plainly expressed without, and it must be conceded that it possesses at least those elements of beauty arising from consistency and simplicity which, in combination with its vast size, give it also that of grandeur. That it is faultless it would be needless to assert, or to imagine that, from its example, a new style of architecture will originate; but that it is admirably suited to its purpose,—that it is a remarkable specimen of the constructive skill of this country, and that it will certainly form one of the most interesting objects of the Great Exhibition by which it has been called into being, if not the most interesting of all, must, we think, be admitted by all candid observers."

Although it is no part of the object of the work to arraign any act of those in authority, some of the objections that we were compelled to make to the report of the building-committee on the designs that were sent in, are fairly quoted from our pages.

The whole makes an exceedingly interesting and instructive volume, and is very creditable to both authors and publishers.

Smithfield and Newgate Markets. By the Hon. FREDERICK BYNG. James Ridgway, Piccadilly. 1851.

THE aim of this little pamphlet is, by a general review of the question at issue, to invite the attention of members of Parliament and other influential parties, at this favourable moment, to the great importance of the subject; and to put the general public in possession of such facts as will help them to decide whether the Government ought or ought not to be supported in their bold attempt to abolish the existing state of things, and replace it by arrangements of an entirely different description. Mr. Byng was one of the members of the late Royal Commission to inquire into, and report on, the meat markets of the metropolis, and, privately as well as officially, he spared neither time nor trouble to make himself master of the subject. He is therefore a highly competent authority, and entitled to parliamentary as well as public attention.

A Geological Inquiry respecting the Water-bearing Strata of the Country around London, with reference especially to the Water Supply of the Metropolis, and including some remarks on Springs. By JOSEPH PRESTWICH, Jun., F.G.S., &c. John Van Voorst, Paternoster Row. 1851.

IN this strictly geological work the author hopes that the general details given may direct attention to the probability of obtaining at London, by means of a fresh system of deeper Artesian wells, a very much larger and better supply of water than that furnished by those which exist at present. Besides an examination of the lower tertiary strata and the chalk whence the present order of Artesian wells in London and its vicinity draw their supplies, the author extends his inquiry to the strata beneath the chalk, with a view to ascertain whether the lower cretaceous series may not be available as new sources of water-supply. By a comparison of the volumes and capacities of these tertiary and secondary formations he endeavours to show that the sources which there is every probability of finding in the upper and lower greensands beneath London, would furnish a quantity of water sufficient, possibly, for the supply of the metropolis; or, at all events, so large as to constitute an important auxiliary-supply derivable from comparatively moderate depths, and rising to a height much above that of the general level of the ground in London.

No Artesian wells in London have as yet been carried through the chalk: this is therefore something like the opening up of new

sources altogether; and should experiment prove the truth of this author's theoretical views, the objections of many to the Artesian well projects may be obviated. We confess, however, to great doubts on the subject.

We regard this work, nevertheless, as a fine instance of the use of theory in turning attention to facts, and in leading experiment into new and feasible channels; and should the generally unfavourable opinion entertained regarding Artesian wells as a means of public supply be hereby modified or altogether obviated, the result will redound to the honour of geology as well as of its interpreter, and show to practical men more forcibly than ever, the importance to them of a general knowledge of this interesting science.

Reports and Papers read at the Meetings of the Architectural Societies of the Archæacony of Northampton, the Counties of York and Lincoln, and of the Architectural and Archæological Societies of Bedfordshire and St. Albans—during the year 1850. Sold by J. Masters, 33, Aldersgate-street; Bell, 168, Fleet-street; and J. H. Parker, &c.

THIS goodly volume affords such a proof of the advantage of combined action, that we doubt not it will constitute an example that will lead to the issue of similar volumes by other societies throughout the country. Besides the special reports of the associate societies, which, exclusive of papers, occupy but a small portion of the whole, there are upwards of 200 pages devoted to papers, "On the Chicheley Days of Higham Ferrers," "On Tile Pavements, especially that of Higham Ferrers Church," "On the Ancient Stone Offertory Box in Bridlington Church," "On Labourers' Cottages," "On Heraldry, as an Architectural Decoration, suggested by a passage in Mr. Ruskin's Seven Lamps of Architecture," "On the Churches of Stamford," "On Monuments in Church-yards," "On the Progressive Development of Geometrical Tracery, and the Claims of the Geometrical to be treated as a distinct Style," "On the Works now in Progress at St. Peter's, Northampton," "On Peculiarities of Norfolk Churches," "On Stained Glass," "On Low-side Windows," "On the Saxon Church of All Saints, Brixworth," "On the Churches in the neighbourhood of Louth," "On the Ecclesiastical Architecture of Bedford," "On some Seals of Bedfordshire," "On Ancient Relics collected in Bedfordshire," "On the Basilicas of Christian Rome," "On Conventual Arrangements," "On Lombardic Inscriptions on Monuments in Bedfordshire," "On Relics preserved in a Church at Cologne," and "On a Seal formed of bone and found at St. Alban's."

The Travellers' Library: 1. Warren Hastings, By THOMAS BABINGTON MACAULAY; 2. Lord Clive, by the same; 3. London in 1850-51, from the "Geographical Dictionary" of J. R. McCulloch. London: Longman, Brown, Green, and Longmans. 1851.

THE essays of Mr. Macaulay need no recommendation from us. Each part of this "Library" is a separate purchase, at very small cost; and the well-timed issue of a well-written article or essay on London is likely to meet with many "travellers" inclined to exchange their shillings for a pleasant diet of mental food of so appropriate a description.

METROPOLITAN PEEL STATUE.—At a meeting held on Tuesday week at the Alliance Life Assurance Office, Sir Moses Montefiore, Bart., in the chair, it was determined that a committee be appointed, consisting of twelve members; that the memorial be a bronze statue, ten feet in height; that the amount to be paid for it be 2,000*l.*; and that the committee have the appointment of a sculptor. With permission of the Lord Mayor, the models are to be sent to the Mansion-house, and to be considered, and a site determined, on 16th June. The site, it is believed, will be either at the west end of Cheapside, or at the east end of the Royal Exchange.

Miscellaneous.

WESTMINSTER ABBEY.—Some years ago I saw in your paper, most of the improvements recommended which have since been carried out here with much advantage and credit to the clergy and the people. Formerly in the confined choir a few hundred persons on Sundays came in and out during the celebration of divine service, but now there is often a congregation of 2,000 persons most reverently attending the morning, afternoon, and evening services. I am sure you will entertain the clergy to keep pace with the laity by affording all the aid in their power: much more accommodation could be provided: at least 100 seats could be placed in the choir, all looking towards the altar: the sadly out-of-place and annoying ropes could be creditably removed: seats on hinges could be placed from Poet's-corner to the north door on each side of the way: the sermon could be more efficiently preached from the N.W. pier instead of the N.E. pier, since the voice would reach the hearers better, as 100 in front, to 20 behind, and 80 on either side, consequently all would hear more distinctly, especially at Poet's-corner, where not a word can be understood: the preacher might, for the occasion, occupy a stall near the pulpit, avoiding the occasion to go down all through the choir, setting the constables into a pretended ferment with the people for not making way with more alacrity. The Abbey professedly opens at twenty minutes before the hour, and during Dean Oxford's time thirty minutes before the hour; but now it never opens till the quarter has struck out of doors: the lost five minutes would enable the aged and females to obtain seats, which becomes impossible when that time is lost through the great accession of numbers, and the vergers are not respecters of persons.

TEST OF CHAINS AND IRON RODS.—On Friday se'night several gentlemen interested in scientific experiments, attended at the cable manufactory of Mr. H. P. Parkes of Dudley, to witness some tests of the strength and toughness of iron used in the fabrication of chains. Several samples of round chains, 5-8 inch size, were put to hydraulic proof, and whereas the interstice between the links previous to their tension measured only 32nd of an inch, after proof it had stretched equally to 15-16 inches. One of these pieces of 5-8 inch chain sustained, without a flaw, 18-10 tons, being nearly four times the ordinary testing weight. The material furnished by Messrs. Millington and Co., Summerhill Ironworks, Tipton, stood the severest test. Its fabric is a novelty to the trade, and will shortly be patented. Mr. Parkes has contributed a sample board of the chain to the Great Exhibition, in sizes varying from 2 to 2½ inches. This series of experiments terminated with the tying in iron of "the Staffordshire knot." A piece of 5-8 inch round of Mr. Millington's iron, formed into a noose at each end, and gracefully formed into a loose tie, was drawn in cold metal into a tight compact knot, lifting in the process the unparalleled weight of eight tons. Parties visiting the Crystal Palace may inspect the chain, the knot, and the peculiarly twisted iron of the Millington make in the Class No. 8 among the ship models near the west end.—*Staffordshire Advertiser.*

METROPOLIS WATER BILL.—The following is a copy of the scale of water-rates proposed to be inserted in schedule (B) of the Metropolis Water Bill; being a return to an order of the House of Commons on Monday:—"For water supplied to any dwelling-house for domestic purposes:—Where the house contains not more than one room, a rate not exceeding 3s. per annum. Where the house contains two rooms and no more, a rate not exceeding 5s. per annum. Where the house contains more than two rooms, a rate to be charged according to the number of rooms in each house, at not exceeding such amount for each room as hereinafter mentioned; that is to say, where the house contains more than two and not more than six rooms, at not more than 3s. per annum for

each room. Where the house contains more than six and not more than nine rooms, at not exceeding 3s. 6d. per annum for each room. And where the house contains more than nine rooms, at not exceeding 4s. per annum for each room. If there be a bath in any dwelling-house, then, in addition to the rate above specified in respect of such dwelling-house, the sum of 5s. per annum for each such bath shall be payable. [But no addition to the rate above specified for the water supplied to any dwelling-house shall be charged in respect of any watercloset therein.] For water supplied to any stable, a rate to be charged according to the number of stalls in such stable, not exceeding 3s. 6d. per annum for each stall. For water supplied to any coach-house, where the same is constructed to contain one carriage only, a rate not exceeding 3s. 6d. per annum; and where the coach-house is constructed to contain more than one carriage, a rate to be charged according to the number of carriages the same is constructed to contain, at not exceeding 3s. 6d. per annum for each carriage. For water supplied for the purposes of any manufactory or business, such rates as may be agreed on between the company and the person supplied, not exceeding 6d. for every 1,000 gallons."

FIRE ESCAPES.—The late calamitous fire in the City is another loud call upon public attention, to the means of rescuing the lives of our fellow-mortals from so awful and devouring an element. It is painful to think of, as well as difficult to account for, the apathy and seeming indifference, so prevalent amongst the inhabitants of crowded cities upon a matter involving human life. We shudder when we read of so sad a loss as the one before us; but the remembrance of it almost ceases with the thrill which passes through us, and again we fall back into our former state of indifference, and become almost or quite unconcerned as to whether human ingenuity has already contrived, or ever can contrive, anything like a safe and useful "Fire Escape." Many months ago, an article appeared in your journal, from the pen of one of your correspondents, in which a very earnest call was made upon mechanical ingenuity to do its utmost to send some "fire escapes," which might appear among the "lions" of the "Great Exhibition of 1851." Many have responded to that very laudable and praiseworthy call, and seem to have done their utmost in this public and humane cause; and if nothing has been or can be found, singly, to accomplish this very desirable end, cannot some committee be appointed to meet such exhibitors, and thus, from combined ingenuity, endeavour to ascertain if some really useful machine cannot be brought out. With enlightened mechanics, all ideas of self-interest, I doubt not, would quickly merge into the better feelings of humanity, and the earnest endeavours to become the means of saving human life.—R. T.

PATENT VITRIFIED PIPES, BRICKS, &c.—The *Northampton Herald* says, "We briefly called attention to a process of making vitrified bricks, discovered by Mr. Elliott, of Blisworth. Further details will, perhaps, not be uninteresting. The materials are—clay, limestone, chalk, sand, oyster-shells, &c., and are run into a liquid state in a hot blast furnace, and carried in a ladle to cast-iron or sand moulds. The moulds to be made to open and shut, similar to those used for casting of glass, and, when partly filled with liquid, press an iron pin or core into the mould before the liquid sets, which will cause the liquid to rise round the core and fill the mould. When set, draw the pin out; but if a sand core is used, it may remain in until the pipe is cold, and then be washed out. All articles made one inch thick and less in iron moulds will be sufficiently annealed and fit for use by remaining in the moulds, covered up with dry sand, twelve hours. The raw material requires no farther preparation previous to melting than drying by the aid of the waste heat from the furnace; or the clay may be roasted in heaps, similar to preparing ballast for roads. The cost of the raw material and fuel will vary considerably, according to situation, and, consequently, the

price per ton of liquid. In establishing a new manufactory, this system is decidedly the least expensive, particularly if a steam-engine, water-mill, or other power to generate blast be already on the spot, as very little building or ground is required, a large stock in hand not being necessary, as any article can be made to order at any season of the year. The cost of a steam-engine and blowing machinery will be about 130*l*. Hot-air oven and furnace, 60*l*.

THE TIMBER TRADE.—The following remarks are from the circular of Messrs. Churchill and Sim:—"The import duty on foreign wood reduced on hewn, or timber, from 15s. to 7s. 6d. per load, and on sawn, or deals, from 20s. to 10s. per load, by the resolutions of the House of Commons, took place on the 16th April last; and it may be assumed that these resolutions have the force of law as regards prices in the London market. Christiana deals of 1850 import had ruled very equally, until the stock was sold, at 24*l*. per hundred 12-feet for yellow deals, and at 21*l*. for white. On the arrival of fresh in April, under the remission of duty, the prices realised were 22*l*. and 19*l*. yielding two-thirds of the reduction to the consumer, and one-third to the producer. The prices of Baltic fir timber advanced during the winter, and, with active demand and stock barely adequate, continue to rise when further stimulated by the expected change in the tariff. The importation commencing almost simultaneously with the reduction in duty, and the supply brought to this market being unexpectedly large, new prices opened at 10s. or 12s. 6d. less than the quotations under the former duty, while the reduction of duty amounted to 7s. 6d. only. This has encouraged business, and will make Baltic timber the leading article for some time to come, although advanced shipping prices in the Baltic must enhance the value presently. Dantzic and Memel fir timber of common qualities, which in March were sold from 60s. to 65s. per load, now sell from 50s. to 52s. 6d. For Petersburg deals the selling price was 14*l*. to 14*l*. 5s. standard: it is now 12*l*. 10s. to 12*l*. 15s., deducting thus all the difference of duty. In our market for colonial wood we cannot at present trace any sensible effect by the change in foreign duty. It is evident that the reduction will stimulate consumption, and its effect will not be limited to foreign wood, but carry with it a fair share of cheap colonial wood also.

LEWES CASTLE, AND THE SUSSEX ARCHAEOLOGICAL SOCIETY.—Since the Sussex Archaeological Society has taken possession of the Castle at Lewes, reparations have been commenced. The infant school and wool warehouses, which impede the sight of the gateway, are to be pulled down, piles of stones and bricks removed, and the Castle-yard thrown open to visitors. The purchaser of the materials has engaged to use expedition in pulling down the buildings and removing the materials. The apartments of the warden are improved. When the society takes full possession of the gateway and the eastern tower, it is believed they will soon gather together a collection of local antiquities worthy of the county.

THE CRYPT AT GUILDHALL, LONDON.—We recently gave some particulars of the crypt under Guildhall, and communicated the information that access to it could be had without difficulty. We find that a large number of persons have visited it within the last fortnight. There is in the crypt a large red granite bowl of enormous weight, which has attracted much curiosity. The *Times* gives from the Corporation journals, of the year 1802, the following notice of the present made of this bowl to the city of London, as a memorial of great military achievements:—

"Major Cookson, commanding the Royal Artillery in Egypt, presents his respectful compliments to the Lord Mayor and Corporation of the city of London, and begs to acquaint them that he has taken the liberty to ship on board the *Anacron* transport, Allan Massingham, master, a large antique Egyptian red granite bowl, and which Major Cookson requests the Lord Mayor and Corporation will do him the honour to accept, as a testimony of his respect and a memorial of the British achievements in Egypt.

"Alexandria, Sept. 1, 1802."

EXTINCTION OF SUBTERRANEAN FIRE BY STEAM-JET.—Mr. Goldsworthy Gurney has extinguished a sort of volcano, which has raged without ceasing for 30 years, over an area of 26 acres of coal-seam underground! This new triumph of scientific principle has been achieved in Scotland, at the South Sauchie colliery, near Alloa. The seam of coal in course of destruction by the fire is 9 feet thick. It was set fire to, it is believed, by illicit distillers. A puddle-wall to arrest its ravages, was erected at great hazard, at an expense of 16,000*l.* about 19 years ago, after 5 years' labour of many hands, and at a sacrifice of 12 lives. The upholding of this wall, moreover, has ever since cost the Earl of Mansfield, who is the owner, 200*l.* a-year. Various reports, made by men of great authority in the coal trade, agreed in the belief of the utter impossibility of extinguishing this fire. The object has been accomplished, as many of our readers will be already well aware, by forcing into the burning waste a kind of choke-damp formed of nitrogen and carbonic acid, the product of a coke furnace, kept burning three weeks for the purpose, and pouring the choke-damp along an iron cylinder down the shaft and into the burning waste; the quantity of coke consumed being a sufficiently accurate measure of the quantity of air passed. To cool down all the material, so as to prevent it again igniting on the admission of atmospheric air, Mr. Gurney justly considered the most uncertain part of the whole experiment. In order to effect this, he used a fine contrivance, by which, by the power of the steam-jet, water was driven into the shaft along with the choke-damp in the form of the finest spray: it is described to have been like a continual Scotch mist. After a month's operation the temperature of the waste was reduced from about 250 to 98. Several bore-holes have been driven into the waste at different points, but no fire can be discovered; and this great volcano is extinct! Mr. Cayley, of Westminster, who took some part in the experiment, has published an account of the process.

ELECTRO-TELEGRAPHIC PROGRESS.—Mr. Edwin Clark, of the New-road, London, has patented a method of preventing the deposition of moisture on the earthenware insulators employed in suspending telegraph wires, by applying a band or inverted cup of metal, preserving a dry zone around them. Also for a method of applying a cross bar of iron or nickel to one pole of a permanent magnet, to cause the oscillation of the bar, and the consequent certain deflection of the needle. The Submarine Telegraph Company for establishing an electric communication between Dover and Calais, have received the grant of a royal charter. The sum to be raised is 50,000*l.* in shares of 1*l.* each, to be paid in full. When this link shall have been constructed, the telegraphic line will be unbroken from London to Vienna and Trieste. An advertisement in the *Connecticut Courant* states that Houses' patent printing telegraph is in operation from Hartford to Boston, Providence, Springfield, Newhaven, and New York, and that it connects with all the southern, western, and Canada lines. The dispatches are printed by the instruments in Roman capital letters; thus avoiding the necessity of translating or transcribing, and the consequent liability to error. The prices for messages of ten words to Boston and New York are twenty cents, and for each additional word two cents; while, to any intermediate station the prices are fifteen cents for the first ten words, and one cent for each additional word.

PIG-IRON MAKING IN SCOTLAND.—A correspondent of the *Mining Journal* advises the blowing out of half the furnaces, and says that the produce of iron would still be very considerable; for by the improvements in the size and shape of the new furnaces, and the increase of blowing and heating power, upwards of 200 tons per week is no uncommon produce from one furnace. The scrip system, he continues, is nearly, if not altogether, extinguished. Lucky it is so: it is a queer system, and, if carried out in every branch of manufacture, would lead to as queer results. Think of a man selling 1,000 bales of cotton,

to be grown a year or two hence—that is to say, the mineral is not dug yet, nor the cotton grown, but it is expected to be all right. The ease with which money was raised in this way enabled ironmasters to extend their works, and probably some more foolish things, which, if left undone, would have been better for the trade today. The state of the trade is such that matters cannot be mended; and what was attempted in 1841—viz, the blowing out of one-third of the then existing furnaces, must be repeated now by the blowing out of one-half. All the works now going on may be held as at their maximum.

THE ROYAL ITALIAN OPERA HOUSE.—"Fidelio" has been produced here with great completeness. The first scene, "The courtyard of the prison," is a good specimen of Romanesque.

HALTING PLACES.—The noblemen and gentlemen requested by the Council of the Society of Arts to act as a committee for establishing forthwith a certain number of model waiting-rooms, with water-closets and urinals in public thoroughfares, with the object of proving that these public conveniences, so much wanted, may be made self-supporting,—consider that the following, amongst other regulations, should be adopted in commencing this experiment:—1. That these conveniences be established on a moderate scale, in connection with shops in some public thoroughfares, and be called "Public Waiting-rooms." . . . 6. That the charges for use of lavatories (2*d.* and 3*d.*), water-closets and urinals (1*d.* and 2*d.*) include all attendance, and be publicly affixed in the shop. The committee recommend that the Council should undertake to lease several ground-floors in the Strand, Holborn, and Cheapside, and that no time should be lost in inviting respectable persons holding shops in public thoroughfares, who may be desirous of connecting the proposed public waiting-rooms with them, to inform the secretary, Mr. G. Grove, at the Society of Arts, Adelphi, of the accommodation which their premises offer for the purpose. The shops which appear to be most suitable for waiting-rooms for ladies are staymakers', bonnet-makers', milliners, &c. Those most suitable for gentlemen's waiting-rooms are hairdressers', tailors', hatters, taverns, &c.

DRAINS LAID BY MACHINERY WITHOUT EXCAVATION.—Some experiments, it is said of a satisfactory nature, have been made with a machine invented by Mr. Fowler, of the firm of Fowler and Fry, of Bristol, which, by the help of a capstan worked by horses, rips up the soil as by a knife, and inserts a series of tube-drains strung on a rope, and preceded by a conical nozzle, which bores the way at any required depth within a certain range, and introduces the drain-tubes without throwing out any earth, or leaving any mark but that produced by the knife or couler, and, we presume, a little surface rise or ridge along the line or cut. The estimated expense of draining land in this manner, independent of the cost of the tiles, is about fourpence a chain, at which charge, we understand, contracts would be entered into: from 6 to 7,000 feet can be drained in one day, at an expense of about 30*s.*

BRIDGE ACROSS THE ST. LAWRENCE.—The project of the day in Quebec, is a bridge across the St. Lawrence. On a motion by Capt. Boxer, the city council have resolved to address the Government, asking them to inquire into the practicability of bridging the river at some point near Quebec. From bank to bank, at a point where the shores are unusually high, near Cape Rouge, the distance is about 2,200 feet. Low water mark, however, is over 500 feet from one bank, and more than 400 feet from the other, so that if two stone piers were raised at each of these points, the distance between them would be only about 1,200 feet, a space which has been spanned before in a single arch, both in the United States, at Wheeling, and across the Danube, in Austria. It is estimated that two piers of solid masonry, 50 feet square, and of the necessary height, 130 or 140 feet, would cost about 50,000*l.* If the point opposite Deschambeault were chosen, though the width of the river there is somewhat greater, there is

an island in the middle on which a pier might be built. The expense of the rest of the work, judging from the expense of the wire bridges of Niagara, would probably be about 70,000*l.*; so that the whole cost might probably amount to 120,000*l.*

DRAIN PIPES, GLAZED AND UNGLAZED.—"Towns and villages," writes the *Wiltshire Gloucester Herald*, "are to be perforated by tubular drains, and yet no one asks or cares for the cheapest and most efficient material. The glazing of clay pipes adds fifty per cent. to their cost, and yet it is quite practicable to make pipes that shall be longer, requiring fewer joints, of perfect current, and of infinitely greater strength—that is to say, capable of bearing double the hydraulic pressure. Well-burned common pottery is the oldest of all manufactured substances. In the Etruscan rooms of the British Museum—the Society of Arts—and, indeed, every collection of ancient works—this material is seen, after the lapse of ages, in an imperishable state. Mr. Kennet Loftus, now employed in the survey of Turkey and Persia, says, 'At the ruins of Sirkara I found a well-baked cylindrical pipe of reddish clay, a yard in length and five inches bore, as perfect as when deposited centuries ago.' Throughout the estate of Lord Grosvenor at Picnic, Mr. Cubitt has used the unglazed drain pipes; and, indeed, their use seems to be only obstructed by those who have but superficially considered the question. Why then, we ask, do the ratepayers of this country incur increased expense for that which is shown to be unnecessary? Glazing adds nothing to the durability of pipes: it is frequently deleterious, from its composition, to pure water; and for sewage purposes is destroyed by the acid of the fluids passing over it. Strength, impermeability, and smoothness of current are necessary to perfect drainage, and this may be attained by a greater economy over the present system."

DOCTORS' SHOPS FOR WORKMEN.—Mr. C. R. Walsh, M.R.C.S., in a recent lecture on "Co-operation in Sanitary Matters," before the society for promoting "Working Men's Associations," said, "To supply the inhabitants of any city, town, and village with plenty of wholesome air, plenty of wholesome water, (and not too much), and wholesome food must always be the result of co-operation in some shape, whether at the hands of the state at large, or of any municipal body, or even of a public company. But no such interference was required to provide the public, or as large a portion of the public as chose to avail themselves of it, with plenty of good medical advice, and genuine drugs. The latter might simply be added, as an article of trade, to the stock of any co-operative store. It was clearly absurd that articles, costing together 1*d.* or 1*½d.*, should be charged 18*d.*, simply because they were bought as medicine, bought at a "doctor's shop;" just as if, finding a patient too thinly clad, and ordering him to buy an overcoat, the latter should be charged 10*l.* or 12*l.* for it, because it was for his health. As respects medical advice, they could derive, he thought, valuable hints from what are called self-supporting dispensaries. A number of working men club together by small subscriptions to set up a "doctor's shop" of their own, overlooked by a practitioner at a fixed salary. It becomes their interest to consume as little of their own medicine as possible, but that little as good as may be: it becomes his interest to have as little illness to attend to as he can. Why should not this practice be extended from class to class, till the services of the most eminent practitioners should be secured? Clerks might have a society at one rate of subscription; those somewhat better off in the world than they, at a higher one.

SIGN AND NOTICE BOARDS.—None but those who have witnessed the fixing of these boards against the fronts of houses can credit the insecure manner in which this fixing is accomplished. A few wall hooks, which, if they ever had any hold of the brickwork, lose it often by rust, constitute the sole points of support. The Act of Parliament limits the height of the top of these boards to 18 feet above pavement line, but this is often evaded.—R. L. S.

ST. SAVIOUR'S, SOUTHWARK.—The Morning Advertiser says the resuscitation of the Borough-market, under the immediate superintendence of Mr. Rose, the architect, is proceeding rapidly. The iron columns and girders are being replaced, and when the covering of glass is laid on, and the clearances are effected in the immediate neighbourhood, the market will be far more unique, and almost as extensive as that of St. John, at Liverpool. It is not intended at present to cover over the vacant ground adjoining the collegiate church of St. Saviour, near to the Ladye Chapel; but it affords matter of much interesting consideration, and the historical recollections attached to the immediate spot (originally St. Mary Overs) is ripe with antiquarian matter.

WORKMEN'S TRUCK ANNIHILATION ASSOCIATION.—A large meeting of workmen connected with the various iron-works at Wolverhampton was held on Monday week, to adopt resolutions and re-organise an association established for putting an end to the system of truck, and chiefly composed of members not themselves subjected to the impost. The chair was taken by a working man, and the meeting was addressed by the Rev. Jno. Waller, of Prince's-end; Rev. — Willan, of Tipton, and others.

THE BRIDGEWATER GALLERY.—The pictures forming the Bridgewater Collection are now all arranged, and hung in the new mansion of the Earl of Ellesmere, in Cleveland-square, St. James's, and may be viewed by tickets. We shall take an opportunity to speak further of the gallery.

FOUL AIR IN WELLS.—Your correspondent X. Y. Z. desires information respecting "Foul Air in Wells," or rather its remedy. My experience leads me to recommend the following plan:—Lengths of tin tubing, attached by common "ears," or perforated plates, of the necessary length for the well, the top length having an union joint, to be attached to the bottom of a box or "barrel" 3 feet long by one foot wide: to the barrel fix a plunger, being a flat piece of wood, the edges covered with leather, and having four valves (opening downwards of course): the plunger may be easily worked by one man; and if the tube be 2 inches in diameter, the supply of fresh air will be sufficient to enable a man to work in the well in a very short time.—E. C. A.

EXHIBITION OF PICTURES BY THE PAINTERS OF ALL NATIONS AT LICHFIELD-HOUSE, ST. JAMES'S-SQUARE.—The Directors of this novel gathering of pictorial art are actively preparing to open their exhibition. Among the foreign painters, whose works are already arrived, are Paul De la Roche, H. Scheffer, E. De la Croix, H. Lehmann, Rosa Bonheur, Gosse, Thuilliers, E. Slingener, H. Leys, Signol, Chauvin, E. Verboeckhoven, Willems Baron Guslaf Wappers, Genisson, and many others. The saloons are intended to be opened for an evening exhibition, brilliantly lighted by gas, to afford the numerous classes of the community, who are occupied by their daily avocations, an opportunity of enjoying the view of these works of art, among which many of the finest works of the English school, we are told, will fully sustain the dignity of the national character in fine art.

TO CORRESPONDENTS.

"H. P." "J. W." "One of the Profession," "Johnny," "O. B." "H. O. P." "H. S. M." (shall be looked to), "G. F. R." "W. S." "W. V. P." "F. F. W." "Un Menstruer," "Regular Subscriber" (illegible is not necessary), "J. A." "W. H. V. S." "W. P." "Pedestrian," "J. B. D." "J. F. W." (apply to the society, at Exeter Hall), "C. H. M." (we are forced to decline), "B. C." (ditto), "K." (ditto), "Cler. Sub. Art." (ditto), "H. P." (ditto), "J. T." "J. C. C." "S. S." "H. B." "J. B." "Jonas Smith," "S. R." "M. A." (may do just as he pleases. We will not allow our pages to be a vehicle for personal spite, especially when spelt anonymously. Great cowards may brag behind such a wall, "J. P. W." (shall appear), "H. A." (ditto), "A. F."

"Seven Periods of Church Architecture."—Mr. Sharpe's paper on this subject is unavoidably postponed.

"Boles and Addresses."—We have not time to point out boots or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the Editor: all other communications should be addressed to the Editors, and not to the Publisher.

ADVERTISEMENTS.

ROYAL ACADEMY OF ARTS, 107, TRAFALGAR-SQUARE.—THE EXHIBITION OF THE ROYAL ACADEMY OF ARTS, NOW OPEN.—Admission from Eight o'clock till Seven, one Shilling. J. P. KNIGHT, R.A., Sec.

THE NEW SOCIETY OF PAINTERS IN WATER COLOURS.—THE SEVENTH ANNUAL EXHIBITION OF THIS SOCIETY, NOW OPEN.—Admission from Eight o'clock till Five, one Shilling. JAMES FAHEY, Sec.

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TO ARCHITECTS.

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WANTED, immediately, a first-rate practical CLERK, by an Architect in a large provincial town. He must be thoroughly acquainted with all scientific construction, including the erection of buildings, very rapid in getting out working and detail drawings, quantities, estimates, and calculations, thus being an essential requisite, and extremely active and business-like, as well as being able to superintend the work of his clerks. A knowledge of land surveying is also desirable. None need apply who have not had from fifteen to twenty years' practical experience. Salary allowed, two-and-a-half crown per week. Every letter to be accompanied with unexceptionable references, addressed, T. H. S., Office of "The Builder," 1, York-street, Covent-garden.

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WANTED, by an experienced Young Man, of sober and industrious habits, a SITUATION in above branches, and can make himself generally useful; no objection to country.—Address, L. R., Mr. Croft, 29, Dorset-street, Bayswater-square.

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to J. L. Hancock, Goswell-mews, Goswell-road, London, will meet with immediate attention. Waterproof fishing boots and stockings, portable india-rubber boats, shower and sponging baths, &c.

The Builder.

No. CCCCXXXV.

SATURDAY, JUNE 7, 1851.

IN our present number we give a view of the residence of one well known to our readers,—Somerleyton Hall, near Lowestoft, the seat of Mr. Samuel Morton Peto, member of Parliament for Norwich, and constructor of some of the most important railways in the kingdom.* The original house here is said to have been built by Sir John Jernegan in the reign of Elizabeth (afterwards altered and added to), and old Fuller speaks of it as being "among the many fair houses of the gentry of this country," and says the place "well deserves the name of Summerley, because it was always summer there, the walks and gardens being planted with perpetual greens." Camden, after speaking of Lake Lothing, says,—“At the beginning of this, *Lestoffe*, a little town, hangs (as it were) over the sea; and at the end of it is Gorleston, where I saw the tower of a small ruined religious house, which is of some use to the seamen. More inward upon the Yare is *Somerley*, formerly (as I was told) the seat of the Fitz Osberts, from whom it came to the knightly and famous family of the Jerneganes.”†

In Morden's map of Norfolk the place is marked "Somerley Town." On the other side of Yarmouth, by the way, some will remember there is a place called Winterton, "which," says Camden, "I fancy had that name given it from the wintery situation." The termination *ton* is very general in the neighbourhood.

Concerning *Lestoffe*, as he calls it, Camden, describing Yarmouth, records, that about the year 1340 the citizens walled that town round; and "in a short time became so rich and powerful that they often engaged their neighbours the *Lestoffenses* in sea-fights, with great slaughter on both sides," having a "peculiar spight against them." The engagements between Yarmouth and Lowestoft are fortunately of a very different kind now, and these engagements have been mainly brought about by the proprietor of Somerleyton.

Mr. Peto purchased the place from Lord Sydney Godolphin Osborne in 1844, and has been occupied from that time in its improvement. The estate comprises, as we understand, 3,500 acres. Round about the houses there are six acres of pleasure grounds and three acres and a half of kitchen garden, and though the natural beauties of the place are less, perhaps, than might have been desired, taste and unstinted expenditure have supplied the defect. The house has been erected from the designs of Mr. John Thomas, well known from his connection as sculptor with the new Houses of Parliament. Parts of the old structure were retained, and have in some degree influenced the interior arrangements. Probably if Mr. Peto had seen then what he sees now, he would have cleared all away, and started afresh: this, indeed, is the opinion that most have arrived at who have tried the same experiment.

The style of the building externally we must call Elizabethan, for want of a term of closer definition, and the materials used are Caen stone and red bricks.* There are two towers, it will be seen: the upper part of the principal one is fitted up as an observatory, and further contains a tank, into which water is pumped by steam for the supply of the house. The dormer windows in the roof of the house are boldly treated, and form very effective features, somewhat Scotch in character.

The principal apartments are the entrance-hall and the dining-hall. The latter is very lofty, for its size, and has a richly decorated ceiling, carried on corbels, which present amongst their ornaments the boar, stag, and hunting emblems. The sides of this room are in two stories, and the observer will detect here the junction of old work and new. The appearance of extent is increased by looking-glasses at each end, in the upper story, which serve to close openings into a gallery. The windows are filled with stained glass, by Mr. Ballantyne, of Edinburgh (a little too yellow in tone), and include medallion heads, in the first, of Newton and Watt; in the next, of Chaucer and Shakspeare; and in the third, of Wren and Reynolds,—thus memorialising science, literature, and art. The desire to do this is apparent throughout the edifice and grounds; and forms, indeed, the great and distinguishing characteristic of the place.

The chimney-piece of the dining-hall is supported by two figures,—of an old man and a young girl, incarnating summer and winter, and is surmounted by the shield of the proprietor in foliage, with his earnest motto, "*Ad fidem fidelis*."† Compartments are formed on the walls for paintings, and to fill these, commissions have been given to Sir Edwin Landseer and Stanfield (for the space on each side of the chimney-piece), and to Herbert and Lance,—the space over the side-board at each end of the hall.

The painted decorations, we may here mention, are being executed by Mr. Moxon,—of whose singularly excellent imitations of rare woods and marbles, we have before had occasion to speak.

The entrance-hall has a panelled ceiling; windows filled with shields of arms; a staircase of oak, and gallery carried on large consoles. Over the fire-place here, is Machse's fine picture, "The Departing Warrior." Scattered throughout the house are many very interesting pictures, and a small collection of ancient armour.

In what is called the White Drawing-room, the plaster enrichments are more light and elegant than elsewhere, especially the caps of the pilasters, and the foliage in the panels of the ceiling. Two sculptured marble chimney-pieces here present, in one, figures of Art and Science, with heads of Raffaello and Watt; and in the other, figures of Music and Poetry, with heads of Shakspeare and one of the world's great composers. The walls of this room are panelled with looking-glass. The library has a panelled ceiling, somewhat too heavy for a low room, and is fitted up with carved oak by Willcox, of Warwick.

In the principal bed-rooms are many things from Stowe, and some curious wall-hangings, showing, in what Falstaff calls "fly-bitten

tapestries," the stories of Penelope and Lucretia, and incidents in the life of Moses.

The grounds contain a large amount of sculpture: the fountain indicated on the left side of our view includes a female figure of elegant design. Near this are four figures of boys in marble, personifying the seasons: two garden seats near the conservatory show sculptured heads of some of the early kings, and at the entrance to a fine avenue of trees on one side of the grounds are sculptured hunting groups of very considerable merit, all the work of Mr. Thomas.

The conservatory is mainly of iron, with a roof on the ridge and furrow principle, and is floored with coloured cements and tiles. The stable buildings include a clock tower, and the furnace chimney in the gardens is topped with iron, and made to accord in character with the house. At a small distance from this there is a small chapel, with which, probably, an architect has had little to do.

There was a divine who used to say, when preaching to the youths of his congregation, "beware of being golden apprentices, silver journeymen, and copper masters;" and with a like motive it may not be useless to mention that Mr. Peto, now only forty-two years of age, left school at the early age of fourteen; and being apprenticed to his uncle, Mr. Henry Peto, the builder, worked three years at the bench, used the trowel for a year, and passed the remaining three years of his apprenticeship at the mason's banker. When he was little more than twenty-one, his uncle died, and left his business and his capital jointly to him and to Mr. Thomas Grissell, also a nephew. Their first work was Hungerford Market, their second the new Houses of Parliament,—afterwards placed wholly in the hands of Mr. Grissell. They built the Reform Club-house, the Oxford and Cambridge Club-house, the Model Prison at Clerkenwell, and many other large structures: the St. James's Theatre was completed by them in thirteen weeks. They also entered very largely into railway works, and to these, after the dissolution of the partnership, Mr. Peto confined his attention: we may mention more especially the Eastern Counties line, the line from Ashford to Folkestone, the Southampton and Dorchester, the Oxford and Birmingham, and in conjunction with Messrs. Betts, the whole of the Great Northern line north of Peterborough. When we say that there were employed on his works at one time ten first-class locomotive engines, 2,300 waggons, 916 horses, and 14,800 men, some idea may be gained of their great extent, and of the energy and power required to keep all well in hand. There are many excellent traits recorded of Mr. Peto, but for none does he deserve more honour than for his continued and enlightened efforts to raise the character of the large bodies of men engaged under him.

Mr. Peto has earned for himself a great reputation for enlarged views and liberality, and has shown how much we may advance our own interests by attending to the interests of others.

"THE INDUSTRIAL ARTS OF THE NINETEENTH CENTURY."—Under this title Messrs. Day are about to publish a series of illustrations of the choicest specimens produced by every nation at the Great Exhibition of Works of Industry, 1851, edited by Mr. Digby Wyatt.

* See p. 363.

† Camden's Britannia, translated by E. Gibson. 1695.

* The plinth is of Aubigny stone.

† We shall give an engraving of this chimney-piece in an early number.

THE PERIODS OF CHURCH ARCHITECTURE.



FIG. 1.



FIG. 2.



FIG. 3.

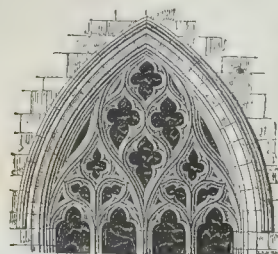


FIG. 4.



FIG. 5.

THE SEVEN PERIODS OF CHURCH ARCHITECTURE.

OUR readers are already acquainted to some extent with Mr. Sharpe's views on the nomenclature and divisions of mediæval architecture.* He has recently published a small work on the subject,† and has read a paper upon it with especial reference to the subordination and distinctive character of the mouldings at the Institute of Architects.‡

In the latter Mr. Sharpe said,—Though it may be difficult to assign a reason, the fact is undeniable that the cultivation of the study of our national architecture, at least of the critical and historical part, has been almost entirely abandoned by the professional architect, and left in the hands of architectural amateurs; yet, while we are willing to admit our infinite obligations for the light which these gentlemen have thrown on the subject, we may fairly contend that it is to the pains, talent, and zeal of the hard-working architect and architectural draughtsman, that those admirable illustrations of our ancient monuments, and those faithful transcripts of their minutest details are due, which afford at the present day to these very authors such unexampled facilities for a fire-side study of the matter. It is, however, to be feared, that unless such labours are made the basis of some order and system, or subservient to the elucidation of some branch of the inquiry, they will hardly gain the well-earned recognition of merit due to them, nor be considered by our literary friends more favourably than as detached portions, valuable contributions undoubtedly, but requiring to be connected and formed by some learned professor into a complete system. Now there is, perhaps, no branch of the study of church architecture, in the treatment of which the disadvantage, arising from the absence of all inquiry into the principles of construction on the part of those who have handled it, is more apparent, than in that which I have undertaken to bring before you this evening. The inquiry which would naturally suggest itself to the practical mind of the architect, as the first to

be made, namely, how the parts are put together, before considering how they are clothed and dressed, that first step in the investigation has yet to be taken. We cannot, in fact, take up the subject from any point which has already been reached by previous writers, or treat it upon any plan that has already been laid down; but we must commence the investigation again from the beginning, and upon new principles.

Church architecture was essentially an architecture of transition. A regular and gradual progress is observable throughout the six or seven centuries into which it is divided; and this appears to have been carried on simultaneously in different parts of the country. It is, therefore, impossible to divide our architecture into any distinct number of orders or styles. To arrange it in any given number of periods is a matter of difficulty, and must necessarily be arbitrary; but it is essential, for the purpose of description, that we should divide and classify the buildings which are left to us. Although the successive changes were so gradual, they were yet so continuous and complete, that fifty years did not elapse without a total change of form, not in the mere outline, but also in the details. We naturally find, however, that certain features were retained as favourite ones longer than others, and these may give us a means of classification. One principal division of the subject has been generally admitted; that which divides the whole into two principal classes,—namely, those which contain the circular arch, and those which contain the pointed arch. The earlier of these has been termed Romanesque, and the later of them Gothic. This is so simple and so natural a division, that, without quarrelling with the terms which have been already adopted and used for so long a time, I at once adopt them, being satisfied that they are well understood. Taking these two terms, we have one simple division of the subject, which may be made the ground work of minuter divisions, for these are not sufficiently minute to answer the purposes of particular classification and description. It is also evident, that there is one class of buildings that was erected before the circular arch disappeared, but after the pointed arch appeared, which is comprised in neither one nor the other of these divisions.

As regards the earlier, or Romanesque, no division can be more efficient than that which divides buildings of that class into those which were erected previous, and those which were erected subsequently, to the conquest, and describes them respectively as Saxon and Norman.

As to the intermediate period alluded to, to none other can the term Transitional be so well applied as to the buildings erected under those remarkable influences which existed during the contest between the two antagonistic periods which ended, about the close of the twelfth century, in the complete establishment of the pointed arch.

As to the Gothic period, no better division of it can be employed than that which is characterised by the four different forms under which the window appeared. These four divisions are shown in the diagrams, which, in fact, speak for themselves.

For his reasons for adopting the nomenclature he advocates, we go to Mr. Sharpe's book, and give the following extract:—

"For half a century or more after the disappearance of the circular arch the window appeared under a form which, from its general resemblance to a lancet, in its length, breadth, and principal proportions, rather than from any uniform acuteness in the shape of its head, led to the universal application of that term to all the windows of this period. This observation applies equally to the window whether used singly or in groups of two, three, five, or seven; and equally also to the later as to the earlier examples of this period."

It is proposed therefore to denominate this the LANCET PERIOD of Gothic Architecture. (See fig. 1.)

Towards the close of this Period the practice of combining a plurality of lancets, under one arch, or hood-moulding—and of piercing the solid spaces that intervened between the heads of these lancets and the underside of this arch in various ornamental ways, became common; by the adoption of which, a group of several lancets was converted into a single window of several lights. (See fig. 2.) Out of this practice arose a novel and beautiful discovery: this was the invention of Tracery.

For nearly three-quarters of a century after its introduction, the tracery of windows con-

* See Vol. VIII. p. 432.

† "The Seven Periods of Church Architecture Defined and Illustrated." By E. Sharpe, M.A., Architect. Geo. Bell, London, 1851. We recommend the book to attention.

‡ This was on May 19th.

tained forms in which that simplest of all geometrical figures, the *circle*, was principally conspicuous: and although, in the latter part of this period, the circle does not obtain the same prominent place, in the centre of the window-head, and as the principal feature of the design, that is generally allotted to it in the earlier examples; yet the important part that it bears in the construction of the design of even the whole of these later examples, fully justifies the application of the term, already pretty generally in use, to this class of windows, and entitles us to call this period after that figure, and, *par excellence*, the *GEOMETRICAL PERIOD*. (See fig. 3.)

At the close of this period a feature began to make its way into the subordinate parts of the tracery, which had already shown itself for some time previously in the mouldings, and which eventually exercised a most important influence on the architecture of the next half century.

This feature is the curve which mathematicians call the *curve of contra-flexure*, and which is known amongst architecturalists as the *Ogee*.

The flowing nature of this curve imparted to the tracery a grace, and an ease which the rigid outline of the circle denied to it; and affords us a strong point of contrast whereby to distinguish the architecture of the two periods. The sinuosity of form which characterizes the tracery, pervades also the mouldings, the carved work, and all the details of this period, and enables us to designate it appropriately as the *CURVILINEAR PERIOD*. (See fig. 4.)

In the later part of this period, a horizontal bar, or *transom*, as it is called, was occasionally used in the lower part of the window. Whether this bar was introduced for the purpose of strengthening the mullions, or for the sake of proportion, it speedily grew into frequent use. At the same time also vertical lines presented themselves occasionally in the tracery: a new principle, in fact, had made its appearance, which rapidly overran not only the windows, but the doorways, the arcades, and every part of the building. The straight line, when once introduced, quickly superseded the curved line: square panels covered the walls: angularity of form pervaded even the mouldings and minor details, and to the round finish, the square edge was preferred.

This, the last of the four periods of Gothic architecture which extended over a term of nearly two centuries, we propose accordingly to call the *RECTILINEAR PERIOD*. (See fig. 5.)

The history of our national architecture will thus be divided into Seven Periods, the order and duration of which are as follows:—

ROMANESQUE.	A.D.	A.D.	YEARS.
I. Saxon Period ...	from	to 1066, prevailed	—
II. Norman Period...	" 1066	" 1146,	" 79
III. Transitional Period	" 1146	" 1190,	" 45
GOTHIC.			
IV. Lancet Period ...	" 1190	" 1245,	" 55
V. Geometrical Period	" 1245	" 1315,	" 70
VI. Curvilinear Period	" 1315	" 1360,	" 45
VII. Rectilinear Period	" 1360	" 1550,	" 190

It is only just to those who have previously investigated the subject to say, that these terms are not original. In an article in the *British Critic*, some time ago, they were proposed to be applied, but with this distinction: the term *Curvilinear* was proposed to be applied to the tracery of all periods in which a *curve of any kind* is found; and the term *Rectilinear* was proposed to be substituted for the *Perpendicular* of Mr. Rickman.

Returning to his paper at the Institute, Mr. Sharpe continued,—The *Norman Period* is characterized by its extreme massiveness, the bulky proportions of every part, and its cubical capitals: there are frequently circular columns, and the round arch is universal. Superficially ornamented details are found, whether string courses with plain billet or zig-zag mouldings, or arch mouldings considerably enriched; chevrons, or zig-zags, the nail head, and animals' heads, occurring in rich but barbarous profusion around the archivolt. The bases are either without mouldings at all, or they are very few and very large. There is a triforium and a clerestory, consisting generally of three arches,

of which the centre is the largest. The windows are plain and broad, and invariably circular headed. On the outside there are corbel tables, often carried on blocks, rudely sculptured. The walls have flat, shallow pilasters, rather than buttresses. The mouldings of the windows, which are heavy and rude, are carried on thick circular shafts, having also cubical capitals.

In the *Transitional Period*, the union of the circular and the pointed arch is the leading characteristic. There is a lighter proportion in the piers and mouldings, with extreme severity throughout the whole. The doorways are of the same breadth as before, but more elongated. Corbel tables support the parapet. The buttress is still flat, broad, and shallow, but has more projection than in the Norman period. The base course, and, in fact, the parts generally have more projection and lighter proportions. As to the union of circular and pointed arches, I may offer a remark upon the way in which it was generally effected, and in what parts each of them generally appeared. For more than a quarter of a century, the pointed form was confined to the arches of construction, which constituted the main frame-work of the building, whilst the circular form was confined to arches of decoration, such as doorways, windows, &c. It is true there are several examples where that rule is violated, but the exceptions themselves justify us in laying down this rule as a fixed law. Towards the latter end of this period, we find circular and pointed arches used indiscriminately, as in the example before us.

In the *Lancet Period*, the windows are invariably of the lancet form. The pier is cut up into a great number of parts, each of which is lighter in proportion to its length. Stone vaulting appears, which was by no means common in the Transition period, and of which there is no example in England (with perhaps one exception) in the Norman. Here also we have the union of triple arches under one, a new feature which gave rise to so great a revolution, first seen in the space above the subordinate arches which are pierced with openings of different forms. We have banded shafts, trefoiled arcades, and all that pointed feature which exhibits itself, not only in the windows, but in the buttresses and in the general aspect of the building, both externally and internally. There is a base course of considerable projection, full of deep hollows and bold mouldings. String courses abound in every part of the building.

We have next the *Geometrical Period*. Buildings of this period have hitherto been classed as transitional buildings; as anomalous structures, exhibiting part of one style and part of another; whereas, whilst it embraces a greater number of buildings than any other class, and those by far the most beautiful and important of the whole, we find it to possess marked and distinctive features of its own. The principle of these is the prevalence of the circle, which occurs in the windows everywhere, and in all the mouldings and other details, as well as in the general outlines of the building. The carving of this period is marked by great richness and elegance, and may be said to be the most beautiful we can boast of. The shafts now increase somewhat in proportion,—a greater degree of solidity again making its appearance, but there is also great richness of detail. The crocket is introduced for the first time; panels are brought in, and the whole surface is covered with beautiful and delicately treated ornaments.

We next come to the *Curvilinear Period*, and here that sinuosity of form which I have mentioned shows itself everywhere, in the windows particularly. The buttresses are much more slender: they are ornamented with canopies, and carry the fully developed crocket, which, instead of being a stiff bell-like leaf as before, becomes a mass of elegant foliage. The buttresses are graduated with regular sets-off, the base mouldings diminishing in size; and, above all, we have the elegant, flowing, intricate tracery, which is the most remarkable characteristic of the period. The triforium disappears in this period.

Lastly, in the *Rectilinear Period* you will

see the predominance of straight lines, not only in the windows, vertically and horizontally, but in the arcades on the walls, and also in that upper portion of the building which corresponds with the roof of the side aisle, which is no longer a triforium, but a prolongation of the window itself. We have here also the four-centred, or Tudor arch, as it has been called, together with the same thinness and flatness, and shallowness of detail, which began to appear in the previous period. I may say here, generally speaking, that I look upon the Geometrical period as that in which our national architecture arrived at its climax, whether in the architecture generally, in the mouldings, or the carved details, every portion of which was carried out in the most beautiful and delicate manner. The art of carving in stone gradually improved, in fact, until this period, about A.D. 1260, and then declined again as it approached the sixteenth century.

There are very few of the illustrated works on the subject of Church Architecture to which I have referred that do not contain numerous examples of the mouldings of the buildings described in them, yet I do not know a single instance in which the mouldings of the arch are exhibited in any other manner than as a continuous series of rounds and hollows, without any reference to the mode in which the arch is constructed. We have, in fact, in all these examples, one unbroken, undivided profile exhibited, as if the whole series were carved out of one solid block, a proceeding common enough indeed in modern practice, but as unattainable by mediæval builders, as it was foreign to the character of their buildings, in which stones of such large dimensions were never used.

It is therefore worth inquiring, how the arch of the middle ages was constructed. The arch, as handed down by the Romans to our forefathers, exhibited one broad uniform soffit, extending throughout the whole thickness of the wall, panelled and relieved on its surface and sides with superficial mouldings, but unbroken and undivided in the principle of its construction. It appears to be extremely probable, that this simple form of construction prevailed throughout the first thousand years of the Christian era; and so far as we are able to form an opinion from the few remains which are left in buildings belonging to the Saxon period, it appears almost certain, that all the arches of that period were of the same form.

In the Norman period, however, a new principle was introduced, which was rapidly adopted and soon became universal, and was never subsequently abandoned. According to this plan, the arch was divided into two or more layers or orders, which formed, in fact, a series of concentric receding arches, of which the innermost or lowest carried on its back the one above it, which was in turn subordinate to the next, and so on. This new principle then was that of *subordination*, one which was not indeed confined to the member of which we are treating, but which rapidly overspread the whole of the building, and the influence of which became eventually perceptible in its minutest detail.

We now approach the subject from a new point of view: a mediæval arch was composed of a series of consecutive and concentric courses or orders, and each order carried a series of mouldings on its outer edge. We have now a key to the classification and arrangement of these mouldings, and instead of viewing or representing them any longer as one continuous, undivided series, we must look upon them as the ornamental portions of a series of distinct subordinate arches, grouped and combined in a highly artistic manner so as to produce an appearance, in which due subordination of parts, so uniformly characteristic of the designs of these periods, is made consistent with the general unity of effect, essential to the importance of so principal a member of an ecclesiastical building.

Having thus examined the construction, we will now proceed to consider the decoration of a mediæval arch. Now, to one who understands the language, the history of our national architecture is as clearly written in their mouldings, as it is in the general outline and

in those more prominent features of a building which strike the eye of the ordinary observer; but it is not to be denied that the forms and profile of the whole of the mouldings of the four last periods bear to one another so strong a family resemblance, as to induce a belief, on a superficial examination, that they are scarcely capable of separate classification, nor can it be said but that there are very few of the curves employed which are confined to any one particular period. I shall nevertheless be supported by all who have drawn and studied these mouldings, in stating, that although it is not easy to lay down any very strict laws on the subject, it is by no means difficult to trace and to chronicle the series of gradual changes which converted the plain quadrate form of the Norman period into the richly moulded arch of the Geometrical period; and later still, for the delicately shadowed lines substituted the shallow and insipid forms of the Rectilinear period.

Omitting the Saxon period, we find that in the *Norman Period* the mouldings are very simple and heavy, and placed at the corners of each of these orders of arches; but they are somewhat relieved and lightened in the doorways by zigzags, frets, &c.: still the round moulding prevails. I would observe that, notwithstanding this heaviness of appearance, the stones are not of greater depth than in any of the remaining periods; and the subordination I have described also prevailed throughout. I think an architect would therefore be inclined to say that the change of form which the arch gradually underwent, was really by no means so important a change as a change in the mode of its construction would have been. The Norman orders were not heavier, in regard to the size of the stones, than those of the subsequent periods, and the workmanship of the Norman walls was, in reality, lighter than afterwards.

In the *Transitional Period*, an increased lightness of effect is apparent in the mouldings, which assume a pointed form. We find also a peculiar form, which is of frequent occurrence in the Temple Church: we see still, however, the same general squareness of outline; for though considerable portions of stone are cut away, the mouldings usually project to the angle of the stone.

In the *Lancet Period*, the mouldings seldom or never come to the angle of the stone. There is a greater rotundity of appearance throughout. We have the tooth ornament between two rounds, the label moulding or hood moulding, and others peculiar to the period.

In the *Geometrical Period*, the mouldings are generally distinguished by their elegance and minuteness. A very common feature is the recurrence of little fillets, intersecting and combining with circular mouldings. You will observe the delicacy of these curves, —and these, be it remembered, are in the doorways; for in the shrines, canopies, and smaller work, the mouldings are so minute and delicate, so light and elegant (many not one-eighth of an inch broad), that one would scarcely conceive they could be executed in stone at all; yet by the selection of a fine grained stone, they were produced in the greatest profusion, and to an extent that we should now never think of imitating. And be it also remembered, these are not copies one of another, but original designs by men imbued with a general feeling, arising, perhaps, from education and habit, which is certainly capable of being identified. The mouldings are hardly ever copied: some particular group may be introduced from one subject to another, but they are generally slightly altered. In the later portion of this period, as at Guisborough, we have a continuous undulating form running through the whole series of mouldings. The orders begin to be larger; and later still, they increase considerably. Another circumstance also is perceptible, which is first seen in the Lancet period, that of placing the joints of the stone in a hollow. In the *Transitional period* (and of course in the Norman), that is never found to happen. Each order is there separately prepared, and one surface is placed against another, forming a right angle. In

the later periods, the joints come in the hollows.

In the *Curvilinear Period* the hollows are broader and shallower, and the ogee form is one of constant occurrence. And I will notice here the gradual alteration of this form of moulding, which continually occurs in the Lancet period, and becomes modified in the manner shown. The double ogee first appears in the *Curvilinear period*, and is more common in the *Rectilinear*.

Leaving the *Curvilinear period*, we find this flattening of the mouldings increased, as well as the breadth and shallowness of the hollows; and we have the three-centred hollow, corresponding with the four-centred arch; angularity of form in the label mouldings; with few or no mouldings of any projection; and I think we must admit, that in the *Rectilinear period* the art of carving mouldings had very greatly degenerated.

THE BRIDGEWATER GALLERY, CLEVELAND-ROW.

OUR readers will do well to obtain tickets forthwith from Mr. Smith (of Bond-street), or Messrs. Graves, and visit the fine collection of pictures opened for their admiration by the liberality and right feeling of Lord Ellesmere. The collection comprises specimens of Raffaele, Titian, Guido's wonderful "Assumption of the Virgin," Nicholas Poussin, the Caracis, Cuyt, and other great masters; and though there are but few modern works, there is a splendid Turner, and Paul de la Roche's picture of Charles I. Visitors will not omit, either, to notice the often talked of "Chandos Shakspeare," and a fine selection of works of the Dutch school.

In our seventh volume (p. 485) a plan of the principal floor in Bridgewater House (as altered), including the Picture-gallery, will be found.* At present, the walls of the very fine hall, with its vaulted corridors, are but rough-cast; and the ceiling and decorations of the great gallery itself are but shaped out, and wait the fine skin. The effect of the hall is good, with the exception of the lights in the ceiling, which are singularly ugly. We are sorry to be forced to say that the lighting of the picture gallery is very unsatisfactory, so much so, indeed, that alteration seems to us indispensable. The lights are in the cove of the ceiling, close to the walls,—a very steep cove too, so that, as now hung, many of the pictures cannot be seen at all,—at all events they could not on the day we visited the gallery. A central light would be far superior.

ARCHITECTURAL PUBLICATION SOCIETY.

THE annual meeting of the society was held on the 30th ult. Mr. Sydney Smirke, A.R.A. took the chair.

The report of the committee set forth that the conclusion of the "list of terms," forming the basis of the "Cyclopædia of Architecture," was in MS. and would shortly be printed. The committee being fully aware of the many difficulties connected with the furtherance of this valuable undertaking, had been desirous that some further steps should be taken towards carrying it into execution, but their exertions had not met as yet with that earnest response without which so great a work could not be prudently commenced.

An extract from a letter communicated by a member was read, suggesting that all the subscribers should put their shoulders to the wheel in earnest, and though they might not be able to furnish a complete article, yet they might give notes which would be useful for others more able, to work upon and reduce into order.

The balance-sheet for the year ending 30th April, 1850, was then read, showing an income of 536l. 5s. 10d. up to the 8th April, 1851, and an expenditure of 461l. 9s. 6d. leaving a balance of 75l. 5s. 4d.; also a statement of the receipts, &c. for the year ending 30th April, 1851, showing the income to the present time of 423l. 17s. 4d., and an expenditure and liabilities of 335l. 7s. 6d. leaving, a

* A view of the house was given in the previous volume.

balance of 88l. 9s. 10d. for further publications of that year; and it was stated that this amount would be further increased by many subscriptions not yet renewed.

After a speech from the chairman on the position, prospects, and usefulness of the society, and calling upon the members to assist the committee by contributions, pecuniary, literary, and pictorial, the following gentlemen were elected with the former members of the committee, viz. Messrs. James Bell, Ewan Christian, Francis Edwards, junr., T. H. Lewis, and David Mocatta.

We will take this opportunity of bearing testimony to the zealous services of Mr. Wyatt Papworth as honorary secretary.

The first part of the society's publications for 1850-51, just now issued, contains illustrations of the arch, corbel, door, façade, gateway, loggia, mausoleum, and metal work, and is a very valuable part. The principal contributors are Mr. A. J. Green, Mr. Donaldson, Mr. Lockyer, and Mr. Heneker. The bronze doors from S. Pantaleone, Ravenna, are interesting specimens of early metal work.

THE LATE ACCIDENT IN GRACE-CHURCH-STREET.

CAST IRON.

UNDER the above heading, I notice a letter in to-day's *BUILDER*, which condemns cast-iron in construction, from a failure which any founder would have told the writer was certain to have taken place. A casting, as described, is about as difficult to make as any that can well be formed, and would be almost sure to break from unequal contractions. The secret is this: cast-iron, in sectional masses of 12 inches wide and 9 inches thick, should always be avoided, and for this reason, that the first two or three inches get cold before the internal part of the section has done shrinking, and the exterior of the section gets so bound up that it ultimately destroys itself.

Many persons, ignorant of the proper uses of cast-iron, think that where they require strength they have only to place a great lump of metal, and they are sure to get proportionate strength: this is a great mistake, unless the metal is distributed in such a manner that the contractions are equal: this great lump of metal, intended for strength, only drains the pocket, and does more to weaken the work than strengthen it. In hydraulic presses, for instance, a few years ago, we thought we had only to increase the sectional area to get increasing strength, but we know better now, and we depend as much upon the quality of the mixture of the metals, and the way in which the casting is moulded, as we do upon the sectional area of the casting.

Cast iron for girders in buildings is the material that can be used with the greatest economy; that is, we can get a beam of cast-iron of a guaranteed strength, up to 40 or 50 feet long, for less money than we can in any other material: the whole matter reduces itself to a commercial question, and I think it very wrong for parties to be raising false alarms respecting the strength of cast iron bearers, when we consider the millions of tons we have in the buildings of this metropolis. I those not fully acquainted with the best forms and bearers were to consult some respectable founder, and take the guarantee, there would be nothing to fear, always recollecting that it is not masses of metal that constitute strength, but the judicious proportions and forms of the casting. The Hyde-park building is a sufficient proof of this assertion.

Wrought-iron girders are not so much to be depended upon as cast-iron; they are even as yet new, and have to be proved by time. I know of a wrought-iron girder bridge in this country where, at the present time, it may be seen that the heads of a great number of the rivets are gone, and many of the rivets themselves dropped entirely from their places; and I account for it thus: the rivets are heated hot, and in cooling naturally shrink to their utmost limit: when intense frost sets in, the iron has again a still further tendency to shrink and become brittle, and the constant vibration of passing loads ultimately snaps the

heads. We sometimes find in our manufacture of wrought-iron girders that by accident an indifferent piece of rivet iron gets used, and in the cooling of the rivet the head will fly off. Wrought-iron girders in particular positions are good, and cast iron in others equally good, and as much to be depended upon, when scientifically used, as any other material; but let us not raise unnecessary alarms, and fly from one extreme to the other, and thus cause fireproof buildings to be discontinued, or by our foolish fears put such a cost upon the construction that it will materially check the course of their erection.

HENRY GRISSELL.

We are induced to solicit space for a few remarks in reference to the late lamentable accident in Gracechurch-street, more particularly as we find that your correspondents offer opinions upon the subject, founded entirely upon erroneous data, and calculated to convey impressions injurious to our system of fire-proof construction for floors and roofs, which was employed at this building. We consider it due to the profession at large, and to the public generally, that they should know whether or not this system is in any degree answerable for the accident; because, if the affirmative can be proved, and that its introduction involves danger to a single human life, it is the duty of every man to discountenance it: while, on the other hand, if the negative is established, it is neither just nor reasonable that the system should be condemned, simply because it happened to be adopted in a building, a portion of which has fallen down.

It is admitted that the accident originated with the failure of one of the staircase girders; and it is in evidence (vide that of Mr. Bell, as reported in the *Morning Chronicle* and the *Daily News*, but not in the *Times* or *THE BUILDER*), that "Fox and Barrett had nothing to do with the girders of the staircase."

We consider the omission of these few words in the report of the inquest to have very materially affected our position in reference to this unfortunate affair, because in numerous instances in which we have pointed them out to those who had read only the *Times*' report, the remark has at once been made that we were evidently wholly exonerated, which was not the previous impression of the parties.

It was with the floors and roof of the building alone that we were concerned, and in furnishing the details for these, proof weights were given for every casting: the whole of them were submitted to the required test, and as some of these were proved, by way of experiment, up to their breaking weight, an opportunity was afforded of ascertaining their ultimate strength, which was far from being in any way condemnatory of the quality of the metal employed, viz., Scotch iron.

As to the general question of the introduction of cast iron into buildings, it is surely out of place, after the full investigation the subject has received at the hands of the highest authorities, to raise any doubt upon the point: its value as a material for construction is at best universally admitted, while its use has been sanctioned in every building of any importance erected during the present century. It is the abuse of this material only that is to be guarded against. With the most ordinary precautions the risk of accident is very small even with girders which are exposed; but with the light joists used in our system, first tested to a degree far exceeding their load, and then placed at short distances apart, and embedded in concrete, which soon assumes nearly the solidity of stone, accident is impossible—the iron being protected by its complete insulation, and the strength of the concrete being added to that of the joists—already proved to be in excess; but should any objection be raised to the use of cast-iron, it can be met by substituting rolled iron for the joists, at very little, if any, additional cost.

FOX AND BARRETT.

ST. PANCRAS ALMSHOUSES.—It has been proposed to establish, in the wealthy and populous parish of St. Pancras, almshouses for about 100 parishioners, who have attained sixty years of age, have never received parochial relief, have borne good characters, and have been overtaken by misfortune and adversity. The building will be commenced as soon as 2,000*l.* shall have been subscribed; and of that amount nearly one-half has been received. A ladies' committee has also been formed for building a wing for widows and single women of the parish. The proposition is warmly supported by the parochial clergy and influential residents.

SMEATONIAN SOCIETY OF CIVIL ENGINEERS.

This Society was founded in 1771 by Mr. Smeaton, for the purpose of encouraging civil engineers, and introducing, through social meetings, a friendly intercourse among the profession and men of science. Jessop, Whitworth, Watt, Rennie, Mylne, Golbourn, Huddart, and Chapman, were amongst the most eminent of the first class: Banks, Evelyn, Bolton, Prestly, and Hutton, of the other.

We owe to this society the publication of the valuable reports of Smeaton, which having been purchased, with other papers, by Sir Joseph Banks, were liberally given up by him, and were edited by a special committee.

The members of this Society entertained, on Friday evening last, a distinguished party of foreigners and English scientific men at the Freemasons' Tavern, Lincoln's-inn-fields. Among those present were General Poncelet, Col. Morin, Baron C. Dupin, Baron Séguier, Mr. M. Mathieu, M. Payen, M. Combes, M. Quetelet, of Belgium; Chevalier Conrad, of Holland; Professor Wedding, of Prussia; Chevalier de Burg, of Austria; Professor Colladon, of Switzerland; Professor Corridi, of Tuscany; Luigi de Cristoforis, of Lombardy; Count A. E. Rosen, of Sweden; Colonel Schwabe and Capt. Lisiansky, of Russia; Mr. Hayward, Dr. Smith, and Mr. S. Webber, of America; Earl of Lovelace, Sir John Herschell, Sir David Brewster, Sir Roderick Murchison, Professor Willis, Professor Wheatstone, Mr. T. B. Pentland. As honorary members of the Society there were the Astronomer Royal, Rev. W. Whewell, Mr. C. Babbage, Dr. Roget, Mr. C. H. Turner, &c. &c.

M. Gourlier, of Paris, the Duke of Buccleuch, Lord Brougham, Lord Rosse, Lord Wrottesley, the Dean of Ely, Colonel Sabine, Capt. Sir B. Walker, and Mr. Cockerell were unavoidably absent.

Mr. T. Lloyd, of the Admiralty, the president of the year, took the chair; and the treasurer, Mr. Mylne, acted as vice-president.

The usual royal toasts were given, after which the chairman gave the health of "their distinguished guests," associating with it the name of one who had distinguished himself for his engineering works, both civil and military, and whose reputation had gained for him a high scientific position, viz., General Poncelet.—The general expressed his anxious wish to do justice to the toast with which he had been honoured to reply, both for his own countrymen as well as for those distinguished representatives of other nations now present: in doing so he claimed the indulgence of speaking in his own tongue. He was sure he would speak also the feelings of all those who had been drawn together by the stupendous spectacle (the Exhibition) which no nation in ancient or modern times has ever paralleled. England had set them an example by her industrial progress. She had also entered into a solemn engagement with history and posterity to maintain with all her power the happiness and liberty of her people. To the Great Exhibition they, eager for information, and also as lovers of scientific progress, had come to give their tribute of their national productions and the assistance of the judgment, free from all sentiments of exclusive nationality. He thanked the commissioners on the part of the foreign jurists of the Exhibition for the great courtesy and kindness which had been shown them in the execution of their office, the remembrance of which would never be obliterated in their minds. He trusted that the members of the Society of Civil Engineers would allow him, a humble foreign engineer, to express his gratitude and that of his compatriots for the cordial reception they had given them, and for the science, which they not only cultivated for their own kingdom, but for the improvement of other nations. He need only mention the names of the illustrious founders of their society—of Smeaton, Watt, Brindley, Rennie, &c.—the real benefactors of mankind, to recall to them the monuments of genius with which their noble country was enriched, or by which other nations had been prospered, by their being the germ of new discoveries and of that grand and pacific strife which had

caused the happy union of so many scientific persons. If he detained them with mentioning their great engineering works, their docks, tunnels, electric telegraphs, their steam navigation and railways, would they not see that all tended to make of the whole human race one family, animated by the same philanthropic sentiment, the same desire for peace, of good, and true liberty. Should he speak to them of the immense progress the civil engineers of Great Britain had made in manufactures and agriculture, as shown by the multitude of beautiful machines at the Great Exposition; machines to be recommended not only for their ingenuity and variety, but for their perfect construction and mathematical exactitude in all their movements. No, he could not sufficiently explain their admiration of the ingenuity of invention, of what might be called the *chefs d'œuvre* of science, which they had seen collected there. In speaking of these wonders, which would redound to the classical honour of the age in which they lived, and to the English nation, he must beg to record his thanks to a society to which Watt, Farey, Tredgold, and others had contributed the fruits of their laborious inquiries—a society in which practical knowledge was enlightened by true theory. In the name of all the engineers present he had the honour of drinking to the prosperity of the illustrious Smeatonian Society.

Mr. Mylne, as the senior member of the society, replied, and expressed his regret the duty had not devolved on a more able member of the Society. The Society had been formed by Mr. Smeaton for the encouragement of civil engineers, by the introduction of social meetings and friendly intercourse among the members of the Profession, and to wear off those prejudices which too often existed between the members at home, and which acted as a bar to their obtaining knowledge from those of higher attainments abroad. He trusted this object had been attained, and in the name of his fellow associates returned their most cordial thanks for the honour conferred on them.

The Chairman, on giving "The Foreign Scientific Institutions," called upon the distinguished Baron C. Dupin to reply, to which the Baron, in an eloquent and energetic speech in English, remarked, that the Institutions on the continent could not be separated from those of Great Britain, but they of necessity had one great end in view; the advancement of general science, and with it, as one great branch, the unity of theoretical knowledge with practical civil engineering. These have now been united, and never can be separated, the fruits of which have still further to be developed. In speaking of the Royal Society he enumerated several distinguished members, many of whom he had the gratification of meeting on this occasion. He recollected well at a former period meeting with most of the distinguished engineers of that day, at the same festive board, now, alas, no more; viz., James Watt the first, Rennie, and many others. After other interesting allusions, he concluded by proposing "The Royal and other Scientific Societies of Great Britain."

Sir John Herschell, in reply, said—He saw by his side, before and around him, those whose discoveries and labours, and philosophical pursuits, rendered them fit representatives of the societies of Great Britain which had just been proposed. And after alluding to some particular discoveries of Sir David Brewster approaching in importance to those of gravitation, and to the labours of his friend, Dr. Whewell, as a philosopher and hystriographer of science, he proceeded to contrast the spirit of enlightenment and civilisation of the present age with that of the mightiest days of Rome, by referring to the kind of exhibition which the capitol then afforded, with its vast amphitheatre and gladiatorial and other shows, calculated to uncivilise and debase the human mind, with that of the grand display which has now brought to this country the representatives of all nations, which by its crystal-like character, suitably represents the taste of the present day and purity of its objects. All this will do more to lead to the union of

nations than has ever been accomplished before. The true and ennobling principles of science and art have received the sanction of the world, and we shall have that bond of fraternity instead of national strife.

The Chairman proposed the "Engineering of the Continent and of America," which was acknowledged in English by Baron de Burg, on the part of the Continent, in a neat and clear speech, and by Mr. Hayward and Dr. Smith, on the part of the sister country.

Monsieur Quetelet, in proposing the health of the President, took occasion to express his delight in being mixed with such a distinguished assembly, &c. &c.

Here the Rev. Dr. Whewell, Master of Trinity College, Cambridge, begged leave to propose a suitable toast for the occasion, viz. "The Amateur Engineers," which was responded to by the Earl Lovelace.

Much unity of sentiment and cordiality was evinced on this interesting *réunion* of the representatives of such scientific institutions, and the party broke up at a late hour.

SOCIAL FEATURES OF ARCHITECTURE.

The geologist can discern traces of long-gone phases of life from the form of a rock or a fossil he may pick up. Some such deductions may be interesting in connection with architecture, and may assuredly be full of solemnity and grandeur.

How strongly the genius of a period is imprinted upon its buildings! Look, for instance, at Babylon and Nineveh. Palaces and temples shew the powerful monarch, and equally powerful priesthood, and an enslaved people. At Jerusalem, one only temple signifying its sublime theocracy.—Egypt, with its gloomy religion, enormous temples, palaces, and cemeteries, shewing its ignorant superstitions and degraded masses working by the hundred thousands under hard taskmasters—kings or priests,—the theatres and temples of Rome and Greece—their baths and circuses,—all tell their own tale. Rome's mighty walls, even now on our own land, speak of her resolve to keep all she had as being all that was worth taking. The feudal fortresses and the old cathedrals remind us that not long ago the priest and the noble divided the power and the purse. Then the close-built old-fashioned towns tell us of the sturdy burghers beginning to beard the noble and to think for themselves—and act too.

I wonder what the fortifications of Paris will say for themselves 500 years hence! We cannot tell now: our great grandchildren may. No, we cannot tell the full meaning of the present:—"We cannot see the wood for trees."

Nevertheless, we can tell what that immense brick chimney, belching forth smoke within a stone's throw of that old time-worn castle, means. These long rows of palace-like buildings—immense warehouses, miles of docks, tunnels, embankments, stations—don't want much questioning as to their meaning: the shops being only lath and plaster, will not say much a few centuries hence, at least I hope not as they are.

When looking back on the history of nations, we see them gradually rising from poverty to affluence, with wealth comes effeminacy, then corruption, then ruin. History is said to be an index of the future, as well as a record of the past: though opposed to the common notion, I venture to say this is untrue; and in this point lies the grand distinction between ancient and modern civilization, for which we are indebted to the influence of Christianity. In all old communities, as wealth and numbers increase, there is at the same time formed a fearful mass of poverty in the lower strata of society. Pent up in dark alleys, good and bad together, misery breeds sin, which reproduces itself in wretchedness, and rags, and dirt: into this Augean stable are plunged the crime, recklessness, and ruined debauchery of the classes above, the dry rot gradually creeps upwards, till the whole mass is rotten, and is hewn down and cast into the fire.

Gibbon, in summing up the chances of old communities being swallowed up by bar-

barians, as Rome was, lays most stress on the improvements in the mechanical arts of defence, and on the fact that barbarians have first ceased to be so, before they could cope with the arms and arts of wealthy nations.

But we have a safer defence than these: we also have reached that stage of our existence when enormous wealth stands side by side with gaunt poverty and misery in its most revolting forms—so appalling, that thinking men stand aghast at the spectacle. But, as I said before, thanks to Christianity (I shall not stop to say why we may attribute this to Christianity), the very horror of the spectacle has opened men's eyes to the danger of its continuance—the truth has forced itself on all minds, and begins to operate for good. This is the master topic of the present day, and will be so for many a year: we see at last that the evil must be grappled with, or it will destroy us also; that we must drag this mass of ignorance, poverty, and vice up, or it will drag us down, so we have "sanitary reports," "labour and the poor" questions, "theories of education:" the overpowering feeling begins to show its effects on our buildings: we have baths and wash-houses for the million, ragged schools, soup kitchens, model lodging-houses, and model cottages. These are new ideas in building: they are the embodiments, in bricks and mortar, of a grand movement in society. Prince Albert, Lord Ashley, and others of the great, are working nobly in the cause. Peel's greatest speech ends with a prayer for the poor man's blessing. These are only beginnings, however: we want poor men's churches, and more than I dare occupy your valuable columns by mentioning. In this movement lies the salvation of society.

When from the lowest depths of society there flows upward a stream that will purify and renovate instead of corrupting, then we may be sure that our civilization will go on, ever assuming higher forms, and will not be swept away like that of old; because it is founded on a rock—God's blessing.

J. P. W.

NOTES IN THE PROVINCES.

THE project for the erection of a town-hall and corporate buildings at Leeds appears to be a settled one. The committee have not yet decided on a site, but they have been authorised to expend 200*l.* in procuring plans and estimates. The feeling seems to prevail that 30,000*l.* should be expended on a town-hall, to be worthy of a place such as Leeds. One-third of the cost is looked for from the sale of the present court-house and other public sources. Park-lane appears to be the most likely site.—The report of the Hull Workhouse Building Committee was lately adopted by the guardians. It stated that of the fifty-two tenders received, the following, being the lowest in amount, had been adopted by the committee:—Samuel Attack, Leeds, bricklayer, 3,200*l.*; Joseph Beauland and William Gledhill, Bradford, plasterers, 363*l.*; I. Y. Margison, Hull, joiner and carpenter, 2,824*l.*; Simpson and Malone, Hull, stonemasons, 1,624*l.*; Richardson and Miller, Hull, plumbers and glaziers, 468*l.*; Onions and Wheelhouse, Bradford, ironfounders, 270*l.*; Henry Newmarch, Hull, slater, 622*l.* 15*s.*; John Chapman, Hull, painter, 89*l.* 15*s.* Total, 9,461*l.* 10*s.* Though this was an increase of 426*l.* 10*s.* above the original estimates of the architects, yet it was 51*l.* 10*s.* below the subsequent estimate, including the additional works required by the Poor-law Board. It had been proposed to place the front of the entrance buildings at a distance of 90 feet from the road, and the committee also recommended that, in order to insure increased stability for the building, a sum of 175*l.* should be expended in stone landings to the foundations. Mr. James Ogilvie, of Elloughton, near Hull, has been appointed clerk of works, at a salary of 2*l.* per week, on condition that he resides in town and attends exclusively to the works during their progress. The first stone was laid on 21st inst., in the Anlaby-road. The building, which was designed by Messrs. Lockwood and Mawson, architects,

will be in the Italian style. The several fronts will be cased with red stock bricks, and the dressings will be executed in stone. The workhouse will comprise four departments. First,—the entrance buildings, providing immediate ingress and egress for business of a temporary nature. These consist of offices and apartments for the guardians, clerk, porter, applicants for relief, relieving-officer, vagrants, and probationers, together with baths and washplaces for vagrants and probationers. Second,—the main building, for permanent occupants. This will contain the master's office, male and female wards for infirm, able, and disorderly; school and workrooms, dormitories, lying-in-rooms, &c. A large dining-hall, 80 feet by 40 feet, will occupy the central space at back of main building, with kitchen, scullery, &c. Third: parallel with the main building will be the workshop for men, and washhouses, laundries, and drying-closets for women. The chapel, which will occupy the centre, in rear of the dining-hall, is intended to hold 400 persons. The infirmary will be placed behind, but within the area of the workhouse. In the whole, accommodation will be provided for 763 inmates, including vagrants.—The enlargement of St. Edmund's Cemetery, at Gateshead, is in progress.—A new church is in course of erection at Gilsland Spa.—A new church is about to be erected at Kexby, parish of Catton, chiefly at the expense of Lord Wenlock and Lord Lonsborough.—New markets are about to be opened at Elgin. They contain shops, stalls, and tables for the sale of butcher meat, vegetables, poultry, eggs, and dairy produce, and a corn-market, hall, and offices. The architects were Messrs. Mackenzie and Matthews, and the contractors, Messrs. Chalmers and Ross, masons; Mackenzie, carpenter; and Stewart, plasterer.—The chancel, nave, and south aisle of the Episcopal Church of St. John the Evangelist, at Aberdeen, have been completed from designs by Messrs. Mackenzie and Matthews of Aberdeen, architects, and the building was consecrated on the 6th inst. by the primate of the church in Scotland, who is the bishop at Aberdeen. The style is Early Middle Pointed, and consists of a nave (56 feet by 21 feet), south aisle (56 feet by 10 feet), north porch, chancel (28 feet by 17 feet), with sacristy on the north side, and tower on the south side of the chancel, in the angle formed by the aisles. The tower is not yet completed, but, when finished, will be surmounted by a spire. The nave consists of four bays, the porch being placed in the second from the west. All the windows are filled in with geometrical tracery, the west one having four lights, and the east one five. The walls are built of hammer-dressed coursed granite, with freestone dressings, from Burntisland. This style of work is quite new in this part of the country, where granite is so plentiful. Each of the gables is terminated by crosses, and the ridges are covered with ornamental tiles. The windows and doors have moulded dripstones, terminating in heads. The roof of the nave is forty-five feet high from the floor to the apex, the wood being varnished. The roof of the chancel is not yet finished, but is intended to be painted in polychrome, as will also be the walls. The chancel is entered by a stone arch, 26 feet high, and the tower, in which the organ is placed, opens into the chancel and aisle by arches, 15 feet high. The floor of the chancel is laid with Milton's encaustic tiles, and the nave with black and red tiles. On the south side of the sanctuary are the Sedilia and Piscina, carved in Caen stone. The windows in the nave and aisle are glazed with Hartley's patent rolled glass—the west ones having ornamental quarries. Those in the chancel are of painted glass, by Wailes. The east window has been put in by subscription, and has five lights, in each of which are canopies containing figures. Others of the windows, chiefly memorial, were designed by Mr. Wailes.—The foundation stone of a new West Bridge was laid at Galway on Monday week.—The new works at All Saints', Worcester, have been inaugurated. The whole churchyard and approaches have been surrounded by a wall of red brick (with stone courses introduced),

about 2½ feet high, from which springs a light and fanciful cast-iron railing, to the height of about 5 feet. A handsome and commodious flight of stone steps forms the ascent to what is now rightly become the principal entrance to the church—the north-western door—with pillars and gateway, and two lamps half-way up on either side. The ground slopes from one end to the other about 14 feet; in such a case there is always a difficulty in arranging the levels. The usual way is to make the breaks at the piers, but in this case the difficulty has been got over by breaking the railing between the piers, which are of red brick with stone facings.

CONVERSAZIONE AT THE MANSION-HOUSE.

THE conversazione given by the Lord Mayor and Lady Mayoress on Wednesday, the 4th, passed off most successfully. More than 1,500 cards were issued, many of them double, and the Mansion-house was filled in every part with a distinguished crowd of English and foreign savans and literary men, including the greater number of those gentlemen who have been concerned in the Great Exhibition. Many scores of men moving in society saw the great room there for the first time (which was superbly lighted, by the way), and no question was repeated so often during the night as "Why is this called the Egyptian Hall?" Whether they thought the ordinary reply, "Because it is built in accordance with the Egyptian Hall described by Vitruvius," satisfactory, we will not pretend to say.*

A concert, ample refreshments, and a collection of curiosities and models up-stairs, including Milton's watch, the gloves worn by William III. at the battle of the Boyne; a remarkable MS. from the Guildhall, relating to the times of Henry IV.; sketches taken in the Punjab, by the Hon. A. Hardinge; specimens of silvered glass; models illustrative of naval architecture from the Admiralty; examples of electro-plating by Elkington's process; and microscopic illustrations of the circulation of the blood in the feet of frogs, afforded full occupation to the visitors. Mr. Musgrove seems determined to make his mayoralty an epoch in the City annals, and is succeeding admirably.

ARCHITECTS' CHARGES.

THE GREAT GLOBE, LEICESTER-SQUARE.
WELCH & WYLD.

THIS was an action brought in the Westminster County Court by Mr. Welch, architect, against Mr. James Wyld, M.P., to recover the sum of 47l. 4s. for certain plans, specifications, and drawings of the great model of the earth in Leicester-square, made at the request of the defendant. The plaintiff's case went to show that the work and labour had been supplied to the defendant, who subsequently disapproved of the plaintiff and requested him to retire, as he was in communication with another architect, who had denounced the plans as being impracticable. The papers and drawings were obtained from plaintiff, and he retired from the engagement to proceed with the undertaking, but stated that he should expect the usual remuneration for the services he had already rendered, namely, two and a half per cent. upon the contract. Tenders had been received in consequence of an advertisement inserted in THE BUILDER, and Mr. Myers' contract was accepted after it had been reduced by plaintiff from 2,561l. to 1,898l. and the present claim was the per centage on that amount. Mr. Wyld had promised to pay, it was alleged, but in examination the defendant denied it most positively. After hearing all the facts, the judge thought the preponderance of evidence was on the plaintiff's side, and therefore gave him a verdict, with full costs.

BARNSELY & CARTWRIGHT.

THIS was an action at Wolverhampton for 5l., moneys alleged to be due to plaintiff, an architect, for superintending the erection of a house. Mr. Underhill supported

the plaintiff, Mr. Hayes the defendant. Mr. Barnsley stated that in the month of April, last year, Mr. Cartwright applied to him to draw out plans and specifications of a house he wished to erect. He did so, and made an estimate of the cost. The defendant observed that the cost was rather more than he wished to expend, and he, at his request, made out another, and in the presence of a witness agreed to superintend the erection of the building. He overlooked the erection of the building for two months, and generally visited it two or three times a day. The defence was to the effect that plaintiff was also a builder, had made a contract to put up the timber part of the building, that he came to overlook his men, and that no plans had been received by defendant. Judgment for plaintiff.

BUILDERS' ACTIONS.

HOLLAND V. EARL OF HARBOROUGH.

HAVING noticed in your journal of the 5th April last a paragraph relative to the late action, *Holland v. Earl of Harborough*, I beg to submit to your notice the manner in which the whole affair has been conducted and closed. As you are aware, the cause had proceeded just far enough to claim all the costly fees of the court, when the judge declared that he was no architect or surveyor, and therefore considered it a very fit case for reference. Mr. Humphrey (one of the defendant's counsel) also said, that for the honour of his lordship (the defendant), and to allow him an opportunity of appearing in court to rebut the evidence of one of the plaintiff's principal witnesses, the case (in justice to him) ought to be referred. This being agreed upon, the next question arose as to who should be the arbitrator, and Sir Eardley Wilmot (a barrister-at-law) was soon fixed upon by council and judge, neither plaintiff nor defendant, nor even their respective architects having a voice as to the choice of such referee.

Now, without in the least calling in question Sir E. Wilmot's legal acquirements, let me just for a moment, Mr. Editor, draw your attention to this ridiculous part of the matter. The judge a short time ago declared himself unable to proceed with the case, being no architect, and at once sanctions the appointment of a barrister-at-law to conduct it for him.

After some days had elapsed, it was arranged on the 14th of April last that the Court should be held at Melton Mowbray, a town 15 miles from Leicester, and about 4 miles from Stableford-hall (Lord Harborough's seat). The plaintiff's original claim being 614l. 1s. 6d., and the defendant having paid into court 457l. 14s. 4d., consequently left a balance due to plaintiff of 156l. 7s. 2d., which was the bone of contention, and although the Court was removed within so few miles of the noble Earl's seat, he either dared not or would not appear in court.

After the whole of the witnesses had been examined, and the counsel on both sides had summed up the evidence, Sir E. Wilmot remarked that as there was a difference between the two architects engaged by plaintiff and those by defendant (and he not being able to judge which were correct), it would be necessary for him to engage a fifth architect whose opinion he must be guided by.

On the 26th of May, the plaintiff's attorney received a letter from Sir E. Wilmot, stating that on receipt of 92l. 4s., the award should be forwarded. The amount was sent forthwith, and the award is now before me, being in our favour. But before this result was arrived at, there had been engaged in this cause no less than one judge, nine barristers, four attorneys, and five architects, at a cost, including the expense on both sides, of upwards of 600l.!

You have my permission, Mr. Editor, to make what use you like of this statement, which I trust will tend to further your object in getting such, or similar, disputes, between employer and employed, arranged in a more speedy, direct, and cheap manner.

THOMAS HOLLAND,

(Son of the plaintiff in the above case).

ARTISTICAL AND OTHER INTELLIGENCE FROM ABROAD.

Archæological Society, Athens.—This body has caused, of late, some excavations to be made, under the superintendence of M. Pitakakis; of the results of which, although they have been kept secret, not to anticipate M. P.'s reports, the following has become known:—There have been found, under the foundations in the court of a small house, the ruins of the old court-house of Athens. Besides a number of fine blocks of the Piræus stone, numerous sculptures and inscriptions have been discovered: the former, although much broken, are of surprising beauty. The arm of a statue, over which part of the garment of archaic type is thrown, is much admired. Sixty inscriptions have been already discovered, mostly relating to rewards and honour bestowed on deserving citizens of the Macedonian or Roman eras; one of the former of the Archonship of Nikias (Ol. 211, 1). It is interesting to observe, that it is stated on all of these inscriptions, that they are to be put up in the council hall, or in the council. These researches have already led to an interesting elucidation of Athenian topography. They have been made at the north-west corner of the Acropolis. Hence we see that those have erred who have placed the Athens court-house, and the buildings connected therewith, behind the hill of Mars (Areopagus). The description of Pausanias points to the right, viz. to this side of the Areopagus. That author mentions the statues of Harmodius and Aristogiton, which were in or near the court house, and he places them on the road from the Kerameikos to the Areopagus.

Co-operative Power.—The number of small weekly contributors towards the building of St. Nicholas' Church at Hamburg is 15,082, who have consequently advanced that undertaking during the present year by a sum of 15,945 mark banko.

A Temple of enlarged Christianity.—On the 1st of May, the foundation was laid at the Bursteg, in Hamburg, of a vast edifice, to give shelter to those hundreds of families, Christian and Jewish, who at each quarter's rent-day are unable to satisfy their landlord, and are therefore driven out in the open street! This is the first benevolent institution in Hamburg, equally accessible to members of both testamentary religions.

Melchior Boissérée.—The death of this distinguished man, brother to Sulpize Boissérée, is much regretted throughout Germany. It was so far back as the year 1804, that three young men, citizens of Cologne, conceived the idea of collecting and resuscitating the mediæval art-relics of the Rhine-lands. But what was, probably, but contemplated as a provincial undertaking, soon attracted the eyes of Europe, and became a great fact of modern art-history. When, about 1808, Sulpize B. determined to devote himself entirely to the work on the *Cologne Cathedral*, Melchior and his brother Bertram continued the research and collection of ancient paintings. But already in 1810, the old pictures had outgrown the scanty spaces appropriate to them at Cologne. They were transferred first to Heidelberg, and in 1819 the three brothers migrated with them to Stuttgart, where the king afforded room to this unique gathering of mediæval art. It was Melchior who chiefly attended to the restoration of the pictures, and enriched the collection during his travels in the Netherlands, in 1812 and 1813. Having found some of the pictures of Hemling and Memling, it was he who first attracted notice to these excellent, hitherto hardly known artists. In 1827 the collection was sold to Ludwig of Bavaria, and as the Pinakotheka (where they were to be placed) was not ready, the pictures were conveyed to Schleissheim. In this retirement, Melchior Boissérée devoted his whole attention to the art of glass painting, which at that time was nigh considered as lost. If now such great things are accomplished at Munich in this department of art, it was Melchior (conjointly with his brother Bertram) who paved the way by this collection of old specimens, seen with astonishment by travellers from the whole of Europe. When Ber-

* George Dance was the architect, 1739.

tram had died (about 1830), Melchior joined his brother Sulzpie at Bonn, where Melchior, in the prosecution of his favoured art-studies, concluded his life in serene quiet and contentment.

German Art.—Statue of Madlle. Rachel.—The works of Overbeck have been increased of late by some important additions. His "Conversion of St. Thomas," is intended for London. The series of fourteen pictures of the Passion, which have to be published as coloured engravings, next call his attention. The engraver is Bartolomeo Banboccini. The picture also which Plo IX. has ordered of Overbeck, for Monte Cavallo, is in a fair way of progress.—A model for a statue of Madlle. Rachel has been made by M. Afinger, at Berlin. It will be executed in marble, by order of the king. The actress is represented in Grecian costume, the diadem-covered head bent forward in contemplation, and the whole bespeaking that nobleness and ideality which characterise the original.

Munich.—Academy of Fine Arts.—After an interruption of three years, the Academy announces an exhibition of works of living artists, to begin on the 25th of August, and to last two months. Paintings, sculpture, cartoons, architectural drawings, and (superior) lithographs are admissible; and for works sent in by request of the Academy, the freight is paid, as is the case in most German Art-Unions and Academies.—*Glass Painting.*—One of the former legislatures having rescinded the grant hitherto paid to this renowned establishment, there was some danger that it would cease altogether. M. Ainmüller, head of the Royal Glass-painting Commission, has, however, made an offer to continue the working of the establishment if a subsidy of 4,000 fl. (340*l.*) should be granted to him annually, which modest proposal is likely to be accepted.

SOMETHING CRITICAL.

THE specimen of street architecture at Manchester shows that the provincial *shopocracy* are determined not to lag behind their metropolitan brethren. Besides displaying spirited liberality in an unusual degree, the design is marked by an attention to architectural logic, which is sadly disregarded here in town, since, instead of presenting a continuous surface of glass without any apparent support to the rest of the front, the ground-floor exhibits substantial construction, and the whole elevation is well and firmly put together. Still there are one or two matters which do not seem to have been quite so carefully considered as they might have been. Now, though such arrangement would have been contrary to rule, it would, I conceive, have been more judicious to have reversed the sequence of the orders, making the lower and loftier one Corinthian instead of Doric, and employing the latter for the third story. So disposed, the richer order would have been approximated to the eye, consequently the capitals and details would have been more distinctly seen, especially as that first-floor order is somewhat loftier than the others. Such arrangement would, too, have been in perfect accordance with the principle of bestowing greater ornateness on the windows, and other features of a first-floor, than on those above it; besides which, the characteristic proportions of the several orders would have been preserved; whereas now the Doric columns are of considerably more slender proportions than the Corinthian ones, so that the latter look comparatively stumpy, and the others lanky.

I am further of opinion that the general effect would have been greatly better, had the entablatures over the smaller columns to the windows been omitted, and these columns been carried up as high as the window-transoms, and the mouldings of the arches made to spring immediately from their capitals; whereby not only would some degree of fritter have been avoided, but also the disagreeable effect (highly disagreeable, at least to my eye) occasioned by the columns being shorter than the head of the aperture beneath the arch, to the interruption of continuity of lines and levels.

ZETA.

SANITARY IMPROVEMENT OF THE METROPOLIS.

THE inhabitants of London are suffering from bad air; a very expensive, but limited supply of impure water; imperfect drainage; insufficient laws for the removal of nuisances and prevention of diseases; dwellings, especially those of the poor, built without proper regard to the health of the inhabitants; up to this time, also from the exclusion of light, by the Window Tax, and from the shocking practice of burying the dead among the living, in overfilled burial grounds.

The Metropolitan Sanitary Association was instituted in February, 1850, to endeavour to obtain, through Legislative enactments, remedies for these evils. Since the institution of this association, the Metropolitan Extramural Interments Act has been passed, and the abolition of the Window Tax has been declared.

Much, however, has to be done. An abundant and constant supply of pure water, at a small expense, must be procured for every house in London—a good Buildings Act must be passed—the drainage must be made perfect—filth and nuisances must be removed—the origin of all diseases, where possible, must be prevented, and provision be made to arrest the course of those which are infectious.

The committee of the association give their valuable time to carrying out the designs of the institution, but they incur much expense in the hire of committee-room—rooms for public meetings—the salary of a secretary—advertisements—printing reports, and other publications,—and for messengers, stationery, &c.; and it is but right that the public, who are to enjoy the benefit of their success, should contribute to the funds which are required in endeavouring to obtain it.

REFUGE FOR THE FOLLOWERS OF SCIENCE.

SOME time back I saw in your pages an observation encouraging the hope that the establishment of a benevolent institution for aged and unfortunate members of the civil professions connected with science might be contemporaneous with the successful development of the scheme of our literary friends, and as I live so near the spot selected for the literary asylum or college (or whatever it may be termed), my anxiety for the perfecting of the object alluded to has considerably increased.

Some years ago—about eight years—I did make an effort to get a few friends together with this view, but the vortex of 1844 or 1845 swallowed up the little help I could get from engineers and surveyors, and my endeavours were thus smothered in their birth. But since the time I refer to, many men have become rich and some poor and destitute, and it is not improbable that, with your assistance among the architectural and building fraternity, a benevolent fellowship may be now started.

If *Stevenage*, from its having been selected as the site of the Literary Refuge, should be deemed a good place for a like asylum for scientific men—such as architects, civil and mechanical engineers, surveyors, &c. &c.,—I shall be glad to contribute any personal services as well as my quota to the funds.

J. BAILEY DENTON.

THE IRON TRADE.—Common qualities of iron, rods and bars, are notoriously being sold at rates varying from 5*s.* to 15*s.* per ton below the nominal prices, and other descriptions show a still wider range: sheets as far as 20*s.* to 25*s.* In pig iron there is an unusual variation of 20*s.* per ton, between the extreme qualities; and, generally, a decided giving way in price has taken place during the last month. The interests of South Staffordshire appear likely to be injuriously affected by the production of vast quantities of inferior metal, while quality is altogether disregarded. In some instances every other consideration has been so far abandoned but that of cheapness, that pigs are now made and sold in this district scarcely realising the price of common brands in Glasgow, and certainly below them in value.—*Birmingham Paper.*

IRISH ARCHITECTURAL AND OTHER WORKS.

THE Dublin Graving Dock, lately commenced, will, it is considered, circulate from 80,000*l.* to 100,000*l.* among the artisans of the metropolis.

The old Lunatic Asylum at Cork is undergoing a course of alterations for the purpose of its conversion into a cavalry barracks.

A new workhouse is to be erected at Clonmel, according to the drawings of the architect to the Poor-Law Commissioners.

Two new churches are about being erected at Wexford by the Catholic Church Committee, and proposals are being received for the erection of the walls of same.

The amount of expenditure for the contract works at Maynooth College was 23,500*l.*; for drains and excavations, 1,775*l.*; for extra works, 834*l.*; incidents, 25*l.*; besides the sum of 5,728*l.* for alterations, additional accommodation, and maintenance of the apartments of president, vice-president, professors, and resident officers' rooms, the several halls, chapels, dormitories, &c.

The Board of Public Works intend erecting new bridges at Castlenode, Carrownaskeagh, Lisouniffy, and Bunamucka; also at Killmood, Carrickglass, Ballyclare, and Ballinamore, according to the drawing at the Drainage Engineer's office, Longford.

The board of guardians at Bawnboy Union, County Cowan, intend erecting a new workhouse, according to the drawings, &c. of the Poor-Law Commissioners' architect.

The board of guardians of the Tobercurry Union, county Sligo, also intend erecting a new workhouse.

The tunnel under the Blackrock-road, on the Cork and Bandon Railway, which is 1,000 yards long, has been opened. The ribs of the metal arch over the fourth and last span of the Chetwynd valley viaduct have been fixed on the piers. The superstructure, which is composed of cast and wrought iron, weighs 1,000 tons. There are four spans of 110 feet each, and the arches are at a height of 90 feet over the mail coach road.

The Ecclesiastical Commissioners have caused to be rebuilt the churches of St. Nicholas and Ballymodan, in the diocese of Cork; also Ramoan and Croagh churches, in the diocese of Limerick. A sum of 2,030*l.* has been expended thereon. A new church has been erected at Achill by private subscription, the commissioners contributing 200*l.* The church of St. John at Limerick is rebuilding, and is to accommodate 1,000 persons. A church at Lismore is in progress of erection: the cost will be 1,200*l.*, contributed by the Marchioness of Waterford. The commissioners' architect made the drawings. Grange Gorman Church, in Dublin, has been enlarged at an expense of 357*l.*

NASMYTH'S ABSOLUTE-SAFETY VALVE.

—Mr. Nasmyth has forwarded to us a representation of the valve already described by us at p. 273 of our current volume. The diagram appears to bear out what is there said as to its peculiarity of construction. It must be effectual in preventing the valve from getting set fast in its seat, unless, indeed, there be some extraordinary power of attraction at work, electrical or magnetic, which even the violent agitation of the water in ebullition cannot overcome. The valve, however, is spherical, and one cannot readily conceive even a force of this kind to be capable of rendering such a form of valve quite fixed and immovable. The precise nature of the cause of fixture, in some cases at least, is by no means clear, and seems to require further and closer investigation; and if it should turn out that electrical or magnetic action has something to do with so dangerous an accident, it will be very easy to apply the proper remedy so as to render such a valve as Mr. Nasmyth's, even in this assumed respect, quite certain in its action. That electricity may have more to do with boiler explosions than might at first sight be supposed, the wonderful phenomena of Armstrong's hydro-electric boiler sufficiently justify us in suggesting.



SOMERSET HOUSE, SEAT OF MR. S. M. PETO, M.P.—ARCHITECT, MR. JOHN THOMAS

[See page 355 in our present Number.]

DRAWINGS AND SKETCHES BY
AMATEUR ARTISTS.

SOME of the same lovers of art who organized the exhibition of sketches last winter, at the Old Water Colour Gallery, have arranged an exhibition of drawings by Amateurs, at 121, Pall-mall, their motive being, as they state, to show what may be done in a beautiful art by those who have no cause or inducement to follow it as a profession, giving, as it does, its own reward to the amateur in an interesting occupation, as well as a source of no little pleasure to his friends; and further, with "a hope that those who have not already introduced the art into their own homes—have slighted it as a part of education, and have been inclined to repress rather than indulge and encourage latent talent when seeking to manifest itself,—may find an earnest inducement and a praiseworthy example to extend their fostering care to every effort in art, however feeble, by seeing, in this gallery, to what a successful issue and good purpose it may be carried by taste, well-directed study, and perseverance."

The collection is an interesting one, but necessarily represents only a small circle of amateurs: next year, the intention being known, it might be greatly strengthened. Miss Blake exhibits some exquisite landscapes: "Quedlinburg, in the Hartz" (25), and "Potterdale Church, Westmoreland" (96), are first-rate productions. The same may be said of Mr. Houlton's "Studies of Heads" (97 and 108).

The Lady Honoria Cadogan has some capital sketches in Belgium, Italy, &c., and the Lady Augusta Cadogan a portrait, amongst other contributions, of Lady Londesborough, characteristic in its pose, but scarcely so handsome as the original. Mr. Charles Jenyns's "Sketch of Temple of Minerva at Rome" (85), and "John Knox's House, Edinburgh," the Hon. Col. Liddell's "View from Goodwood Park," and others; "Brancepeth Church," by Mrs. A. Salvin; "Italy," by Mr. T. Macdonald; "Queen Elizabeth's Hunting Lodge," and others, by Mr. Heathcote; Mrs. Puller's "Farm near Welwyn" (98), and Miss Sophia Yates's illustrations of "The Mistletoe Bough," have great merit. We may mention, too, amongst the other contributors, Mrs. Serjeant Thompson, Miss Aldjo, Mrs. Davidson, Miss Mary Severn, Miss Pell, and Miss M. Palliser.

DIRECTION OF LONDON STREETS.*

At the eleventh hour, and on a very small scale, the police authorities have undertaken to do something towards simplifying the vast labyrinth of London streets, on behalf of the many provincials and strangers who may be within our gates during the present summer. At a few of the points where leading roads commence or intersect each other, the terminating point of each line of route has been painted at the corner beneath the particular name of the thoroughfare. For example, at the old bend of High-street, Bloomsbury, where it communicates with St. Giles's, we read,—"Broad-street, leading to Charing-cross," on the left-hand side;—"Broad-street, leading to Piccadilly," on the right. So far as it goes, this is a real improvement—and one that has been long required. If similar notifications were extended to the whole metropolis, it would be of use, not only to the foreigner who visits us for a week, the provincial who spends with us a month every year, and the recent settler in the great city, but even to those who are "to the manner born." No man does or can know London in all its details. What does the resident at the West-end know of the crowded streets, courts, lanes, and alleys east of the East-India House? How many dwellers in St. John's Wood could find their way unaided about Bermondsey and Lock's Fields? Is there a man in London who having ventured beyond his usual beat, has not found himself false in his reckoning? What memory can be found equal to the remembrance of all the names, surnames, bearings, and geographical positions of 20,000 streets? The clues and turns and windings of

London might make the study of a life-time. Each year that passes, adding its 60,000 souls to the population, and 15,000 to the number of houses, makes the evil greater. If the statesmen of Elizabeth found London too large to feed and govern in their day, what would they think of the London of 1851? Sooner or later, a change of nomenclature, an improvement of system, must take place in regard to the registry of streets: and it might be effected now that attention is forcibly directed to the subject as well as hereafter. A great simplification might be obtained, quickly, quietly, and at a slight expense, with little alteration of the present plan, merely by adopting a more minute notation. For instance, we would suggest that instead of a single name being painted up at the end of each street, as at present, the entire topography of the street should be indicated, with the streets which empty into it on either side, those which cross it, and that in which it terminates. All this could be easily and briefly expressed. Take Bond-street—at the Oxford-street end of this thoroughfare we would have some such inscription as the following:—

NEW BOND STREET.—OLD BOND STREET.
BROOK STREET.
GROSVENOR STREET.
BRUTON STREET.
GRAFTON STREET.
BURLINGTON GARDENS.
PICCADILLY.

At the Piccadilly end of the street, the same inscription would appear in the reverse order. The advantages of such a system to all persons, native or stranger, in finding their way about the streets of London are too obvious to need pointing out. To assist the same object at night, we would suggest—enlarging on a hint formerly thrown out—that on the lamps which stand at the corners of thoroughfares there might be painted the number of the house opposite to which it stands, and the name of the street opening into it at that point, with the addition of that of the thoroughfare to which it leads: thus—"Oxford Street (000)—Bond Street—Piccadilly." How much of the time of the dwellers in cities would be saved by the perfection of such arrangements as these!

ARCHITECTURAL LECTURE AT
EXETER.

On Tuesday in last week, at the Exeter Athenæum, Mr. E. Ashworth delivered his fifth lecture on Anglo-Gothic Architecture. He commenced by noticing the corruptions that crept into third-pointed gothic, despite the richness and the beautiful forms of its details, for instance, in large stone pendants exaggerated into mimic vaults, springing from the empty air, and the same impossibilities in carved ribs of a wood roof, making their impost of a detached corbel, or attached only by one edge to the roof cornice, as in Crosby Hall, London. The continuance of spires was next noticed, their being found dating as late as the sixteenth century, as for instance, at Louth, in spite of the fashion for towers, finishing with pierced parapets and pinnacles, that so prevail in the third pointed age. The rage in Italy for mythological literature influencing architecture, and her handmaids, painting and sculpture, was described in its progress, till an inimitable cathedral, adorned with members and ornaments of revived ancient Roman art, was reared to set the fashion, which all countries subject to Rome then followed in their churches. It was then shown how the dome of St. Peter's only followed a bold flight of Brunelleschi, who, without precedent, reared the vast cupola of Santa Maria del Fiore, at Florence, which doubtless was Michaelangelo's prototype in designing St. Peter's. The Corinthian pilasters in the base of this dome denote the continuance of classic detail through the Byzantine peculiarities of Italian Church architecture, and show that "the orders" were never totally exterminated by the Basilican arcades. The introduction of the new style into England, "the corruption of Pagan architecture," revived or rather applied as a dress to old English edifices, would have crept more

slowly over the stern majesty of our Gothic cathedrals, had not the impetuosity of temper of Henry VIII. overturned the system of abbatial rule in England, and the Reformation, aiding the tendency to fall into puerile novelties in art, now comes, and

"With a voice that, like a bell,
Tolled by an earthquake in a trembling tower,
Rings ruin."

to pointed architecture. The palace of the ill-fated Somerset, on the site of which the present Somerset House stands, the first piece of Italian architecture in England, designed by John of Padua, in 1546; Inigo Jones's Corinthian portico and fantastic obelisks and towers applied to the Gothic cathedral old St. Paul's; Views of the school's tower, Brasenose College Chapel, Oxford, &c., showed the incongruous mixtures of Gothic and Italian features in our English buildings of the sixteenth and seventeenth centuries, and forming a style, too frequently imitated now, and termed Jacobean or Elizabethan. Trinity College Chapel, Oxford, said to be a joint design of Christopher Wren and the great amateur, Dean Aldrich, and the present St. Paul's Cathedral were brought forward to show the complete abolition of Gothic architecture in the eighteenth century.

THE GREAT GLOBE IN LEICESTER
SQUARE.

Mr. WYLD, having completed his great model of the globe (reversed), has opened it to the public, and we sincerely hope that he will obtain a good return for the time and money expended in his spirited project. We should not be honest, however, if we were to say that we expect he will do so in a pecuniary point of view,—the public it addresses being comparatively select. It seems to us that two great mistakes have been made,—in the first place, the shell is much too costly for the kernel; and in the next place, the interior is swamped by the staircases and galleries, so that the first impression on entering is one of disappointment. Our readers, however, must not be deterred by this,—let them at once go up to the top, and when the eye and mind have accustomed themselves to the scale,—which is necessary with all models,—they will find it a very extraordinary work, full of interest and suggestive of knowledge. The volcanic districts are very interesting: the vast proportion of wilderness and water making up the world becomes strikingly evident, and we wonder over the laws that keep in safety the peopled ridges of land which the sinuous rivers, extending here, there, and everywhere, have left high and dry; and then to find that that small jagged spot is England, and to trace her dominion far away;—but in speculations such as these we must not indulge, though our readers, when they go there, doubtless will. The Admiralty, the Geographical Society, and all educational bodies should give all the aid in their power to the undertaking. The value of the model would be increased by marking the equatorial line, and some means should be adopted to make obvious the position of principal places.

A plan and view of the building will be found p. 218, ante. The four apartments which are shown in the plan around the main building have not yet been formed, so that the appearance it now presents does not exactly accord with our view.

WESTMINSTER BRIDGE.—The question of rebuilding this venerable but dilapidated structure, is, we hope, at length likely to be settled. A commission has been appointed by the Lords of the Treasury, to consider the whole question of site, style, and material, and to report, without delay, with a view to immediate operations. The commission includes the names of Lord Seymour, the Earl of Lonsdale, Lord Sudley, Lord Robert Grosvenor, Sir Robert Inglis, Bart., Rt. Hon. C. T. D'Eyncourt, and Mr. Alderman Humphrey. Their first meeting was held at the Office of Woods, on Thursday, the 29th ult.

* From the Athenæum.

PYNE'S LAKE SCENERY OF ENGLAND.

THERE are at this time in Messrs. Graves's gallery, Pall Mall, twenty-five large pictures by Mr. Pyne, illustrating the scenery of the lake districts of England, which eminently deserve a visit from all lovers of art. Mr. Pyne's powers as a landscape painter have been long known and appreciated; but these, his last productions, while they make known to many for the first time beauties of scenery that can scarcely be rivalled, will, we are disposed to

think, greatly increase his reputation. He has done what the painter should do, caught nature at her best,—sought transient effects most worthy of being perpetuated, and fixed them on the canvas,—adhering faithfully, nevertheless, to the material scene.

We would particularly instance No. 23, a picture full of beauty, representing the scenery of the Vales of Ennerdale and Buttermere, and including Crummock Water and Lowes Water. These views have been painted for Messrs.

Agnew, of Manchester, to be published by them in lithography, as a connected work. Apart from the natural beauty of the scenery, the English Lakes are rich in associations with Wordsworth, Southey, and Coleridge; and it is good as well as pleasant to stroll—

"Where each old poetic mountain
Inspiration breathes around;
And every shade and hallowed fountain
Murmurs deep a solemn sound."



MILL ON THE STOCK GILL.

SYSTEMATIZATION OF COLOUR.

THE French Academician, *M. Chevreul*, has concluded his long and arduous task, mentioned in his work "On Colours." He has constructed the painted porcelain tablets which have to serve as types for all colours, which *M. Chevreul* has systematically arranged in his chromatic tables. In this way it will be possible to point with precision to any given colour, as we point to a number in logarithmic tables. *M. C.* has marked methodically in these tables the astounding number of 14,421 colours, and thus a perfect precision as to the classification of colour, its *nuance* and *tone*, become possible. For the sake of comprehending the value of these expressions, it is to be understood, that, according to the French philosopher, a coloured surface, red, yellow, blue, can only be modified in four different ways:—

By the white, which, in rendering it more light, diminishes its intensity.

By the black, which enfeebls its intensity by darkening (*assombrissant*).

By another colour, which changes it without darkening it.

By a colour, in fine, which changes it by rendering it more black.

Accordingly, the *tones* of colour are the different degrees of intensity, which it obtains from a mixture with black or white in different proportions. The *ensemble* of these *tones* *M. Chevreul* calls the *gamme*. The *nuance* is the modification, which any colour undergoes by the addition of another, which changes without darkening it.

In the infinite variety of colours which nature presents to us, *M. C.* has first chosen seventy-two simple colours, presenting each

twenty *tones*, and comprising nine *gammes* of *tones*. The produce of the three quantities, seventy-two, nine, and twenty, is 12,960, to which we must add twenty-one resulting from the depersishment (*dégradation*) of the black.

After a long labour, prosecuted with the care and precision which characterise *M. Chevreul*, he has been able to complete the coloured and imperishable types, which have to serve as the basis of this classification.

LIFE ASSURANCE A CERTAINTY
AND A DUTY.

THE BRITISH MUTUAL SOCIETY.

THE report read at the general meeting of this office last week contained some observations which apply generally, and may be usefully quoted.

"We anticipate the future," say the directors, "with confidence. A knowledge of the principles of life assurance is now extending (though slowly), and we may look for the approach of a time, when to assure will be the rule, and not, as now, the exception. The business of life assurance is not a commercial speculation, but a scientific certainty. It has been truly said, that while there is nothing more uncertain than the duration of life in the *individual*, there is nothing less liable to fluctuation than the average life in the multitude. Perhaps no species of investment has proved so invariably prosperous as life assurances. For the British Mutual Life Assurance Society nothing is wanting but *numbers* to ensure to every member such an amount of profit as would double the value of their policies, and this desirable result is wholly in the hands of the members themselves. If

each member will lead his friends' and acquaintances to reflect on the great blessings of life assurance, and induce them to avail themselves of the advantages offered by this office, they will, by encouraging and creating habits of prudent and provident forethought, greatly benefit the community, and, at the same time, materially advance their own interests." It was pointed out that the enormous profits realised by some life offices served to confirm all calculations as to the safety of their rates, low though they are, whilst the rapid progress of sanitary science, and the consequent improvement in the physical condition of the people were tending still further to lessen risks.

ROYAL PRINCESS'S THEATRE.—An adaptation for the English stage, by Mr. A. R. Slous, called the "Duke's Wager," has given an opportunity for some excellent scenery by Messrs. Gordon and Lloyds, and some singularly good acting on the part of Mrs. Kean, Mr. Kean, Mr. Wigan, and Mrs. Winstanley. As a subtle discriminating display of emotions, we have seen nothing finer for a long time than Mrs. Kean's acting in this piece. The plot is laid at Chantilly, in the reign of Louis XV.; and the scene which we would more especially praise, represents an ante-room of that period, having a central flight of steps and gallery beyond, with chandeliers and fittings exceedingly well designed, and effectively painted. Notwithstanding the success of this piece, we hope Mr. Slous will not be led, by the fatal facility of adaptation, to neglect his own powers of composition, well proved by the "Templar."

WIDE ESTIMATING.

I INCLOSE a list of the tenders sent in for the additions to the schools at Aldershot, belonging to the Farnham Union, and advertised in *THE BUILDER*; Mr. Young, architect. Each party took his own quantities, and I, being engaged in the business, had an opportunity of ascertaining the inefficient manner in which this office was performed; many went into the business who either did not understand the practice of measuring, or were reckless of the consequences.

T. E. K.

Stewart, Farnham	£2,617	0	0
Patrick and Sheldborough, ditto ..	2,623	0	0
Parcey and Co., ditto ..	2,194	0	0
Paterson, Kingston	2,481	0	0
Gover, Winchester	2,397	0	0
Odes, Egham	2,370	0	0
Loe, Guildford	2,362	10	0
Poland and Simmonds, ditto ..	2,339	0	0
Williams, Stoke, near Guildford ..	2,193	0	0
Goddard, Farnham	2,048	0	0
Mason, Farnham (accepted)	1,997	0	0
Coff, Guildford	1,870	0	0
Ellis, ditto	1,801	0	0
Mansell, ditto	1,599	0	0

Books.

The Eastern Counties Railway Illustrated Guide. London: Printed by James Truscott, Nelson-square. 1851.

"THE Exhibition" has "put out" everything else, it is said,—just as the rising sun does so many farthing rush-lights. Wonder arrests the natural course of the mental faculties, and even the object of wonder itself for a time may fail to obtain any very discriminative criticism in detail. But, however much absorbed all minor exhibitions and amusements, or other objects of public interest, may be, in the meantime, in contemplation of the one grand idea, there is one source of amusement and instruction which this idea has not quite absorbed or arrested, namely, the press—the "teeming press." As the one great exponent of the Exhibition itself, the press has a busy time of it—only, however, as an exponent: all its extra efforts have some distinguished relationship to the central source of concentration, and, as in the present instance, of radiation also. Trips out of town to recruit the exhausted curiosity of the sight-seeking sojourners in the metropolis, will, no doubt, soon form a leading feature of the great gathering. The tide of Continental humanity has not yet reached our shores, but is on the way.* And few trips will prove more attractive to foreigners as well as natives than those along the Eastern Counties line, especially with so right-pleasant an addition to the sketch-book as "The Eastern Counties Guide"—itself a sketch-book of no mean pretension, no less than a lively companion, full of local anecdote and topographic lore.

"In common with so many other projects of which 1851 is the fruitful parent," says the Introduction, "the idea of this little publication is suggested by the Exhibition. It is hoped incidentally to render it an auxiliary to that great gathering, by familiarising some few thousands then visiting London for the first time with the leading features of a most interesting and important district of England,—particularly those from abroad, and, still more especially, foreigners approaching our metropolis by the new route between the Suffolk coast and the north of Europe. Eschewing any

pretensions to originality of view or novelty of treatment, the main design has been so to popularise the ordinary topographical data as, with the assistance of the engraver, to afford the hasty reader a more truthful and effective reflex of the scene traversed than has been yet attempted in respect to any other railway. The price, it will be observed, is such as to render it a very slight pecuniary addition even to the most economic excursionist trip; and it is hoped that its contents, nearly equivalent to a volume of a novel, may reconcile the purchaser to the outlay when its immediate purposes in connection with the journey have been accomplished."

Perhaps some may be surprised to know that, notwithstanding the early casualties which gave the Eastern Counties line so unenviable a notoriety, a Parliamentary return dated Feb. 6, 1851, made to the Commissioners of Railways, for the half year ending June 30, 1850, shows that though 1,537,863 passengers were conveyed over 1,155,623 miles of railway on the Eastern Counties line, not a single passenger was killed from causes depending upon the company or its management: the same remark holds good during nearly the last five years, no passenger having been deprived of life, except by his own neglect or incaution, since July, 1846. There is no other railway in the kingdom, of one quarter the length of the Eastern Counties, that can tell the like tale. The company owe much in this and other respects to their Secretary, Mr. Roney.

The other statistical details of this line show that the company "has spent in the formation of its various lines the really gigantic capital of 12,998,207*l.* 2*s.* 2*d.*, and that it possesses 326 miles of railroad, over which 1,734,390 persons were carried in the six months ending January 4th, 1851. The classification and revenue arising from this one and three-fourths of a million of passengers were as follow:—

	Number.	£	s.	d.
1st Class Passengers	226,714	63,386	9	5
2nd Class Passengers	801,541	83,733	19	1
3rd Class Passengers	706,135	54,360	10	8

Giving a total amount of 201,480*l.* 19*s.* 2*d.*; in addition to which the company received for the carriage of parcels 15,392*l.* 12*s.* 6*d.*; goods, including coals, &c., 140,172*l.* 15*s.*; cattle, 19,818*l.* 14*s.* 5*d.*; mails, 8,591*l.* 14*s.* 1*d.* Forming, with other minor sources, a revenue of 400,552*l.* for half a year, or an annual income of upwards of 800,000*l.*—an income much larger than that of many a continental state. This was accompanied by an expenditure of 225,347*l.* 17*s.*, distributed as follows: locomotive expenses, 82,587*l.* 13*s.* 4*d.*; maintenance of way, 54,871*l.* 5*s.* 3*d.*; miscellaneous working expenses, 85,461*l.* 1*s.* 8*d.*; rates and taxes, 12,869*l.* 7*s.* 7*d.*; Government duty, 8,558*l.* 9*s.* 2*d.*; total, 225,347*l.* 17*s.*, leaving a profit of 175,204*l.* 6*s.* 11*d.* on the half-year's work, which balance, nevertheless, was only sufficient to yield a very small dividend available to the original shareholders; but the prospect of a better result is encouraging."

The book is very pleasantly written, very fully illustrated, and very well got up.

A map of the line would have been a useful addition.

The Exposition of 1851; or views of the Industry, the Science, and the Government of England. By CHARLES BABBAGE, Esq., Corresponding Member of the Academy of Moral Sciences of the Institute of France. Murray, Albemarle-street, 1851.

This is rather a curious and remarkable volume. A good deal of it does refer to the International Exhibition,—to a review of the progress towards its realization, and strictures as to various points connected with it; but probably the main motive to its production may be traced in such an announcement as the following:—

"England has invited the judgment of the world upon its arts and its industry: science appeals to the same tribunal against its ingratitude and its injustice."

The most prominent feature in its details, accordingly, consists in an unsparing exposure by the author of an alleged determination of certain men of science to "put him down," a determination certainly of a most hateful description, if Mr. Babbage be not mistaken in the view he takes, and he appears to rest on declared intentions rather than on inferences or suspicions—except as to consequences. To

this determination the author attributes the indisposition of the Government to continue the means afforded to enable him to finish the celebrated calculating engines, as to which Mr. Babbage declares that he personally reaped not one penny of advantage, the funds advanced having been solely for behoof of the workmen employed and paid to them. Having ourselves not long ago asked what had become of Mr. Babbage's calculating machines, we may regard the following passage as the inventor's own answer, and quote it accordingly:—

"The state of the difference engine at the time it was abandoned by the Government (in 1842, it is said), was as follows:—A considerable portion of it had been made; a part (about sixteen figures) was put together; and the drawings, the whole of which are now in the Museum of King's College at Somerset-house, were far advanced. Upon this engine the Government expended about 17,000*l.* The drawings of the analytical engine have been made entirely at my own cost."

Mr. Babbage here gives an interesting description of these machines. Might not the public have taken an increased and hopeful interest in them if they had been sent to the Great Exhibition?

Besides "Intrigues of Science," and "Calculating Engines," the author enters into various other disquisitions as to "The Position of Science," "The Press," "Party," and "Rewards of Merit." On the last of these points he treats of the moot question of "an order of merit." The only further quotation which our present limits will enable us to give, however, relates to the subject of limited partnerships in connection with patent rights and the "ulterior objects" of the International Exhibition. Referring, in the first place, to the law of patents itself as a question for discussion, the author proceeds to say—

"We have another law—that of partnership—which presents greater obstacles to the advance of the mechanical arts than even the defective state of the patent law. In England, whoever enters into a partnership, however small a share of the profits he is to receive, yet his whole fortune becomes responsible for any losses. In most other countries there are a class of partnerships called anonymous, or *en commandite*, in which persons willing to risk only a limited sum are entirely relieved of all further responsibility.

The effect of our English system is highly unfavourable to inventors. It prevents in all but a few cases a small capital from being raised by the joint contributions of persons more immediately acquainted with the character and prospects of the inventor, and who are in that respect best fitted to measure the chance of his success.

A far greater impediment, however, arises from its entirely preventing a considerable quantity of capital from being directed to inventions. Its operation may be thus explained.

There exist in this country a great number of persons of manufacturing and commercial habits, whose knowledge of men is considerable, and whose judgment of the capabilities of a proposed scheme or invention, is cautious and judicious.

Persons of this description often possess capital, or such credit as easily to command its use. If partnerships could be entered into, in which the liability was limited, many persons so circumstanced would naturally use their skill and knowledge in selecting a certain number of schemes, in each of which they would embark a small sum. By thus spreading the risks over an extensive field, the profits to the capitalist would be much more certain; whilst many an excellent invention now lost for want of capital to carry it out, would thus enrich its inventor and benefit the country."

The subject of partnerships *en commandite*, it is to be hoped, will shortly meet with that attention from the Legislature and the Government which has been already almost promised on the part of the latter, in connection with a thorough revision of the patent-laws.

HOLLOWAY NEW RAGGED SCHOOLS.—This building is now completed and opened. The cost, we believe, has been about 1,000*l.* The building is in the Elizabethan style, with open timber roofing, and is calculated to accommodate about 500 children, with offices for master and mistress. It is from a design by Mr. James Harrison, of Moorgate-street, architect, who presented the plan, and superintended the erection gratuitously.

* That it is so can scarcely, we think, be doubted on perusal of the following news from Paris, though in itself without apparent reference to the ultimate destination of the multitude:—"Never was Paris so full as at this moment. Specimens of every race and nation are to be met with in our promenades. Costumes of all countries meet the eye in every direction, and from the boxes at the opera may be seen the strange uncouth attire we have been accustomed to behold upon the stage alone. The Facha of Roumelia, with his gold embroidered caftan, the Hospodar of Moldavia with his scarlet hood, Spanish ladies with their veils and fans, may all be seen gathered there, whilst the greatest lion of all, the Waywode of the gipsies of Courlande—his head encircled by pearls of great price, and wearing a gold chain suspended from his neck, while his form is enveloped in tattered blue serge, and his feet encased in thick wooden shoes, may be seen at four o'clock promading down the Champs Elysées with as much gravity and self-consciousness as though passing the streets of Mitau, or traversing the bleak plains of his native land." Here is a new exhibition which we may in turn hope soon to see; for assuredly our great metropolis has absorbed nearly all evidence of it, as yet, amongst her own less showy multitudes.

Miscellaneous.

STATUES IN THE AREA OF ST. PAUL'S.—The five statues before St. Paul's Cathedral were the work of Francis Bird, and represent Queen Anne, then the reigning sovereign of these realms, and personations of Britain, Ireland, America, and France. The sculptor was of repute, and from his chisel came the great work in the pediment—the conversion of St. Paul. They are well worth caring for, and really should not be neglected as they are. I passed them the other day, and some Goth had thrown a stone amongst them about 5 inches by 3, a large broken crockery pot, and many other inconsiderate trifles. A pound of common soda, of three halfpence value, to a gallon of water, and sufficient common whiting to make a composition the thickness of cream, laid on with an ordinary painter's brush, suffered to remain until dry, and then carefully washed off, would make them look new again. And forty shillings spent in repairing the steps, &c., is the expense this affair would cost; but if ten times this charge were needed, they would repay the care so bestowed, and it would influence the wanton, also, to respect them for the future.—JOHNNY.

WAGES AND LIVING IN AUSTRALIA.—According to recent communications from South Australia, artificers of all kinds are in great demand. Carpenters, builders, wheelwrights, blacksmiths, stonemasons, bricklayers, coopers, as well as shoemakers, tailors, &c. Glazing is not so good as other trades, for the glass comes ready cut, and the sash-makers put it in. The price is 21s. per 100 feet. The amount of artificers' wages is as follows:—Carpenters get from 6s. to 8s. per day, wheelwrights do., blacksmiths from 5s. to 7s. per day, coopers from 5s. to 6s. per day, stonemasons and bricklayers 7s. per day, painters and glaziers 5s. per day; labouring men 4s. per day. As to provisions:—Beef and mutton are from 1d. to 3d. per pound, flour 1s. 9d. per stone, tea 2s. per pound, sugar 2d. to 3d. per pound, soap 3d. to 4d. per pound, candles 6d. per pound, English ale and porter 1s. per pot, and 1s. 6d. per bottle, Colonial ale 8d. per pot, wine and spirits at all prices. All kinds of vegetables very dear. Potatoes 8s. per cwt.

GAUZE DIAPHANE.—Mr. Penfold, of Blackmore-street, Drury-lane, chemist, has invented a light texture, some specimens of which have been forwarded us by Mr. Joseph Ash, of the London Mechanics' Institution, who states that he has assisted in improving the machinery for its manufacture. It is intended chiefly for the better preservation of picture-frames, needlework, &c., from flies, dust, smoke, and such like soiling causes, while not concealing either colours or forms. It seems to consist of fine silk or cotton gauze laid over simply with a gum that moisture removes. The idea, we dare say, is a good one; but if the lacquer or varnish were made moisture-proof as well as tenacious (which latter it already is), ladies might find many uses for it connected with dress as well as household purposes: it might then also do for covering furniture silks, &c., to keep them clean, but not so well till then. It can be sold, it is said, as it is, from 1s. to 1s. 6d. a yard, either transparent or tinged with some colour.

PITTSBURGH CATHEDRAL is said to have been lately destroyed by fire.

BRIGHTON EXTRA-MURAL CEMETERY COMPETITION.—In your paper of this week you will see an advertisement to builders for contracts for building a chapel for the Brighton Cemetery. Perhaps you would like to know that in answer to an advertisement, some time since (in April), for designs for a chapel, twenty-five designs were sent in, out of which four were selected. Of these one was fixed upon by the board of directors, the author of which is Mr. Raffles Brown, of Liverpool.—H. N. G.

THE "TIMES" ON SANITARY MISRULE AND WATER MONOPOLY.—Under this title the Metropolitan Sanitary Association have published a reprint of various powerful articles in the Times, directed principally against the perpetration of "the London joint-stock water monopoly."

GREAT TELEGRAPHIC PERFORMANCE.—A despatch from New York states that the *Europa's* news was received in New Orleans one morning before nine o'clock, and a return notice of the fact received in New York at a quarter past eleven, a.m., thus making a transit there and back in about three hours and a few minutes. The way the wire runs, the distance to New Orleans is about 2,500 miles. The distance travelled, going and returning, was about 5,000 miles, in about three hours, equal to the distance from New York to Liverpool, and two-thirds the distance back again.

THE SHOP-BLIND NUISANCE.—Some time since you advocated in your pages the cause of the most uncomfortable of all foot-passengers, those who are unfortunate enough to be a little taller than their fellows. The sun-blind nuisance is become more intolerable than ever: in fact, in walking our streets, if a pedestrian, forgetful of the danger he incurs, and with his mind, perhaps, filled with the cares of business, should neglect to keep a sharp look out "a head," he is unmistakably reproved for his carelessness, and his first business must be to visit a hatter for repair or reinstatement. Something should be done to remedy this evil. Our streets are crowded, and we have a right to expect to be able to walk on any part of the pavement without the annoyance about which I have taken the liberty to address you.—A PEDESTRIAN.

INDIA RUBBER.—The *Newark* (N.J.) *Mercury* states, that Daniel McCurdy of that city, has taken out a patent for the manufacture of India rubber. It is claimed that by this new process, all metallic combinations in the preparation of rubber are dispensed with, while yet the entire strength and ductility of the gum are retained, and the fabric effectually resists the changing effects of constant exposure to air and weather, being in fact almost indestructible.

INCrustation IN BOILERS.—Dr. Babington, of London, has taken out a patent for preventing incrustation in boilers by voltaic agency. For iron boilers he recommends a plate of zinc, 16 oz. the square foot, to be attached at one of its edges, by solder to the interior of the boiler; and both sides of the plates being left exposed to the action of the iron and water, voltaic agency thus excited is said to have the desired effect. For large boilers, two, three, or more plates may be used, as necessary.

SALES OF HOUSE PROPERTY.—We compile the following from a newspaper report of sales by auction on 29th ult.:—

	Annual Lease Rent or Years Value.	Lease Term.	Ground Rent.	Sold for
AT THE MART.	£. s.	£. s. d.	£.	
By Mr. E. Fox.				
Nos. 1, 2, and 3, Worcester Cottages, Blackwell...	72 0	86	4 0 0	620
No. 11, Queen's-rd. Not- ting-hill.....	30 0	93	7 10 0	330
Nos. 12, 13, and 14, Queen's-rd. Notting-hill.....	97 10	93	7 10 0	325
No. 1 to 5, Phoenix-pl. Queen's-rd. Notting-hill.....	87 11	93	22 0 0	560
Nos. 15 to 19, Prince's-pl. Queen's-rd. Notting-hill.....	97 10	93	18 0 0	700
Nos. 20 to 25, Prince's-pl. Queen's-rd. Notting-hill.....	109 0	93	24 0 0	750
Nos. 1, 2, 3, and 4, Labors- terrace, Queen's-rd. Dalston.....	120 0	92	5 2 4	370†
By Mr. Gadsden.				
Nos. 11 to 16, Crimscott- st. Grange-rd. Ber- mondsey.....	67 0	13	18 0 0	150
No. 70, Connaught-ter. Edgeware-rd.....	105 0	60†	16 10 0	1,305
No. 29, Great Corn-st. Brunswick-sq.....	80 0	49	29 0 0	390
Effra Lodge, Brixton.....	60 0	34	10 0 0	495
No. 16, Robert-st. Hamp- stead-rd.....	45 0	70	18 0 0	220
No. 11, Seymour-crescent, Euston-sq.....	56 0	57	17 0 0	320
AT GARRAWAY'S.				
By Mr. Bryant.				
No. 9, Queen's-terrace, Queen's-rd. Bayswater.....	70 0	86	8 0 0	485
No. 4, North-st. Fins- bury-market.....	32 0	68	5 10 0	225
Nos. 4 and 5, St. Ann's-rd. Brixton-rd.....	71 0	46	1 11 6	285
No. 9, Oxford-ter. Clap- ham-rd.....	42 0	71	6 10 0	370

* Each.

† Sold in three lots for 370£ each.

ILLEGAL DISTRAINT FOR RENT.—*Harvey v. Lacey* (S. J.), Wolverhampton County Court.—In this case plaintiff sued defendant, a builder, for 20l. damages, for illegal distraint on goods and chattels. Plaintiff rented a house from defendant at 20l. a-year. There was no special agreement, but as soon as six months had elapsed, Mr. Harvey paid Mr. Lacey 10l., for one half-year's rent. The defendant gave a receipt for the amount for that time. In February a quarter's rent became due, and on 11th March defendant distrained on plaintiff for 5l. for a quarter's rent. It was contended that no rent was due until the termination of the half-year ensuing. Mr. Harvey, to avoid any difficulty, sent to defendant, to the house where his goods had been removed, to pay the 5l. and to release his furniture from custody. As soon as the money was paid down, Mr. Lacey, instead of giving a receipt, took up the money, put it into his pocket, and exclaimed, "I'll be d—d if you shall have either goods or money, until the other quarter is paid;" although the other quarter's rent would not be due until the lapse of two months. When the remaining quarter did become due, Mr. Harvey again sent to Mr. Lacey, to pay him the 5l. then owing; but defendant still held the goods. He did say, "Now I have all the money, I will give up the goods;" but made no effort to restore them. In defence, it was urged that a verbal arrangement was made that the rent should be paid quarterly, and that Mr. Lacey had inadvertently, in giving the first receipt, given it for "six months," instead of for "two quarters." The dispute was caused by their disagreeing over their account for 4s., and as they were not cognisant of the place to which plaintiff had removed, they could not remove the goods to him. The judge observed that plaintiff was entitled to the value of the goods, and compensation for the inconvenience sustained.—Verdict—Damages, 18l.; 8l. for the goods in the event of their not being returned, and 10l. for the trouble sustained.—Leave to move for reduction of damages granted, but the judge declined to offer an opinion thereon.

TENDERS

For the Stafford Coal enlargement.	Quantities supplied.
Tavernor (Stafford).....	217,807 2 2†
Epsley do.....	17,250 0 0
Cooper (Derby).....	16,835 0 0
Sissons (Hull).....	14,948 0 0
Hemberow (Wolverhampton).....	13,900 0 0
Holmes (Liverpool).....	13,623 0 0

For the New Town Hall at Hemel Hempstead. Mr. G. Low, Architect.

William Bennett (St. Alban's).....	£1,776 0 0
R. E. Williams (Luton).....	1,490 0 0
Mark Patrick (Lambeth).....	1,450 0 0
A. Reed (Stratford).....	1,450 0 0
Wm. Twelvetrees (Bedford).....	1,398 0 0
Joseph Harris (Berkhamstead).....	1,346 0 0
Thompson & Crosswell (Islington).....	1,287 0 0

TO CORRESPONDENTS.

"B. P. W.," "Constant Reader" (Ringwood), "J. H.," "S. H.," "S. G.," "W. D. H.," "W. B.," "C. W.," (we cannot refer), "A. Subscriber" (ditto), "W. F. P.," "J. B." (Liverpool), "T. W.," "E. and Son," "T. T.," "O. H. H.," "W. C." (country to our practices), "J. M. M." (everything would depend on the arrangement of the materials), "A. A.," "W. W.," "I. F.," "J. L.," "H. and R.," "G. H. B.," "J. M.," "R. B. G.," "R. N.," "J. I.," "R. F. and Sons," "W. S.," "A. W.," "Expression in Architecture" (next week).

The New City Prison, Halloway.—We shall give in our next number a fine view of the New City Prison, occupying the space of two pages.

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editors, and not to the Publisher.

ADVERTISEMENTS.

TO MASTER CARPENTERS, AND OTHERS.

THE FRIENDLY SOCIETY OF CARPENTERS AND JOINERS, held at the King's Arms Tavern, Marlborough-street, Piccadilly, the last in fifty years, have removed to the "Coach and Horses," Brewer-street, Golden-square, kept by Mr. J. Ware, which house will be denominated their HOUSE OF CALL.

TO BUILDERS, SHIP-BUILDERS, and OTHERS VISITING THE GREAT EXHIBITION IN CLASS 6, at the PATENT STEAM BREWERY, is a TRUSS GIRDER, or PLANK, which only requires to be seen to class it as one of the best modern improvements in trading. For further particulars, apply at 34½, High-street, Aldgate, City.

The Builder.

No. CCCXXXVI.

SATURDAY, JUNE 14, 1851.

AT the time when the Pope had "frighted the isle from its propriety," a friend of ours, who, in getting on to the box of an omnibus, said "it is a wet day," was received by the coachman with "Thankye, Sir, for that very sensible observation. You're the first gentleman for a whole fortnight that has spoken about anything but the papal aggression!" On the same grounds, now that the Great Exhibition (and a great exhibition it truly is in every sense of the word) has swallowed up everything, not excepting the first-named potentate, and is spoken of everywhere, we suspect some of our readers are obliged to us for not giving them quite so much about the all-engrossing subject as we might easily have done. Our contemporaries of the daily and weekly press have entered so fully and ably into it, that there are now few portions of the wonderful collection that have not been described again and again.* Nevertheless, we should not do our duty to our readers if we did not continue occasionally to turn to it, and we propose in our present number, after making some few rambling observations, to look at Class XXVII., which includes manufactures in mineral substances for building or decorations; cements, bricks, and terra cotta.

Nothing has yet occurred to mar the success of the undertaking, and it may now be reasonably expected that nothing will occur. On Whit-Monday large crowds filled every portion of the building:—as Chaucer says in his prophetic prefiguration of the undertaking:—

"—there came entering in the hall,
A right great company withal,
And that of sundry regions
Of all kinds of conditions,
That dwell in earth beneath the moon,
Poor and rich."

* Such a great congregation,
Of folks as I saw roam about,
Some within and some without,
Was never seen nor shall be more!"

Yet all went orderly and well,—very little inconvenience was felt, except at a few of the popular points, such as the great diamond, the Queen of Spain's jewels, and the Austrian sculpture-room.† The Queen and Prince Albert continue their visits, and if we are not mistaken will know more about the Exhibition before the end of it than any other persons. We have on more than one occasion had the opportunity of admiring the earnest and systematic manner in which our Sovereign and her illustrious consort have pursued their examination of the various works submitted to them. We understand that her Majesty has purchased, amongst other things, a fine service of china by Copeland to send to the Emperor of Austria, in return for the Gothic bookcase

and album in the Austrian room, presented to the Queen by the Emperor. This bookcase, together with the bed and other furniture in this department, was designed by Mons. De Bernardis, architect, now in London, and is full of beauty. As a bed, and as a bookcase, we should not give to either unqualified praise, but for elegance of drawing, and luxuriance of fancy, these are scarcely surpassed by anything in the building. There is an exquisite sideboard in the French department, by Fourdinois; and we must not omit mention of the "Kenilworth Buffet," in the Fine Arts Court: Messrs. Cookes and Son, of Warwick, by whom this buffet was designed and executed, have published an illustrated account of their work. The carved relieves are taken principally from Scott's "Kenilworth," and the oak tree of which the sideboard is composed grew near the castle,—the scene of that immortal romance. Much of the carving is exceedingly good, but if Messrs. Cookes be of our mind they will dismiss or modify the bears.

Before we go into Class XXVII., we would point out two cleverly constructed staircases, near the machinery, by Langley Banks. These are 23 feet high, and mainly depend on wrought-iron straps 5½ inches wide by ¾ths thick, one on each side of each flight, with twelve bolts from side to side.

The English mineral manufactures relating to building are, for the most part, together, on the north side of the nave at the west end. In this department Magnus's manufactures in enamelled slate, especially a bath-room, occupy a prominent place. Some of his tables in imitation of Florentine mosaics are exceedingly well done. Enamel is scarcely the right word for the process, but the colour is so intimately blended with the slate that it is scarcely possible to chip it off without removing also a portion of the slate. Of real mosaic work there are many very good specimens, as, for example, Redfern's marble mosaic table, chiefly composed of the productions of Derbyshire, Woodruff's tables, and Woodley's inlaid Devonshire marbles. Bovey exhibits a chimney-piece in a new material, Yealm Bridge slate and Polyphant freestone: and there are other very interesting applications of Devonshire marbles, Aberdeen granite, Cornish granite, Serpentine, and Irish marbles.

The English mosaic works are finished better than the foreign specimens exhibited, although some of the latter are superior in art.

Orsi and Armani exhibit their metallic lava in its various shapes and applications: the value of this material for pavements, especially in damp places, seems now to be generally admitted.

Francis and Son have formed a screen of Parian cement, marbled in parts in imitation of Verd-antique, Jasper, and Sienna. The peculiarity of this material, which is naturally of a pure white colour, is, that when applied on the walls or laths,—the specimen exhibited is entirely on laths,—it crystallizes so rapidly that it may be painted on the following day, or papered, with papers of the most delicate tints. By its use a newly-built house, which, under the ordinary plastering would be many months before it could be safely inhabited, becomes perfectly dry in a few days. We have heard of a house, finished with this material, being painted and papered and inhabited with

comfort in thirteen weeks from the day of laying the first brick of the foundation.

Lord Lovelace's ornamental bricks are better in intention than execution: they want sharpness and regularity. Haddon's Rhomboidal bricks (to secure bond) are ingenious, but will not come into use. Ambrose's bricks, and Luff's bricks are good specimens. The earthenware architecture exhibited by Bowers and Co., of Tunstall, is sharp and good, but need not take the shape of "imitations of oak carved cornice and rosewood Gothic cornice." Workman's patent for waterproofing bricks should be inquired into.* Peake's ferro-metallic ware; Brown's tiles (of Surbiton); and Haywood's metallic tiles, are all too well known to need remark. Rufford's bath in one piece, made with fire-clay plated with porcelain, is a good application of pottery.

We have already mentioned and illustrated the buildings put up in this department by the Society for Improving the Condition of the Labouring Classes, and will only add now that the cottage stove in it, there called "Nicholson's," ought to be called *Leslie's*. Mr. Leslie's stove, as now improved, consists of a solid lump of fire clay, bottom, sides, and back, and is 4 inches only in depth.

Margett's and Co., of Oxford, have a font very well carved. So too is R. Brown's sepulchral monument; but we must especially praise a statue of St. Peter, in a canopied niche, by Lane and Lewis, of Clifton.

Cowen's gas retorts are equal to anything of the sort we have ever seen. Ramsay's are also very excellent. Harper and Moore have some glass-house pots which seem very good. Pots for this purpose remain in the furnace till they are worn out or broken, and have been known to last upwards of two years. The vessel called a curvette is used to convey the melted glass from the interior of the furnace to the casting table. The sudden transition makes this a severe task for the vessel. For such purposes the clay must be free from iron or other mineral substance, or the colour of the glass would be injured.

A large glass-house pot will be found in the American department, exhibited by Mr. Hartley, of Sunderland.

Blanchard's specimens of terra-cotta are very good: examples from the same establishment have stood well many years. There are some good specimens, too, from the estate of Mr. Betts, of Aylesford. Doulton and Watts exhibit some excellent ware. And Messrs. Minton maintain their eminence in encaustic and other ornamental tile work by a very beautiful collection of their various works. Singer and Co. of Vauxhall, have a very good specimen of their mosaic pavement of highly vitrified coloured clays. Some specimens of this description of pavement in foreign departments are of an inferior character.

Robins and Aspidin have fitted up illustrations of the strength of Portland cement. They show forty-two ordinary bricks adhering one to the other by means of cement alone; and a mass of the cement which required 151 tons' weight to crush it. The Portland cement used in London as a stucco for external work, we are bound to say, varies greatly in quality. Some of it is quite worthless in that position.

J. B. White and Sons also illustrate the strength of Portland cement, but their speci-

* The cost of waterproofing is 7s. per thousand for stock bricks, and something more for bricks of an inferior quality.

* We may mention here "The Synopsis of the Contents of the Great Exhibition," by Mr. Robert Hunt, published by Messrs. Spicer and Clowes, as a very comprehensive though brief introduction. Mr. Hunt, we see, is about a "Hand Book" of larger scope.

† This room contains some fine works of art. The overmuch praise which has been bestowed on the veiled statue there, by the way, will doubtless lead many to try what is truth but an easy trick.

mens are placed in Class I. on the south side of the nave, at the extreme west end. Messrs. White have here, too, some beautiful specimens, showing the application of Keene's cement for skirtings and pavements. The liability of this material to scratch in the latter position would have to be considered.

We will not omit to mention here Seeley and Austin's artificial stone, although the example of it which they exhibit in the nave is not one of their best efforts. This material has now been in use many years, and has, we believed, maintained its character for endurance.

Outside the west end of the building will be found, besides illustrations of matters already mentioned, some fine specimens of granite, by the Cheesewring Company, W. and J. Freeman, and R. Hosken. Mr. Freeman's obelisk is 24 feet high; and the Ionic column sent by the Cheesewring Company, is exceedingly well worked. The specimens of coal here,—of that to which England owes so much of her wealth and power,—are full of interest to those who think on what they are looking at. Green's pottery, too, seems excellent.

The French chimney-pieces are not very successful. In one, by Marga (608), metal ornaments are used; and in a second, by Dupuis (184), a spring roller blind is introduced between the mantel and the shelf, to screen the fire when needed. Lebrun has an elegant chimney-piece of Renaissance design, with detached pillars, and one of Gothic fashion, well cut, but in which the nature of panelling is mis-understood. One by Désanges, of bad design (1184), has the peculiarity of a series of painted medallions.

In the Austrian department, in a glass case, will be found a collection of very excellent bricks and tiles. These articles are exhibited by M. Alois Miesbach, who, besides five brick manufactories in Lower Austria, and one at the celebrated Rakó's, near Pesth, owns the brick works at Juzersdorf, said to be the largest in the world. This privileged brick and tile factory stands on the Wineer-Berg, covering a space of ground of 264½ English acres. "The materials for brick-making are drawn from an area of 680 69-100 English acres, divided into four sections, which are separated into ten sub-divisions. There are 24,930 feet in length of drying sheds for the manufactory of ordinary bricks, and 8,304 feet of moulding sheds for the manufacture of tiles, facing bricks, and ornamental bricks, besides five artesian wells, a drain 2,160 feet long, forty-three kilns calculated to burn 45,000 to 110,000 bricks per kiln, or to burn at one time 3,510,000 bricks. There are further in this establishment infant schools for 120 children, a hospital for fifty-two beds, besides a tool workshop, a wheelwright's and carpenter's shop, and also the great watering and kneading pits for red and white ornamental bricks. On all the sections there are the requisite dwellings for the officials and workmen, besides the carmen's stabling for about 300 horses. Lastly, there are eight places for cooking and selling liquor. The six other brick factories are provided in the same proportion, and the amount of money turned over in all the brick business amounts to about 1,800,000 florins C. M., and the capital employed to 600,000 florins C. M. The annual production of bricks and tiles reaches

107,150,090, and 4,880 persons are employed in their manufacture."

From Belgium there are also some good bricks.

In the French machinery-department there is a machine for making hollow bricks worth examination. Each brick is divided internally by three upright and three horizontal partitions into sixteen cells.

The retorts in the French department cannot be compared with those we have mentioned amongst the English.

Messrs. Virebent exhibit some very beautiful specimens of artificial stone, which will be found on the south side of the nave. These are equal to anything of the sort in the collection.

In Switzerland there is a terra-cotta font not without merit.

Amongst the foreign mineral manufactures we should notice the chimney-pieces, chairs, doors, &c., of malachite and metal exhibited in the Russian department, which show the affluence in Russia of a material regarded by us as rare. The art shown in these works is not of a high order: the labour expended on them has been very great. The folding-doors, for example, occupied, we are told, sixty men for a whole year. The pieces of malachite are put together so skillfully, that the joints are scarcely discoverable.*

Enough, however, for the present.

ON VENTILATION BY THE PARLOUR FIRE.†

THE term Ventilation does not strictly imply what we intend by its use in reference to buildings used as dwelling-houses, or otherwise for the occupation of breathing creatures. To ventilate is defined "to fan with wind;" but one of the main objects for which houses and other enclosed buildings are made is shelter from the wind. Inasmuch, however, as the wind is but air in motion, and we can only live in air, air may not be shut out of our houses, though, for comfort's sake, we refuse to admit it in the active state of wind. But in doing this,—in shutting out the wind,—we are apt to put ourselves upon a short allowance of air, and to eke out the short allowance by using the same air over and over again.

There is a broad line of distinction, indeed, to be drawn between in-door and out-door ventilation; for although the principles upon which nature proceeds are the same, the operation is influenced by the circumstances under which the process may be carried on. Whether it be on the hill-side, open to the winds of heaven, or in a close room from which all draught of air is excluded, the expired breath, as it leaves the nostrils heated by the fire in the lungs, rises, or seeks to rise, above their level, and may not be again inhaled. Out of doors the cooler or less heated air of the lower level presents itself for respiration unaffected by the spent exhaled air, but in a close apartment the whole body of included air must soon be affected by whatever process any portion of it may have undergone. The process by which Nature carries off spent air, purifies, and returns it uncontaminated, is thus checked by the circumstances under which we place ourselves within-doors. All our devices for shelter from the weather, and for domestic convenience and comfort, tend to prevent the process provided by Nature from taking effect according to the intention in that respect of the Creator. We not only confine ourselves, indeed, and pen up air in low and close rooms, but we introduce fire by which to warm the enclosed air: wanting light within our dwellings when daylight fails, we introduce another sharer in the pent-up air of our rooms, being fire indeed, in another

form, but generally under such circumstances, that it not only abstracts from the quantity, but injures the quality of what may remain. But fire, whether in the animal system, in the grate, or in the lamp, cannot long endure the imagined limitation of air. There must be access of air—of vital air—by some channel or other, or the fire will go out.

An open fire in the grate must, however, have a vent for some of its results, or it will be so disagreeable a companion that its presence could not be endured, even so long as the most limited quantity of air would last; and the fire will compel the descent of air by the vent commonly supplied under the name of a flue—a chimney flue—to render its presence tolerable in a closed room, if a supply be not otherwise obtainable. But as the outer air at the higher level of the top of a chimney, because of the rarity of the air in and above the flue, responds to the demand of the fire less easily than the lower air, or that at and about the level of the fire; and the lower air, or air at the lower levels, forces its way in, therefore, by any opening it can find or make—through the joints of the flooring boards and under the skirtings—the supply passing first up or down the hollow lathed and plastered partitions, sometimes even up from the drains and through the joints under and about the doors and windows; if these channels do not exist, as they may not when the joiners' work and the plastering are good, or when the open joints referred to are stopped up by any means,—the fire smokes, and every known means of curing the chimney failing, means are sought of obtaining heat without the offending fire. Ventilation is not thought of yet.

The open fire may be made to give place to the close stove or to hot air pipes, to hot water pipes, or to steam pipes—which make hot the air about them in a close room without causing draughts. But the warmth obtained in pipes, is costly under any circumstances. Air does not take up heat freely, unless it be driven and made to pass freely over the heated surface; and there being little or no draught in connexion with heated bodies, such as close stoves and hot pipes, the heat from them is not freely diffused, and is not wholesome. There is, with all the expense, no ventilation.

Stoves and hot pipes are, moreover, exceedingly dangerous inmates in respect of fire. Such things are the most frequent causes, directly or indirectly, of fires in buildings. Placed upon, or laid among or about the timbers and other wood-work of hollow floors and hollow partitions, and in houses with wooden stairs, more conflagrations are occasioned by hot pipes and stoves, than by any thing else, and perhaps more than by all other things together.

Open stoves with in-draught of air warmed by being drawn quickly (when it is drawn quickly) overheated surfaces may be made part of a system of safe and wholesome in-door ventilation; but to be perfect there must be also out-draught with power to compel the exit of spent or otherwise unwholesome air. But the arrangements for and connected with such stoves are special, and therefore costly, unless the buildings in which they may be employed have been adapted in building to receive them. An in-draught stove may however be applied with great advantage as it regards the general warmth and ventilation, in the lowest story of any house, if there be compelled out-draught at the highest level to which it will naturally direct itself if it be not retained, so that the in-draughted air, tempered as it enters, may be drawn out as it becomes spent, or otherwise contaminated.

But this must be considered in all endeavours to effect in-door ventilation, or the endeavour will fail. *The air must be acted upon, and not be left, or be expected, to act of itself, and to pass in or out as may be desired, merely because ways of ingress and egress are made for it.* Make a fire in a room, or apply an air-pump to the room, and the outer air will respond to the power exerted by either by any course that may be open to it, and supply the place of that which may be consumed or ejected; but open a win-

* The Russian parquetry for floors is very excellent.
† Read by Professor Hosking at the Royal Institution of Great Britain, May 23.

dow in an otherwise close room, and no air will enter: no air can enter, indeed, unless force be applied as with a bellows, whereby as much may be driven out as is driven in, with the effect only of diluting not of purifying. Even at that short season of the year in which windows may be freely opened, unless windows are so placed as to admit of the processes of out-door ventilation being carried on through them by a thorough draught from low levels to high levels, open windows are not sufficient to effect thorough in-door ventilation. There must for this purpose be in every room a way by which a draught can be obtained, and this draught must take effect upon the most impure air of the room, which is that of the highest level. The chimney opening may supply a way at a low level, and a draught may be established between it and the window, but the air removed from the room by such a draught is not necessarily the spent or foul air. But make an opening into the chimney flue near the highest level in the room, that is to say, as near as may be to the ceiling, and if a draught be established between the window and the flue by this opening the ventilation is complete; that is to say again, if there be draught enough in the chimney flue from any cause to induce an up-current through it, or if there be motion of the external air to drive the air in at the window and force an up-current through the flue.

Windows may not be put open in the long enduring colder season, however, and for the same reason in-draughts of the outer air by any other channel are offensive and injurious.

To open a door for the sake of air is but a modification of opening a window, and, if the door be an internal one, with the effect of admitting already enclosed, and, probably, contaminated air. Means of efficient in-door ventilation must, therefore, be independent of windows and doors; and the means should be such as will lead to a result at once wholesome and agreeable.

Many plans have been suggested, and some have been carried into effect, of warming air, and then forcing it into, or drawing it through buildings, and, in the process of doing so, removing the foul or spent air from the apartments to which it may be applied. Some of these plans are more and some are less available to wholesome and agreeable in-door ventilation, but even the best are rather adapted to large apartments, such as those of hospitals, churches, theatres, and assembly-rooms, than to private dwelling-houses in which the rooms are small and labour and cost are to be economised.

Plans have been proposed, too, for the economical ventilation of dwelling-houses; but they seem to be all in a greater or less degree imperfect. Ways of access are provided in some cases for the outer air directly to the fire in every apartment, to feed the fire, and indirectly to ventilate the room; way of egress in addition to the chimney opening and the chimney flue being sometimes provided for the spent air of the room; sometimes, indeed, as before indicated, by an opening into the chimney flue near the ceiling. A direct in-draught of cold air is not agreeable, and it may be pernicious, but if the outer air become warm in its way to the inmates of the room, the objection to its directness ceases. If, however, the warmth is imparted to it with foulness, the process does not fulfil the condition as to wholesomeness, and this is the case when the outer air is admitted at or near to the ceiling to take up warmth from the spent and heated atmosphere of the higher levels. Having undergone this process, it is not the fresh air that comes warmed to the inmates, but a mixture of fresh and foul air that cannot be agreeable to any inmate conscious of the nature of the compound.

The endeavour on the present occasion is to show how the familiar fire of an apartment may be made to fulfil all the conditions necessary to obtain in-door ventilation, to the extent that at least of the apartment in which the fire may be maintained, and while it is maintained.

A fire in an ordinary grate establishes a draught in the flue over it with power according to its own intensity, and it acts with the

same effect, at least, upon the air within its reach, for the means which enable it to establish and keep up the draught in the flue. The fire necessarily heats the grate in which it is kept up, and the materials of which grates are composed being necessarily incombustible, and being also ready recipients and conductors of heat, they will impart heat to whatever may be brought into contact with them.

It is supposed that the case containing the body of the grate is set on an iron or stone hearth in the chimney recess, free of the sides and back, except as to the joints in front. Let all communication between the chamber so formed about the back and sides of the grate and the chimney flue be shut off by an iron plate, open only for the register flap or valve over the fire itself. External air is to be admitted to the closed chambers thus obtained about the grate by a tube or channel leading through the nearest and most convenient outer wall of the building, and between the joists of the floor of the room, to and under the outer hearth or slab before the fire, and so to and under the back hearth, in which sufficient holes may be made to allow the air entering by the tube or channel to rise into the chamber about the fire-box or grate. Openings taking any form that may be agreeable are to be made through the cheeks of the grate into the air chamber at the level of the hearth. In this manner will be provided a free inlet for the outer air to the fire-place and to the fire, and of the facility so provided the fire will readily avail itself, to the abolition of all illicit draughts. But the air, in passing through the air chamber in its way to the fire which draws it, is drawn over the heated surfaces of the grate, and it thus becomes warmed, and in that condition it reaches the apartment.

An upright metal plate set up behind the openings through the cheeks of the grate, but clear of them, will bend the current of warmed air in its passage through the inlet holes, and thus compel the fire to allow what is not necessary to it to pass into the room; and if the opening over the fire to the flue be reduced to the real want of the fire, the consumption of air by the fire will not be so great as may be supposed, and there will remain a supply of tempered air waiting only an inducement to enter for the use of the inmates of the apartment. An opening directly from the room into the flue upon which the fire is acting with a draught more or less strong, at a high level in the room, will afford this inducement: it will allow the draught in the flue to act upon the heated and spent air under the ceiling, and draw it off; and in doing so will induce a flow of the fresh and tempered air from about the body of the grate into the room.

The mode thus indicated of increasing the effect of the familiar fire, and making it subservient to the important function of free and wholesome ventilation, is not to be taken as a mere suggestion, and now for the first time made. It has been in effective operation for six or seven years, and is found to answer well with the simple appliances referred to. But it is the mode and the principle of action that it is desired to recommend, and not the appliances, since persons more skilled in mechanical contrivances than the author professes to be, may probably be able to devise others better adapted to the purpose.*

The mode referred to of warming and ventilating apartments by their own fires is most easy of application, and in houses of all kinds, great and small, old and new, and as the warmth derived from the fire in any case comes directly by the in-draughted air, as well as by radiation of heat into the air of the apartment, fuel is economized. If the register flap be made to open and shut, by any means which give easy command over it, so that it may be opened more or less according to the occasion, and this be attended to, the economy will be assured; for it is quite unnecessary to leave the same space open over the fire after the steam and smoke arising from fresh fuel have been thrown off, as may be necessary immediately after coaling. The opening by

* The appliances used by Mr. Hosking will be found more fully described in his "Healthy Homes," published by Mr. Murray.

the register valve into the flue may be reduced when the smoke has been thrown off so as to check the draught of air through the fire, and greatly to increase the draught by the upper opening into the flue, to the advantage of the ventilation and to the saving of fuel, while the heat from the incandescent fuel will be thereby rather increased than diminished.

Moreover the system being applicable in the cottage of the labourer, as fully and as easily as in the better appointed dwellings of those who need not economize so closely as labouring people are obliged to economize, the warmed air about the grate in a lower room may be conveyed directly from the air-chamber about the grate, by a metal or pot pipe, up the chimney-flue, and be delivered in any upper-room next to the same flue and requiring warmth and ventilation, the process of ventilation applied to the lower room being applicable to the upper room also.

The indicated means by which winter ventilation is obtained are not of course equally efficient in summer, for the draught of the fire is wanting; but the inlet at the low level for fresh air, and the outlet for the spent air at the upper level, continuing always open, the heat which the flue will in most cases retain through the summer aided by that of the sun's rays upon the chimney top, secures a certain amount of up-draught, which is not without its effect upon the in-draught by the lower inlet, even when windows and doors are shut.

While it is obvious that the air drawn into any house for the purpose of in-door ventilation need not be other than that which would enter by the windows of the same house, it may be unnecessary to enter into any inquiry as to the condition of the air heretofore spoken of as fresh and pure. "Fresh" and "pure" applied to air must be taken to mean the freshest and purest immediately obtainable, and that will be the same whether it be drawn in through a grated hole in a wall, or by a glazed opening close by it in the same wall. But it is a fair subject for inquiry whether,—speaking in London to Londoners,—the air about our houses in London is as pure—or as free from impurity—as it might be.

The out-door ventilation of large towns may be taken to be more complete above the tops of the houses and of their chimneys than it is, or, perhaps, can be, among and about the houses:—the processes of Nature are there not only unchecked, but are in fact aided by the heat thrown up by the chimneys into the upper air, and impurities which can be passed off by chimney flues, will be more certainly and more effectually removed and changed by Nature's chemistry, than if they are kept down to fester under foot and to exhale in our streets and about our doors and windows.

At this time every endeavour is made to provide for removing from our dwellings all excrementitious matter, and all soluble refuse, by drains into sewers, and so by the sewers to some outfall for discharge. The drain necessarily falls towards the sewer, and the sewer again to its outfall, and the sullage or soil drainage being rendered liquid, thus passes in the usual course. But the usages and the necessities of civilized life cause a large proportion of the liquid refuse from dwelling-houses to pass off in a heated state, or to be followed by hot water arising from culinary processes, and from washing in all its varieties. The heat so entering the drains causes the evolution of fetid and noxious gases from the matters which go with, or have gone before, the hot water; and with these gases house drains, almost always, and sewers commonly, stand charged. They are light fluids and do not go down with the heavy liquid matters from which they have been evolved, but they seek to rise, and constantly do rise in almost every house through imperfections or derangements of the flaps and traps which are intended to keep them down; but which only, when they do act, compel some of the foul air to enter the sewers, and there to seek outlet to the upper air which they find by the gully gratings in the streets.

It can hardly be said, perhaps, that too much attention has been given of late to the scour of sewers by water, but it is most certain that too little attention has been given to the con-

siderations last stated, for nothing has been done to relieve the drains and sewers of their worst offence. The evolution of foul and noxious gases in the drains is certainly not prevented by scouring the sewers. In the mean time the poison exists underfoot, and exudes at every pregnable point within and about our houses, and it rises at every grating in our streets, though the senses may become dull to them by constant suffering.

Now this is an evil which can be greatly ameliorated, if it cannot, indeed, be wholly cured; but it is by a process that to be effective must be general, and therefore, it must be added, compulsory. The process is of familiar application in the ventilation of mines, and particularly of coal mines. An up-cast shaft containing a common chimney flue carried up at the back of every house, and connected with the house-drains at their highest level, would give vent to the foul air in the drains, and discharge it into the upper air. The foul air evolved by heat expands, and expanding it rises, and rising it would be followed by cold air settling down by the gully gratings in the streets, thus constituting their inlets downcast shafts, and the sewers and drains themselves channels for the currents setting to the up-cast shafts, by which they would be relieved. The down draught into the sewers would carry with it much soot and fine dust, which would settle upon the liquid current and pass off with it, and so remove some of the tangible as well as the intangible impurities, before referred to, from the air in our streets and about our houses.

Much in this way might be effected by the aid of causes in constant operation, but if the up-cast shaft to every house were also a fire-flue, or were only aided by the draught of a neighbouring fire, the up-current would be sufficient not only to prevent the house drains from retaining foul air, but the foul air would be thrown off into the upper air with better effect and be dissipated innocuously and without offence, instead of steaming as it now does from the sewers into the air where it cannot be avoided.

W. HOSKING.

PUBLIC MEETING ON ARCHITECTURAL COMPETITIONS.

A PUBLIC meeting of architects was held on the 6th inst. in the Hall of Lyon's Inn, to adopt certain resolutions, with a view to prepare a code of regulations to be mutually binding on competing architects and committees of selection, so as ultimately to remove many of the evils of the existing system of architectural competition.

MR. G. GODWIN presided.

The CHAIRMAN said that, although there were many in London better qualified than himself to preside over the meeting, he had thought it best to waive all hesitation in complying with the committee's request, and, however imperfect his qualifications, he hoped they would take the will for the deed. He himself had little to do with competitions, and had, therefore, no personal motive in coming forward on the occasion. The few competitions in which he had been engaged had each its moral. One was the case of a public hospital. A sum was there stipulated for the cost of the building, and on inquiring of the secretary if fuller and more elaborate design, involving greater expense, would be received, he had been gravely assured that it would not. He had, therefore, on that occasion, restricted his plans, and in the end a design was selected which cost three times the sum stipulated. In another instance, — a very large establishment, — the selected design was preferred to his own mainly on the question of expense; but the building carried out had cost more than double the amount stated by the author. The meeting, however, were familiar with these experiences. The evils competition had produced were beyond description. The chicanery, the deceit, the bad feeling, heartburnings, and anxiety which they induced, would make, if told, a melancholy story. And what was the result? The public, finding that architects had so long been giving their labours for nothing, had come to

the conclusion that that *nothing* was actually the worth of those labours. A gentleman had called on him with a design for a summer-house, complaining of the *scandalous imposition* of an architect in charging him *three guineas* for it! He could not be convinced of the moderation of the charge, but wishing to show the design to his friends had afterwards no hesitation in paying *four guineas* to a lithographer, formerly copying it on the stone! This was a proof of the ignorance which prevailed as to the value of design. Architects, however, themselves were much to blame, when premiums of 10*l.*, as for a workhouse at Stockton, 5*l.* for a Town Hall at Colchester, and three guineas for the Corn Exchange at East Retford, were eagerly responded to. If a man offered five guineas for the best legal opinion on any question for which ten would be charged in the regular way, he would be considered mad. What would the College of Physicians say to the offer of half a guinea for the best medical opinion in a doubtful case? Yet architects were daily treated so, and the offers were replied to by so many designs that the committees scarcely knew what to do with them, — and, as in the case of the Peel Testimonial, at Salford, not only thought, but stated that they were doing a service to the architects, by keeping all the designs, and hanging them up in the Literary Institution. Under these circumstances, some persons had argued that architects should abandon competition altogether. He was not prepared to agree in the propriety of that advice. Competition gave the means of coming forward to young and unknown talent, which might otherwise be long kept down. The evil was rather in its mal-administration, and its remedy was in the hands of the architects themselves. The main difficulty was in the ignorance of the judges. It had happened to him, as it had no doubt to many of them, to be called upon to examine and adjudicate upon designs; and it was unnecessary to dwell upon the difficulty and delicacy of the task. Yet the gentlemen who were usually the judges of these matters at once detected the best plans, or in some cases the plans of their sons or relatives, and the whole matter was decided in less than no time. Even a professional tribunal was not always satisfactory, and however annoying it might be to some, he could not but refer to the proceedings of the tribunal appointed in the matter of the Great Exhibition, which, with the highest respect for these gentlemen individually, he could not but feel had done great harm to the cause of competition. The first requisites in competitions were clear instructions, and the rejection of all designs which did not adhere to these instructions. Above all things, committees were bound to reject any design which could not be carried out for the stipulated sum. As to an exact estimate, he had always maintained that this should not be expected from an architect unless he were paid for preparing it. To do so accurately often cost more than was offered for the whole design, specification, and everything besides; nevertheless, committees were bound not to select designs not prepared in accordance with the stipulated terms. In the case of King's College Hospital recently, — and in the London Fever Hospital, four or five years ago, — several architects were applied to for designs, and all of them were paid; the author of the best being engaged to carry out the work. That was the fairest course, and those who wished to profit by the talent of many architects ought in justice to pay them all, — at least the money out of pocket. The stipulations for the King's College Hospital competition had been drawn up by Professor Hosking, whose opinions on the subject of competitions were well known, and he (the chairman) would take that opportunity to bear testimony to Mr. Hosking's endeavours to maintain the dignity of the profession. The present meeting would do much good if it only led committees to feel that architects were badly treated, and in fact robbed, by being induced to devote weeks and months to the preparation of designs which the judges were manifestly incompetent to decide upon. He hoped, however, they

should do much more. The resolutions they might adopt would be widely disseminated, and if they could induce the members of the Institute, of the Architectural Association, and of the provincial societies, to agree never to compete, unless the main conditions they adopted were complied with, they would produce a much more wholesome state of things than the present. He hoped the elder members of the profession, although not interested in the question themselves, would come forward to aid in obtaining a satisfactory adjustment of it. It had been truly said that "when every man was his own end, things would come to a very bad end;" but he was confident architects in general had not such an exclusive regard for their individual interests, and would look beyond themselves. Without further detaining the meeting, he would call upon the hon. secretary, Mr. William Young, to state the intended course of the proceedings.

Mr. Young said, the association had, nearly two years ago, nominated from its own members a sub-committee, to consider the best mode of carrying into practical effect the advice given to architects in the Report on Public Competitions issued by the Royal Institute of British Architects; and with the assembling of the present meeting the duties, and in fact, the existence of that committee would terminate. Its deliberations had resulted in the publication of a printed report, recommending the convening of the present meeting, and a code of regulations for the management of architectural competitions, carefully based upon the printed report of the Institute referred to. The code had been for some time before the public, and was now pretty well known, so that it was sufficient to simply allude to the gratifying fact of its having been taken up by the Bristol Society of Architects, and its provisions more or less incorporated, in a valuable code of "propositions" drawn up by that society, a second edition of which had that evening been laid before the meeting, and been then, as he understood, brought for the first time before the public. He proceeded to read communications which had been received from "the Council of the Royal Institute of British Architects, and from the Secretary of the Royal Institute of Architects in Ireland; from the Council of the Bristol Society of Architects, and the President of the Liverpool Society of Architects; and read extracts from, and alluded to, letters received from various architects, practising in different parts of the kingdom, amongst whom were Messrs. Tate, Bunning, Gellier, G. R. French, Joseph Clarke, James Bell, G. Abbott, and Geo. Morgan, of London; Messrs. Grogan, Corbett, Walters, and Spencer, of Manchester; Messrs. Pritchett, of York; Ashworth, of Exeter; Mitchell, of Hertford; Barnes, of Ipswich; Wigginton, of Derby; Kimpton, of Hertford; Whichcord, of Maidstone; Newman, of Ventnor, Isle of Wight; Barnes, of Dorchester; Stevens, of Tonbridge; and Billing, of Reading, the greater part of whom had spontaneously written to the committee on finding that the present meeting in London was contemplated. He then gave an outline of the resolutions that would be submitted to the meeting, which, it was hoped, would that evening nominate a public Competitions Committee to bring the question to a close. He concluded by reminding the meeting that, as the Architectural Association and the Bristol Society of Architects had, at some pecuniary cost and great pains, accomplished the present promising commencement of a better state of things, it was the bounden duty of every member of the profession who really desired to enhance its respectability, to manfully aid a movement so well begun, and to contribute, however slightly, towards the expenses which the public committee of gentlemen to be nominated by the meeting must necessarily incur.

The substance of the report made by the committee of the Institute of British Architects in 1839 was read.

Mr. Fowler, Vice-President of the Institute of British Architects, moved the first resolution, adopting that report as the basis of the movement, and setting forth the necessity of obtaining a satisfactory code of regulations. The speaker said, he had attended the present meeting, feeling that it behoved every one who had the interest of the profession at heart, to come forward on all questions

* Quoted in THE BUILDER of May 31, page 342.

+ This communication entered very fully into the question of competitions, and concluded as follows:—"It is, however, an opinion firmly held by our society that, without for one moment disparaging the great advantages to be derived from an improved management of competitions, no means will be found effectual to establish the profession of Architecture upon a fair and honourable footing, except the institution of a college for the purpose of granting degrees in the Art."

affecting its welfare, even although they might not thereby pledge themselves to any particular cause of action. He had been a member of the committee of the Institute on competitions, and had thereby been fully impressed with the importance of the present question. Their deliberations indeed had been more interesting than satisfactory. Certainly a great reform was needed, not only in the conduct of committees, but of architects themselves, otherwise they might seek in vain for any improvement in the practice of competitions. In principle, competition was most wholesome and desirable, both for the public and the profession. It had broken down the monopoly which he remembered to exist about thirty years ago, when all the patronage of public works was confined to three architects, under the title of the "Board of Works." Instead of giving the public the benefit of their collective wisdom, from some personal feeling the members of that board never met in the same room; but dividing the metropolis into three districts, contrived each to keep to himself all that he could get in his own territory. To ensure honourable and well-conducted competition was their present object; and the first requisites were clear and definite instructions, and a faithful adherence to them. Ignorance and intrigue too often lead to gross injustice; but if architects entered into competitions without a fair and reasonable prospect that justice would be done, they had no right to complain of any injury which they might suffer. A certain amount of professional assistance was essential to committees, as generally constituted. The responsibility should rest with those who invited the competition, but through ignorance, or want of precaution, they might err,—perhaps innocently. The mere preparation of a tabular statement, showing the relative characteristics of each design, might render valuable assistance to a committee. He remembered an instance where it had been shown by that means, that the greatest quantity of building was actually attached to the lowest estimate. A jury deciding in a court of law were assisted by such evidence on both sides as enabled them to judge rightly, and made them inexorable if they judged wrong; and committees on competitions should have the same advantages. He should be glad if the labours of the proposed committee proved successful.

Mr. Fripp seconded the resolution. He had come from Bristol on purpose to attend the meeting, and had much pleasure in supporting the Institute's report, as the ground-work of future measures. His only wonder was that it had not been acted upon before. Competition he feared was much worse managed in the country than in London: at all events nothing could be worse than it was in his own district. There, however, a partial combination among architects,—refusing to compete unless certain conditions were adopted,—had been, in one instance at least, successful. But even there the matter was not decided: a mixed committee of twelve or fourteen builders, surveyors, tradesmen, and "gentlemen of taste," had selected what, to a professional man, was obviously the most expensive design submitted to them. It was notorious, too, that such a committee could arrive at a decision much more speedily than any three architects. Professional advice, therefore, was essential; and he would refer the selection to an architect solely,—still, however, making the committee responsible for adopting or rejecting his decision.

Mr. Hall said.—The resolution proposed assumed that all architects were agreed on the principle of competition. That question was in some degree evaded by the report of the institute. He was himself entirely averse to competitions, and his opinion was strengthened by the arguments he had just heard. With regard to the malpractices referred to by Mr. Fowler, there was no fear of such occurrences in the present day. The improved state of public education, and the exertions of the press—especially the weekly architectural newspapers—would effectually prevent these abuses. The difficulties of competition began with the framing of the instructions. Sufficiently copious instructions, such as were prepared for King's College Hospital, could only be made out by one who was qualified to act as architect to the building; and who ought, therefore, to be the man employed. The more precise the instructions, the more were the suggestions of competitors cramped, and rendered valueless. The ignorance of committees was strikingly shewn by the first competition for the Army and Navy Club. After two days' examination of the drawings on that occasion, he (the speaker) was quite unable to decide upon them; yet he had no doubt the committee had then made their selection. And hence the difficulty of furnishing committees with professional aid; for no architect could devote the necessary time to the selection—in the case of extensive buildings—without a high remuneration. The

great argument against competition was, that it tended to introduce a commercial spirit into the profession. Commerce, certainly, might be conducted more honourably than it generally was; but in its most perfect state proceedings were considered right and proper between competitors in trade, which professional men could only regard as dishonourable and discreditable. Before assenting, therefore, to the principle of competition, it was necessary to assent to those of commerce; and he was sorry to say some architects, by so eagerly entering into competitions, did act upon these principles. He had heard several members of the committee on the Northampton Corn Exchange express their wonder that architects should have taken the trouble to send them such elaborate coloured drawings for so small a premium. He regretted he had so imperfectly expressed his views, but, in the hope that the meeting would not separate without protesting against the principle of competition, he begged to move as an amendment, "That it is the opinion of this meeting that the principle of competition, as regards architectural designs, is erroneous; and that it is the duty of every member of the profession who is anxious to advance his art, and make it conducive to its highest objects and chief results, to discountenance in every manner the continuance of it."

The amendment having been ultimately seconded, Mr. G. R. French said he rose to move a further amendment. He thought they did not quite begin at the beginning; and in order to do so, he wished them to enunciate a principle the very reverse of the last proposition; dissenting, as he did, entirely from that view of the question. His amendment, which should perhaps be rather a substantive motion, was, "That in the opinion of this meeting, architectural competition, if founded upon just and honourable proceedings, is advantageous to the public and the profession."

Mr. W. P. Griffith seconded the amendment. Mr. Young, although approving of Mr. French's amendment, thought the same doctrine was expressed in the report of the Architects' Institute, which the original motion proposed to adopt.

Mr. Wyatt Papworth thought the last amendment necessary; inasmuch as the publication of the original motion, without the report on which it was based, would not convey sufficient information to the public.

After some discussion, The Chairman said he should be sorry if the first resolution of that meeting gave so direct an encouragement to architectural competition under all circumstances, as would follow from the adoption of Mr. French's amendment. The original motion neither approved nor dissented from the principle of competition; but taking things as it found them, sought for the best means of remedying the evils which it recognised.

Both amendments, put *seriatim*, were negatived by a large majority, and the original motion was carried unanimously.

The code of regulations proposed by the committee of the Architectural Association, copies of which had been circulated in the room, was considered as having been read to the meeting.

Mr. Hurst then moved the appointment of a committee to arrange definitely a code of regulations to be submitted to a future meeting. This, he said, was a question in which the junior members of the profession were chiefly interested. It was impossible to put down competition altogether, while so many members of the profession were unemployed; therefore, the best course was to endeavour to improve it. As no code that could be prepared would remove every difficulty, he would urge the meeting not to cavil about details. With the aid of the Institute and the profession at large, he was confident much good might be accomplished.

Mr. Boucher seconded the resolution, explaining that all the suggestions hitherto received would be referred to the proposed committee, who would also receive suggestions from individuals.

Mr. John Papworth observed that he feared the preparation of a satisfactory code was impracticable, as was evidently the feeling of the profession, by the fact that nothing had been done in the eleven years that had elapsed since the date of the Institute's Report. By refusing to compete unless the intended code was adopted by committees, architects would shut themselves out, and leave these committees to avail themselves of the services of unscrupulous men, who were unable to establish themselves in the profession. It was absurd, moreover, to expect that architects would abstain from using the influence of their friends, wherever it could be brought to bear in their favour. He thought, therefore, the contemplated proceedings had not a practical tendency.

Mr. Young, on the contrary, could not believe, after what had been already done, and the encouragement already received, that the present movement

could fall to the ground. "Black sheep" would always be found; but building committees were very tenacious of the good or bad opinion of the profession; and if the united opinion of only fifty good men could be obtained, they need not fear the canvassing or touting of a few black sheep.

On the motion of Mr. J. Wyatt, seconded by Mr. Braithwaite, a committee was named; and on the motion of Mr. Edmeston, seconded by Mr. Billing, it was resolved that the proceedings be advertised.

A vote of thanks to the Chairman was then moved by Mr. Hall, and seconded by Mr. Laxton, in kinder terms than we can print.

Mr. Fowler, in putting the resolution to the meeting, said he should have been glad to have seen more of the senior members of the profession present, but their absence ought not to be taken as any discouragement; because professional movements of any kind never originated with the seniors. They, indeed, had no sufficient motive for attempting to introduce new modes of practice; and therefore it was peculiarly the province of the younger members to take up any measures in which energy and activity were required. The juniors were not only justified, but called upon to take the lead in the present question, as they were most interested in obtaining a better field for the exercise of their labours. He trusted that would be the result of their exertions, and if they pursued their object with energy, diligence, and integrity, they might be sure it would attract the attention and secure the approbation of the profession at large.

Mr. Godwin, in thanking the meeting, said, he had endeavoured, for some years, to the best of his ability, to uphold the dignity of the profession, to advance worth, and maintain truth; and should strive steadily to pursue the same course. He confidently anticipated a happy issue to their proceedings, aided as they were by all the influential bodies in the profession.

A vote of thanks to Mr. Young was then passed, and a subscription entered into to promote the objects of the meeting.

A PICTURE IN THE CITY.

Your paper, as well as many others, both weekly and daily, has given an account of the crypt at Guildhall, and of a "granite bowl of enormous weight," which may be seen there. Pray inform the public that there is, or was, deposited in the same subterranean apartment, a large historical picture, which was, some years back, an object of much notoriety, and whose history and adventures may be regarded amongst romances of fact. It represents the memorable conflict between the English and French Armies in 1415, called "The Battle of Agincourt." It was painted by Sir Robert Ker Porter, when just entering into public life as an artist. His genius and artistic talents attracted great notoriety in a short period of time, as he had previously produced and exhibited a large picture of the *Storming of Seringapatam*, more than 200 feet in length; also three other great historical paintings. These works not only astonished the public, but the members of the Royal Academy, whose president, Mr. West, Mr. Shee, and other Academicians, praised them as wonderful works for a boy. The painter was only nineteen when he executed the "Seringapatam," and which was painted in six weeks. After being exhibited to the public (at the Lyceum, London), who flocked in great numbers to see them, they were taken to several provincial cities and towns, and the painter derived great profits from them. The largest of the four was accidentally destroyed by fire. The "Agincourt" was rolled up and deposited in a city warehouse, when Mr. Porter went abroad. In 1808 he wrote a letter to the then Lord Mayor of London, Ansley, from Stockholm, offering the picture to the City, if a place could be found to hang it up in. He calls it "his last and best work," and as such he wished to have it carefully preserved in London. It was accepted, thanks returned, and the committee for letting the city lands were requested "to consider the best place to display the picture." This was in the year 1808, and it seems that it was hung up in the Egyptian Hall of the Mansion House. How long it remained there is not recorded, but it appears that the picture was accidentally discovered some twenty years afterwards, in the cellar of the Guildhall, and being unrolled and brought

to light, excited no small degree of surprise and conjecture. There was not any memorandum on it, and various opinions were formed as to its origin and history. It was hung up in the hall for some weeks, and the writer was invited by Mr. Fisher, one of the common council, to see it and give his opinion. He remembered to have seen the artist and his assistants, one of whom was Mr. Mulready, R.A., working on it, and that it was afterwards displayed in the Lyceum. Miss Jane Porter confirmed this testimony, and wrote a letter for the public press describing it. After being shown for some months it was again taken down, rolled up, and stowed away amongst other useless lumber, and it is believed has not been exhibited since. Surely such a work, recording such a memorable historical event, and presented to the first city of Europe, is entitled to more respect. At the present memorable era of London, it is hoped that the city authorities will resuscitate it, and make some amends for past apathy. This picture is further noticed, with anecdotes of the painter, in "Britton's Auto-Biography."

J. B.

RAILWAY JOTTINGS.

"MR. BRUNEL," says *Herapath*, "has lately completed the contract with the Rhymer Ironworks for many thousand tons of rails, at the low figure of five guineas per ton delivered, for one of the Exeter railways. The rails are to be guaranteed for five years, and 100 tons to be deposited with the company for that period as security against breakages and failures. Who will not make railways now?"

—In considering the prospects of railway property and its progressive value, the *Railway Circular* remarks that the increase of traffic from the growth of population alone will not be less than 3 to 4 per cent. annually, and as this applies in an equal degree to merchandise and mineral traffic, and as the increase of travelling, on the part of those who already travel, cannot, according to past experience, be taken at a less per centage, an increase of at least 6 to 8 per cent. may be reasonably looked for from these sources. As this yearly increase will be regular and gradual, a very slight additional expense will be incurred, the fixed charges bearing a large proportion to the whole cost of working. On one of the best managed lines in the country, it is found that all increase in traffic beyond a fixed amount, to which the expenses are adjusted, yields a net revenue of 75 per cent., and this would increase with the augmentation of the receipts. It follows, therefore, as a necessary sequence, that 80 per cent. at least of the yearly increase will be available for dividend. — A comparative statement has been printed of the passenger traffic on the various railways of Great Britain and Ireland during the last half-year of 1850, and during the corresponding period in 1849. The length of line open at the beginning of latter period was 5,447 miles, and at the end 6,032. The total number of passengers conveyed was 35,073,672, and the total receipts were 3,455,218*l.* 6*s.* 0*d.* These two totals are thus sub-divided:—First class, 3,957,723*l.*; receipts, 1,041,638*l.* 8*s.* 5*d.*; second class, 12,320,749*l.*; receipts, 1,388,848*l.* 1*s.* 1*d.*; third class, 84,925,672; receipts, 381,089*l.* 10*s.* 11*d.*; Parliamentary class, 10,221,576*l.*; receipts, 642,170*l.* 19*s.* 7*d.*; mixed, 81,055; receipts, 1,470*l.* 11*s.* 11*d.* At the commencement of the former period 6,308 miles of railway were open, and at the end 6,621. The total number of passengers conveyed was 41,087,919*l.*, and the receipts were 7,147,377*l.* 17*s.* 0*d.* The passengers and receipts are thus classified:—First class, 4,635,531*l.*; receipts, 1,151,764*l.* 5*s.* 7*d.*; second class, 15,218,930; receipts, 1,543,360*l.* 16*s.* 11*d.*; third class, 9,079,858*l.*; receipts, 399,248*l.* 8*s.* 9*d.*; Parliamentary class, 12,153,599*l.*; receipts, 723,030*l.* 1*s.* 0*d.* The receipts from goods, cattle, parcels, mails, &c., in the first period were 2,895,343*l.* 6*s.* 0*d.*, and in the second, 3,329,974*l.* 4*s.* 7*d.* The total receipts from all sources of traffic for the first period were 6,350,561*l.* 12*s.* 1*d.*; and for the second, 7,147,377*l.* 17*s.* 0*d.* — A meeting of general managers of railways

was lately held in the Euston Station, at which Mr. Harding, the secretary of the South-Western, drew attention to the position of those companies who are aggrieved by the interpretation put upon clause 9 of 7 and 8 Vict., cap. 85 (providing an exemption from tax on fares at and under 1*d.* per mile), by the Railway Commissioners and the Commissioners of Inland Revenue, on which Mr. Swift has reported that a remedy by legislative enactment cannot at present be anticipated. It was thereupon resolved that the attention of the committee of the clearing-house be called to the unsatisfactory position of this question, the companies being now refused all exemption from tax on excursion fares, though under 1*d.* per mile, except on the lowest fare,—that is to say, if, in an excursion train running 100 miles, the fares are 7*s.*, 5*s.*, and 3*s.*, it is only on the 3*s.* fare that the commissioners will grant exemption from tax. A penalty is thus practically imposed on giving any but the worst class of carriage accommodation. This will be much more severely felt in a pecuniary shape as the excursion train traffic to the Exhibition increases, and should, therefore, it is submitted, be looked to now that such excursions have commenced.

THE NEW CITY PRISON, HOLLOWAY.

THE new prison, which has been built at Holloway for the Corporation of London, is constructed upon the radiating principle, having four wings diverging from one centre, with two other wings in front of the former: one of these wings is for juvenile offenders with schoolrooms attached; the other for females with work-rooms and laundry. The other four radiating wings constitute the male adult prison. These have large work-rooms attached, and an apparatus for lifting water. The wings are 12 cells in length, or about 100 feet, and 3 stories high. The corridors are 16 feet wide, and are open up to the arched ceiling, with galleries leading to the upper cells. The cells are 13 feet by 7 feet, fitted up with water-closets, wash-hand basin, cupboard, table, stool, &c.: these are warmed by means of hot water pipes laid under the corridor floor, the air passing over them and through the flues, provided in the thickness of the wall, and entering the cell over the door. The ventilation is to be effected by means of a shaft 146 feet high, of large dimensions. Inside this shaft is a tube of boiler plate the whole height of the shaft, 5 feet diameter at bottom, and 3 feet at top. In addition to a furnace at the bottom of the tube, the smoke from the various chimneys, together with the spare heat from the kitchen boilers, is conveyed into it, and will necessarily raise the temperature of the column of air in the shaft, and make it pass off with great rapidity. The theory is, that as no air can enter the shaft without previously passing through the cells, a constant supply of fresh air will thereby be conveyed to the prisoners.

The chapel is a spacious room 76 feet by 40, and 48 feet to the ridge of the roof, with two deep recesses for the females and juveniles, and will contain sittings for 380 prisoners. Provision is made for having a constant supply of fresh air passing through the chapel to the ventilating shaft. The arrangements for taking the prisoners from the various cells to the chapel have been well considered. The females and juveniles enter by separate doors near the altar, while the male prisoners enter by four different passages at the opposite end. The kitchen is of ample dimensions, and being close to the base of the ventilating shaft, the steam and smell from the victuals will be readily carried off. The well-house is to be fitted with one of Mr. Bessemer's disc pumps, and to be worked like a capstan, in a building 30 feet diameter. The shaft is 217 feet deep, bore 102 feet, making a total depth of 319 feet. The depth to the water is 153 feet. The tanks, to contain 14,000 gallons, are placed over the front towers at a great elevation, from which the cells and other places are supplied: the whole depth of bore is in chalk.

The whole extent of frontage next the Camden road is of Kentish rag with Caen stone dressings, and is represented in our view. The style is castellated Gothic. The sides of the chapel building, and the back wings are of brick: the windows to the cells have Park-spring stone sills, with splayed brick reveals. The whole of the parapets are coped with Caen stone. The roofs are flat-covered with asphaltum upon plain tiles and iron rafters. As the extracting flues for ventilation are immediately under the roof covering, two thicknesses of plain tiles have been put 6 inches apart, to prevent the atmosphere acting in any way against the free current of air passing through them.

The porter's lodge, which stands about 66 feet in front of the entrance building, is also of rag, with Caen stone dressings, and contains accommodation for two families. Between the last-named building and the road stand the two houses intended for the governor and chaplain, with large gardens attached.

The accommodation afforded in the prison is as follows:—

Females	60
Juveniles	61
Male adults	283
	404
Reception cells	14
Punishment ditto	18
	436

with fourteen workrooms, equal to ninety-six cells; offices for the governor, chaplain, surgeon, steward, clerks, &c.; apartments for the surgeon and deputy-governor, and for master and two turnkeys in juvenile wing, matron and two turnkeys in female wing. The ground, consisting of ten acres, is surrounded by a brick wall 18 feet high, with a strip of land 20 feet broad round its exterior.

The prison is built upon land originally purchased by the City for the purposes of a cemetery during the raging of the cholera in 1832. It is a little to the westward of the Holloway-road, upon the side of a hill, having a declivity of 4 feet in 100. Previous to the commencement of the works the City authorities entered into an arrangement with the Commissioners of Sewers, who built a new sewer for the purpose of securing good drainage for the prison.

The building has been erected from the design and under the able superintendence of Mr. Bunning, the City architect. Mr. Jay is the contractor employed; Mr. Lawrie the clerk of works.

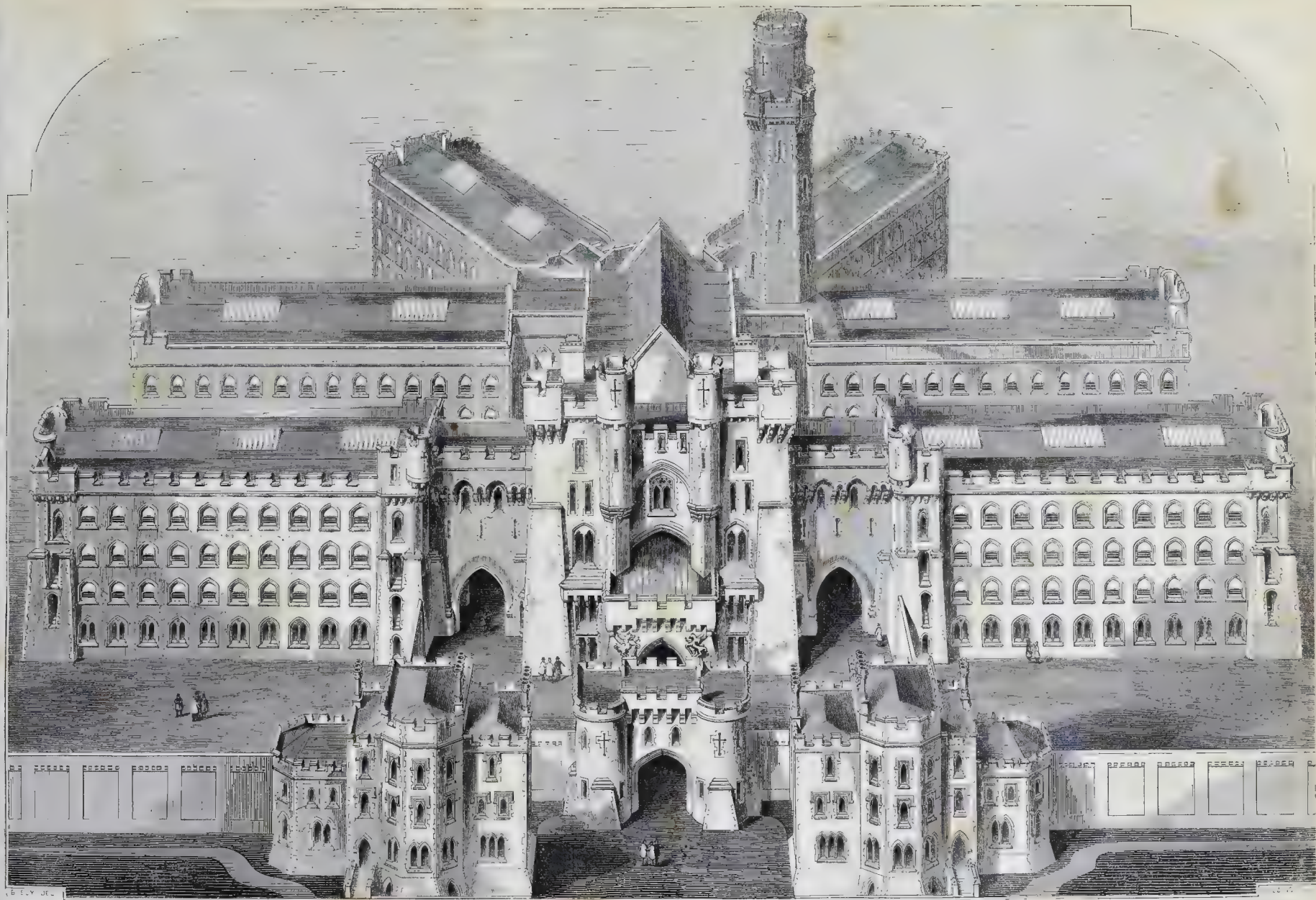
The original estimate for the building was 92,293*l.*; but the committee considered that sum too large, and orders were given to cut it down. The pruning-knife was applied, and it was reduced to the extent of 14,635*l.* The contract now stands as follows:—Building, 77,655*l.*; warming, ventilating, water-pipes, gas-fittings, locks, bells, cooking apparatus, laundry fittings, forming the grounds, fittings, and furniture, about 14,000*l.*; so that, after allowing for any additions the corporation may think proper to make, the expense of the whole may be called something under 100,000*l.*

Prison discipline is a problem the wisest of our legislators have not yet been able to solve. When Pentonville Prison was erected it was thought that complete separation, by its severity, would lessen crime. The result, however, has scarcely justified the belief. The Government have had ample opportunity of forming an opinion upon the merits of the separate system; consequently, within the last twelve months, some relaxation has been made, and about 10 per cent., as we understand, are now in association.

With so many perplexing opinions before them, the City authorities were at a loss upon what principle to arrange their prison, but they adopted a middle course, and they have now the means of confining the vicious in separate cells; and have a sufficient number of work-rooms for classified association.

It is expected that the prison will be ready for occupation in the early part of next year.*

* The hinder must be directed to cut out and fold the view of the prison, before stitching.



PRISON FOR THE CITY OF LONDON, AT HOLLOWAY.

MR. BUNNING, F.S.A. ARCHT.

NOTES IN THE PROVINCES.

To save space we have heretofore strung these notes one on end of another, but complaints have frequently been made that they are not so readable or so easily referred to in this shape, and we have thought it advisable at length to alter their form a little.

Windsor.—There is some talk in the town council of building a new town-hall, with the ultimate view of removing all the houses between the castle-entrance and the north side of the church. The necessity of laying out something like 800*l.* on the roof of the present town-hall appears to have led to the suggestion; but as to the ultimate end in view, it has been maintained (wrongly according to a correspondent of the *Windsor and Eton Express*) that it would cost 100,000*l.* to carry it out.—The Victoria and Albert bridges, crossing the Thames from the Home Park, on the north side of the Castle, and by the Bone Stream, were to be opened for general traffic on Monday last. The commissioners had also notified that the communication across Datchet bridge would then be stopped, and the old bridge taken down.

Brighton.—The contractors for the erection of the new race-stand have been busy of late with the works. The main building, which measures 64 feet in length by 36 in depth, will contain on the ground-floor a refreshment-room, 60 feet by 14, with a covered terrace 10 feet wide. The saloon on the first-floor will be capable of affording accommodation to upwards of 1,800 persons to view the races; in addition to which, a gallery of 60 feet will be erected at each end, and in continuation to the Stand, each gallery being capable of accommodating 1,000 persons. There will be several retiring rooms for ladies. The total frontage, including the galleries, will be 184 feet, and of the betting-ring, 341 feet.—The Pavilion committee have altered their original intention to let the ground in Castle-square and the plots adjoining on either side by tender, and determined to dispose of it by auction. The ground in Castle-square is regarded as a very eligible site for building purposes.—A marble monument, designed and executed by Mr. Pepper, a resident sculptor, has been placed in the chancel of St. Peter's Church.

Romsey.—The old brick flooring of the chancel of the Abbey Church is being removed, to be succeeded by a paving of encaustic tiles. The old railing before the communion table is to be replaced by a new one, as the table itself is.

Caerleon.—Two curious relics of ancient art were lately found here. They are sculptures in ivory, representing, it is said, King Arthur and his Queen, who made Caerleon a favourite retreat. "The male figure," says a Liverpool contemporary, "represents the king in the full investiture of his royal dignities, while the simple guise and appropriate grace of the queen are in strict accordance with the pastoral life which the female portion of the court were doubtless accustomed to in that enchanting spot, or possibly symbolise the lowliness of her origin and the humility of her mind. They have been shown to our principal local antiquarians and archaeologists, all of whom consider them to be genuine specimens of ancient British art."

Birmingham.—During the past week the new baths have been attended as follows:—Swimming bath, 4,400; first-class men's warm baths, 700; second-class warm baths, 390; first-class cold baths, 30; second-class cold, 130.

Worcester.—A local paper, while stating that the town-council had adjourned till last Tuesday, then to take into consideration the plans sent in for the new Market-house, says, "Before they decide, however, upon which they will adopt, it seems they will have to determine whether there is to be a new market-house at all—a matter which we had supposed to be settled. The plans, seven in number, now lie on the table of the council-chamber for inspection, and it will be seen directly that the Crystal Palace has suggested the idea for the roofing of more than one of them. We should fancy the competition will lie between Nos. 1, 2,

and 6. The Markets' Committee have reported generally in favour of the last, which has a central transept with convex roof after the fashion of the great glass-house, and side aisles lighted by lanterns; but the committee say that if this be adopted a good deal of alteration must be made in the details. Much attention seems to have been paid towards making this plan as complete as possible; but a doubt is expressed whether it could be erected for the sum mentioned, but this the gentlemen who look so sharply after the public money will no doubt have an eye to. No. 1 is simple, and very much after the fashion of the recently-erected garden market. It wants elegance. No. 2 proposes an iron and glass roof of a single span, similar to the one stretching over the Lime-street station at Liverpool, with a span there of 153 feet. The span here is about 70 feet, so there can be no doubt about a sufficiency of strength. This, of course, has the advantage of leaving a clear space beneath uninterrupted by columns, and admitting of any arrangement of the stalls which the committee might think best. Had it been intimated in the advertisements for designs, that the committee intended to consult the opinion of a competent judge like Mr. Hopkins, there would doubtless have been more plans sent in, as many professional men dislike the idea of sending in designs for the decision of a mere lay committee."

Preston.—The foundation stone of the new tower and spire to be erected at St. Peter's Church here was laid on Tuesday in last week. They are being erected from a design, and under the superintendence of Mr. Mitchell, of London and Sheffield, architect. The general features of the church are of the decorated or second pointed period. After several designs had been submitted to the trustees, it was finally decided that they should be placed at the south-east corner. The dimensions of the tower are 22 feet square by 80 feet high, divided into three stages, the first forming a chapel, having a groined stone roof, with ribs and bosses, and a floor laid with Minton's encaustic tiles, in suitable devices and inscriptions. The second story will be appropriated to a belfry, and the third to a bell chamber. The tower will be terminated by four canopied and crocketed pinnacles at the angles, with flying buttresses joining the tower to the spire, which will be carried 85 feet high, crocketed at the angles, and have spire lights, and terminate with a finial and weather vane. The whole height of the tower and spire, exclusive of the weather vane, will be 165 feet. The church at present has no chancel, but it is contemplated, should funds be obtained, to erect one. The local *Guardian* was to have an engraving of the whole in this week's number.

Carlisle.—Builders, says the local *Journal*, have scarcely if ever been so briskly employed in Carlisle as at this moment. In addition to an unusual number of new dwelling-houses, now in the course of erection, Messrs. Ferguson and Chambers have commenced laying the foundation of an extensive building for power-looms; Messrs. McKnight are about to make large additions to their woollen manufactory in Willow-Holme; a lot of eight or ten shops with houses attached are to be erected in Bank-street—leading from English-street to Lowther-street, thus filling up the entire of the vacant plot of ground, and making a much required thoroughfare between these streets.

Winchester.—Out of about twenty plans submitted for a new Independent Chapel in this city, those of Mr. W. F. Poulton, of Reading, architect, were chosen by the committee. The front is to be in the Early English style; the centre projects considerably, with an ornamental turret at each angle, and a triplet window. A single lancet light is inserted in each of the receding walls. The body of the chapel is entered by three doorways, and the galleries, schools, and vestry by two side-doors. The roof is surmounted by a lofty lantern turret. The shape of the building is an elongated octagon. Raised seats to accommodate 300 children run round the chapel, and afford means of access under them to the Sunday-schools at the back. A series of columns and arches,

front the raised seats, and the space between the columns is spanned by a light roof. The chapel, when complete, will seat 1,000 persons. The schoolroom will contain 500 children. Over the schoolroom apartments will be erected for the master and mistress of the school. The chapel and schoolrooms are to be heated with hot water. Special attention has been given to the ventilation of the building by means of a shaft.

Chesterton.—The foundation-stone of the church of Chesterton, near Newcastle, in Staffordshire, was laid on Thursday, the 5th inst. The church, which is Early English in style, will accommodate 485 persons, including children, all on the ground-floor; and will consist of a nave, north aisle, children's chapel, and steeple on the south side (which will have a spire of considerable elevation), chancel, and chancel aisle, out of which will be taken the vestry. Messrs. Ward and Son, of Hanley, Staffordshire Potteries, are the architects; Messrs. A. and G. Holme, of Liverpool, builders.

Birkenhead.—Within a very recent period, 100,000 yards, and more, of land have been sold here at considerably enhanced prices. Upwards of 30,000*l.* have been paid for land sold on time bargains.

Rugby.—Nearly 3,000*l.* have now been subscribed towards the erection of a new church for 1,000 sitters, one-half free, at a cost of 5,000*l.*

Crewkerne.—Mr. Wm. Hoskins, of North Perrott, having offered 1,000*l.* towards the erection of an additional church, and some inhabitants having purchased a site, it is proposed to build and endow a church for about 400 persons, two-thirds, at least, free. The expense is estimated at 1,300*l.* The site cost 300*l.*, and occupies more than half an acre of land, a portion for burial ground. An anxiety to prevent the architectural appearance of the interior of the parish church from being in a great measure destroyed by the erection of side galleries, as well as to supply the poor of the parish with free-seats in church, induced Mr. Hoskins to make the liberal offer just noted.

Nottingham.—The "Bellevue Reservoir," of the local Water-works Company, was opened on Friday in week before last. It is situated to the north-east of Mansfield-road, on the highest eminence within a circle of many miles. At the instance of their engineer, Mr. Hawkesley, the company determined to form this tank on a new principle, viz., to arch it over, to render it as clean as possible, so as to make it, in fact, a gigantic subterranean water cistern. A deep square excavation was made near the centre of the table-land on the summit of the hill, within which walls of brick-work were constructed, 160 feet long and 80 feet wide. Then, in parallel rows, were raised shafts of masonry, along which were turned 288 arches, which entirely cover the whole reservoir, with the exception of two ordinary trap-doors. The floor was afterwards puddled with soft clay, on which is placed a layer of bricks. The height within, from the floors of the arches to the roof, is uniformly 12 feet. The reservoir is 50 feet higher than the top of Derby road, whence it obtains its supply, and level with the top of Trinity Church spire. In forming it, half a million of bricks have been used, and the various works have cost 8,000*l.* Mr. Jalland officiated as architect during its construction; Mr. Smart was the contractor; and Mr. McKirk the builder. A circular boundary wall of stone has been erected round the works, and immediately over the surface of the reservoir the ground will be laid down with grass: from thence there is a gentle slope, leading to an enclosed pleasure walk round the central mound.

Boston.—The committee of the Athenaeum, in consequence of the institution rapidly increasing in numbers, have resolved on advertising for an eligible site, on which to erect a new building for the purposes of the society. The edifice is to be very commodious, a provision being made that it shall not be less than 100 feet by 40 feet.

Grimshy.—The docks are rapidly assuming their ultimate form. The arches now in course of construction, forming the walls around the

dock, give it a more dock-shape appearance. The lock-walls are advancing to completion—the top-stones in several places having already been finished. The large gates will soon be completed and hung. The excavations are also progressing.

Blackburn.—Another effort is being made to erect the proposed exchange. It is proposed that the building and purchase of land shall not exceed 20,000*l*. Several of the most respectable firms have given their patronage to the project. The site selected fronts the old market-place.

Newcastle.—Mr. Grainger, says the *Gateshead Observer*, has commenced the removal of the old buildings in Nuns'-gate, at the end of Grainger-street, preparatory to widening the thoroughfare, and erecting a row of respectable shops and houses of the same style of architecture as Grainger-street, and transforming the shabby passage called Nuns'-lane into a spacious arcade, with shops on each side, the arcade being covered with glass after the style of the Crystal Palace. The whole is expected to be complete by November 11. With reference to the scheme at present on the tapis for the establishment of corporation gas works, a protest is being made by the inhabitants and ratepayers against the purchase of the old works. The protesters state, that being convinced that extensive new gas works, possessing all the recent improvements which modern science has developed for the production of pure and brilliant gas, can be established for less than 60,000*l*, they view with indignation the intention of this corporation to give 116,000*l* for old and dilapidated works, not worth 40,000*l*, and which will require an outlay of 30,000*l* to render them sufficient to meet the increasing requirements of the inhabitants.

Sunderland.—The masons employed by the contractors of the south entrance of the dock have struck work because their employers refused to pay them more than twenty shillings per week, the men asking twenty-four.

Glasgow.—The local *Herald* states that the new terrace and "Palais Royale Arcades," (the latter not yet built) will have cost Mr. Scott, of Kelly, the proprietor, who is one of the magistrates of the city, at least 97,000*l*. The site alone cost 37,000*l*, the buildings already erected 20,000*l*, and the arcade, on the plan of the Palais Royale, is estimated at not less than 40,000*l* more.

ORDNANCE SURVEYS.

MEETING OF CIVIL ENGINEERS.

ON 29th ult. a general meeting of civil engineers and surveyors of Scotland was held in the Waterloo Hotel, Edinburgh, for the purpose of considering the means to be adopted by the profession for the protection of their interests as respects the general survey of the kingdom, and for determining what steps should be taken for securing to the civil engineers a proper share of the business of the survey, as well for accelerating the completion of this national undertaking. Amongst those present were the following civil engineers resident in or connected with Edinburgh:—Messrs. Thomas Grainger, Duncan Macallum (of the firm of Macallum and Dundas), William Campbell, F. Shepherd, James W. Stewart, George Gibson, James Bishop, James Lorimer, George C. Bruce, W. A. Jardine, Robert Barlas; James Knox, land surveyor and civil engineer; R. Kirkwood, ditto; George Cowie, ditto; Thomas Maclean, ditto; Henry J. Wylie, ditto; John Young, surveyor; George Forsyth, ditto; George James, ditto; John Houston, ditto; John Rennie, ditto; James Thomson, C.E., Glasgow; William B. Ferguson, engineer and surveyor, Aberdeen; James Agnew, C.E., Perth; P. D. Brown, C.E., Perth; George Mackay, surveyor, Inverness; John Kerr, surveyor, Dunse; John Willet, civil engineer, Aberdeen; &c.

Mr. T. Grainger was called to the chair, and read letters of apology for non-attendance and concurrence in the objects of the meeting, from the following civil engineers and others:—Messrs. William Blackadder, Glamis; George McWilliam, Sheriffston, Elgin; Alex.

Duncan, Banff; John Martin, ditto; G. Campbell Smith, ditto; Joseph Mitchell, Inverness; N. Maclean, ditto; D. G. T. Macdonald, Dingwall; Alex. Smith, Aberdeen; A. Gibb, ditto; Robt. Milne, ditto; Arthur Farquhar, ditto; Wm. Henderson, ditto; Wm. Boulton, Laurencekirk; John Morgan, Stonehaven; Wm. Young, Stirling; George Martin, Glasgow; John Mason, Dunbar.

The Chairman and other gentlemen then addressed the meeting, and appropriate resolutions were passed and petitions to both Houses of Parliament, authorised to be prepared by a committee appointed for the purpose, and consisting of the Chairman and Messrs. McCallum, Campbell, Ferguson, Bruce, and Barlas. The petition to the House of Lords was agreed to be sent to the Duke of Buccleuch for presentation, and that to the House of Commons to Sir Wm. Gibson Craig.

HOLLAND v. THE EARL OF HARBOROUGH.

I QUITE agree with your correspondent, Mr. Thomas Holland, as to the manner in which this cause was referred.

I beg, however, on behalf of the Earl of Harborough, to say that he is not at all responsible for the costly way in which it has been carried on, as he was willing to leave the reference in the hands of the respective attorneys, but plaintiff insisted upon being represented by counsel.

Melton is half-way between Leicester and Grantham, where the chief witnesses on each side resided: the court was consequently held there to accommodate them, and not Lord Harborough; it was easier of access for plaintiff's than defendant's witnesses, and the arbitrator was nearer his work, as he had to go to Stapleford and Oakham to view the buildings.

As to the charge that his lordship either *dared not* or *would not* appear in court, allow me to say, his lordship entertains too high a sense of moral feeling and honour ever to give evidence in his own cause, and that if I could have overcome his sensitiveness on this point, the arbitrator's decision would have been in his lordship's favour.

The proposition of a fifth architect or umpire emanated from me, and not from the arbitrator. I know too well what arbitrations are ever to wish to leave the judge in such cases to decide between two opposing factions, as he is almost sure to split the difference. Sir Eardley Wilmot said he should have done so in this case, and he now says he has adopted the umpire's report, but to which latter assertion I beg most respectfully to dissent. I do not, however, wish to impugn his judgment; still he could not think very highly of plaintiff's case, whilst in awarding him 50*l*., which included 32*l*. for some French casements not received by defendant, he ordered him to pay one-third of the costs of the reference.

Lord Harborough was always willing to abide by the contracts, and to pay for the other work by measure and value; but plaintiff insisted upon having the whole thrown open to measure and value, which led to his commencing legal proceedings.

The statement with regard to the number of barristers and attorneys employed is exaggerated and incorrect.

The umpire's report was a perfect justification of Lord Harborough's conduct, and with that report before him it is difficult to imagine how Sir Eardley could have come to such a decision.

I am, Sir, &c.

FRED. MALIM, Defendant's Attorney.

THE CITY GUILDHALL.—I went a few days since into the Guildhall in the City, and was much struck with its poverty and inappropriate appearance, considering it is the Hall of one of the greatest cities in the world; a building in which all their great meetings and elections are held; the room in which all their splendid entertainments are given on the election of their first magistrate; and one in which all distinguished men and foreigners are entertained; and considering they are now on the eve of entertaining their Sovereign and all the eminent and distinguished characters in the country, as well as foreigners, I cannot help thinking it would be an excellent opportunity on the part of the lord mayor, aldermen, and citizens at large, to vote a sum of money in order to render the Hall worthy of the occasion, and that it should be the admiration and praise of foreigners.

A SUBSCRIBER.

CAST IRON IN CONSTRUCTION.

IN connection with a recent statement in your paper as to cast-iron, let me add, I was some years ago in a place that was quite dark, and perfectly dry, and as little affected by changes of atmosphere as any place I have ever met with, when I heard a loud report. Thinking the building was falling, I retreated rapidly. After myself and men had waited some time, we ventured back, and found that a large cast-iron fly-wheel, about 9 feet diameter, and of great substance, had burst into many pieces. I ascertained that that wheel had been there three years untouched, and when I examined the pieces I could find no flaw, and that the metal was good, nor could I find any one to account for it thus breaking.

P.

Books.

The Architecture of the Heavens. By J. P. NICHOL, LL.D., Professor of Astronomy in the University of Glasgow. Ninth edition, entirely revised and greatly enlarged, and illustrated. H. Balliere, Regent-street, 1851.

THIS is a record of new "signs and wonders in the heaven above,"—a record written in the spirit of wonder itself and reverent feeling, straining worthily at a befitting style of sublimity in which to reveal the celestial and tremendous visions of the astronomic seers of the present time. By the aid of numerous illustrative engravings we have here opened up to us all those strange and astonishing sights to which Lord Rosse and his *confrères* are bearing witness. In fact, this is not so much a ninth edition of an old work as a new one comprising the old and much more than the old. We have here closer views—and views how changed!—of old and familiar forms, and even of forms that but lately were new and astonishing even in their less definite and extraordinary aspects. Hazy nebulae have been resolved into wisps and spirals, fire-wheels, and "true lovers' knots" of stars,—star-dust, as the inconceivable multitudes in these separate aggregations have led them to be designated. Indeed, as Professor Nichol very truly remarks, "investigation regarding such aggregations is virtually a branch of atomic and molecular inquiry,"—with stars in place of atoms—mighty spheres in place of "dust"—"the firmament above" instead of "the firmament beneath." In fact, the astronomer, in sweeping, with his telescopic eye, the "blue depths of ether," is, as it were, some Lilliputian inhabitant of an atom itself, or rather of one little corner of an atom, prying into the atomic structure of some Brobdingnagian world of "star-dust," organised into spiral and other elementary forms—of life, it may be, something like our own. The infinite height appears, in short, like a mirror of the infinite depth, and we know not precisely where we stand between the two immensities of depth and height!

The shapes evolved by the wonderful telescope of Lord Rosse are, many of them, absolutely fantastical—wonder and awe are mingled with almost ludicrous feelings in contemplating the strange apparitions—strange monstrosities, we had almost called them—that are depicted on the black ground of the illustrations. One aggregation looms forth out of the darkness like the skeleton face of some tremendous mammoth, or other monstrous denizen of ancient time, with two small fiery eyes, however, gazing out of its great hollow orbits. Another consists of a central nucleus, with arms of stars radiating forth in all directions, like a star-fish, or rather like the scattering fire sparks of some pyrotechnic wheel revolving. A third resembles a great wisp of straw, or twist or coil of ropes,—a fourth a cork-screw or other spiral seen on end,—a fifth a crab,—a sixth a dumb-bell,—many of them scrolls or rolls of some thin texture seen edgewise, and so on. It is even a suggestion of the author's that some of these spirals and armed wheels may be revolving yet in the vast ocean of space in which they are engulfed.

Thus has the telescope traced the "binding" influences of the Pleiades, "loosened the bands of Orion,"—erst the chief of *nebulous* hazy wonders—once and for all revealing its separate stars; and thus, in brief, has this wondrous instrument unrolled "the heavens as a scroll." Yet even these astonishing results are as nothing to the fact that those fantastic shapes which it has revealed in the depths of this *limbo* of creation, are not shapes merely of the present time,—that thousands of years have passed since the light which shows them left the starry firmaments only now revealed,—that the telescope, in short, in reflecting these astonishing shapes, is like to the eye of a mind turned inward on the long stored records of an universal and eternal *memory* of the past, than to a mere eye of sense looking outward on the things of passing time!

One great idea, which we have looked for, has been now adopted by Dr. Nichol, namely, that there is evidence of the existence of two antithetical kinds of force which appear to play with these starry molecules, namely, a dispersive force as well as a concentrative. The term concentrative would perhaps be more fitly associated with the term radiative, as also having reference to the common centres of concentration and radiation, but the idea is the same, and we have already predicted that some such force as the dispersive or radiative is requisite to explain, even in our own little solar system, those phenomena, such as the tendency of the planetary orbits to perfect circularity, which the centripetal force, or force of gravitation or attraction,—or to avoid the hypothesis involved in such terms, the concentrative principle,—fails alone to explain. New wonders of an explanative order in the astro-geology, if we may so call it, of our own system, will be readily seen to result from the adoption of the idea of radiative or dispersive force, and that especially in the astro-geology of the glorious centrifugal planets, Jupiter, Saturn, &c. We therefore regard Dr. Nichol's adoption of that force, preparative to future explanations of the *status quo* of stellar firmaments, as one of marked importance.

The Architectural Quarterly Review: a Literary Periodical devoted to Works appertaining to the Art and Science of Architecture. No. I. London: G. Bell. 1851.

THIS new and professional quarterly we hail as an acquisition. It promises to be conducted with intelligence, kindly spirit, and proper concern for the interests of the profession and the public; and so long as it continues to be so we shall welcome it as a coadjutor in a field which is large enough for many labourers.

One paragraph from the introductory address to readers will serve to give some idea of the editor's views.

"True art, although difficult to define, is both distinct from and inclusive of the subjects of attention which are mistaken for it. The architect is, of all, the last who should disregard the value of researches into the condition of art at particular periods. But he is also the last who should sink under the influence of routine. He should be open, at all times, to the consideration of premises, dissimilar and opposite to previous ones. He may learn much by analogy, from examples,—but mere antiquarianism is 'a snare.' It is not necessary that he 'should enter into the spirit of a style,' in the sense in which this phrase is, we fear, often intended to be understood, and which would fall short of what is required. It might be well if he entered into the spirit of an old style, with the object of contrasting it with other styles, and to give birth to a new spirit and a new style. But there are certain principles which are unvarying, whatever the changes in styles, and these we ought to grasp. Studying with any other object, we become unworthy the name of artists. Fashions take the place of settled principles: we exalt indifferent works of the prevailing fashion, and unjustly depreciate works only because they are of the style which we have discarded. The want of *uniformity* of style, if we must adopt one, is therefore itself a loss to art. It would

be better to persist in one style, even though a bad one, than to begin afresh."

The principal articles in the present number to which the books reviewed give headings are—On the Great Exhibition and its Influence on Architecture; on Ecclesiastical Architecture; Museums; "Stones of Venice;" Architectural Nomenclature and Classification; Domestic Gothic of Germany; Inventors and Authorship; and on Assyrian Architecture. It is altogether a good first part.

Miscellanea.

THE NEW WORKHOUSE AT BRADFORD.—In a few weeks, according to the local *Observer*, the old establishment will be broken up and the new occupied. The new building stands in the middle of a 14-acre field purchased for the purpose at a cost of 4,000*l*. It has been suggested that part of this field should be left open and laid out in public pleasure walks. The style of Messrs. Lockwood and Mawson's design, though Italian, is devoid of great part of the usual ornamental details. In front of the main building are separate "entrance buildings," for preliminary traffic with paupers, &c. At the back are the infirmary, surgery, washhouse, &c. The whole is fitted up for gas; and, for ventilation, the whole of the windows, which are of large dimensions, are made to turn upon central pivots, so that they open instantly, top and bottom. In every room there is an Arnott's ventilator, and in some rooms there are two. The corridors are all open from end to end, with windows at both extremities. The floors of the corridors have iron gratings inserted at intervals. The walls of the various apartments are left in plain brick, smoothly finished, and will be whitewashed as often as necessary. The dining-room and all the rooms belonging to the officials are, of course, plastered. The bed-rooms are all made larger than the day rooms, in the proportion of three to two. The bed-rooms in no instance overlook one another; neither do the day rooms, nor the open courts. The various suites of apartments are all cut off from each other by fire-proof partitions; not only the stairs but the landings also being of stone. The water-closets all over the house are made of vitrified stone, and act on an improved principle for preventing effluvia: those in the court-yards are thoroughly washed out every night by water supplied by the Bradford company. A mechanical contrivance renders it an impossibility for any two persons to enter a water-closet at once, or to remain in it at the same time. The original estimate for the whole building, including apparatus and fittings of all kinds, is 6,700*l*, within which the whole of the work will be done. The number of paupers it is adapted to receive is 360.

GENERAL PROGRESS OF PUBLIC BATHS AND WASHHOUSES.—For May, the returns from the four Metropolitan establishments, including that at Westminster, opened on 12th May, show an aggregate of 76,685 bathers, and a total receipt for baths of 1,109*l*. 19*s*. 9*d*. with 11,674 washers for 27,699½ hours, and a total receipt for washing of 134*l*. 4*s*. 2*d*. At the Birmingham, opened only on 12th May, there had been 18,230 bathers in course of the month, and a total receipt of 220*l*. 12*s*. 1*d*. The Liverpool baths, in Cornwallis-street, opened on 12th May, show a return of 11,755 bathers, yielding 173*l*. 4*s*. 7*d*., and those in Paul-street, 5,508 bathers, yielding 76*l*. 6*s*. 1*d*. with 1,676 washers for 10,056 hours, yielding 16*l*. 16*s*. 9*d*. The baths at Bristol, Hull, Preston, and Sunderland, appear to be all in a like flourishing state, those at Hull having had 8,774 bathers, yielding 85*l*. 9*s*. 10*d*.; those at Bristol 5,224 bathers, yielding 85*l*. 9*s*. 10*d*.; those at Sunderland, 3,023, yielding 31*l*. 4*s*. 3*d*.; and those at Preston, 1,901, yielding 19*l*. 4*s*. 10*d*.

A PEEP BELOW THE SURFACE.—When you enter a great city you are struck by the magnificent palaces, and churches, and institutions, and theatres, and club-houses, and hotels, the large airy squares, the fine broad

streets, the shining rows of shops filled with all manner of things, and by the great numbers of houses, always in splendour by day or by night. These are all for the upper and middle classes. When a gentleman at home, or a traveller abroad, has seen all this, he considers he has seen this city. Well, sir, but where are the rising millions we hear about?—the masses we read of? He has only seen the localities belonging to "the few," and the comparatively few. Is there *another* city—not so fine, nor so commodious, of course, but very much larger, of course, where "the many"—all those rising millions, those masses reside?—their public and private workshops, and their innumerable colonies of homes? There is another city—what a city!—not quite a city under ground, but a straggling series of holes and corners, and side lanes, and attics, and lofts, and cellars, and nooks behind dark walls and dung-heaps, hovels and dens close to cess-pools and slushy passages, and all the dirty people crowded and jammed together in these family-places—far behind and round about, and out of sight of the city which gentlemen and travellers walk through and admire. This is the inner city of all great capitals—the city kept out of sight—the unknown town within the famous town. The city with the Name does not *itself* know anything about our place. And this unknown region of the millions and masses bears the same relation to the city of the upper and middle classes which the drains and sewers, with the rats, toads, and efts, bear to a splendid river with all its shipping upon it—except that the population of the sewers work for themselves only, and are not shipwright rats, tailoring toads, nor brewing and baking efts, who drudge through the mire for their betters who float in the light.—*The Dreamer and Worker.*

CIVIL ENGINEERING.—A writer in the *American Dollar Magazine*, says, that the laity do not precisely understand what civil engineering is:—"A good-looking young man, with whiskers and a cigar, goes out upon an embankment, carrying a brass clock, followed by two other young men, who are immersed in boots of preposterous depth, and who carry the one a stick and the other a string. A democrat, who need not know Euclid, comes in the rear, bearing an axe and an armful of stakes. The young man with whiskers, having set the brass clock on a tripod, and screwed it this way and that, to satisfy an enlightened and persuasive trigonometry, squints through it at the youth with the stick, who stands some 90 rods distant. The democrat with the axe bawls out, 'Git them cussed carts off from the track! git 'em off! quick! you critters!' Mr. Slope's 'agoin' to touch off the theodolite!' Such is civil engineering."

INSURANCE AGAINST LANDLORDS.—Amongst the unjust and anomalous laws which are disgraceful to our age and nation, that which allows the landlord of a house to seize the goods and chattels of lodgers and visitors in the event of the householder's rent not being paid, stands out in such bold relief, that I am amazed it should ever have been enacted by a British Government. As the case stands, we are "sure of nothing but death and quarter day:" the landlord comes in for his rent, and the householder, perhaps, falls through misfortune or dishonesty in the payment. Lodgers and their friends, both "furnished and unfurnished," are ignorant of what is taking place, and their effects are perhaps seized some morning to be sold. Is there no mode of insurance against the power of landlords in this matter?—P. F. K.

THE HORTICULTURAL SOCIETY.—The second show of this important society, on the 7th, drew a large crowd of visitors, although the day had scarcely that amount of sun which puts the gardens in their best. The locomotive flowers of creation, however, mustered strongly, and emulated in display of the primaries their potted sisters. A fine display of American flowering shrubs formed a chief feature, though the majority of visitors cared to do little but stroll with their friends, and fleet the time pleasantly. And very pretty pastime it is,—now and then. The gardens are in fine order.

MODEL LODGING-HOUSE AT LEEDS.

An interesting account of a lodging-house opened by Mr. W. Beckett Denison, at Wellington-yard, Kirkgate, Leeds, is given in the *Leeds Intelligencer*, which states that it is making successful progress, and thus describes it:—On the ground floor is a kitchen with tables, where the lodgers may sit and take their meals, and small closets, each under lock and key, for their especial use, the key of which may be retained at pleasure on a deposit of sixpence, as its price. On the same floor are also another kitchen with a large cooking apparatus always at work, and a large wash-house provided with several stone basins, pierced,—soap boxes, towels, and brushes, and a bath. On the first floor is the master's room and two day sitting-rooms, where is to be found a medley of serial papers, some local papers, two daily papers, and books. In the flats above we have suites of bed-rooms containing in all seventy-two beds, each separate, formed either of iron, or of wood tressels, with a head, and overlaid with strong linen cloth, on which is placed an excellent flock bed and pillows, and as good bedding as can be used, with every provision for decency and cleanliness—and all this accommodation for 3d. a night, with the Sunday night gratuitously added, if the lodging has been used for seven nights in succession. We believe also that Mr. Denison contemplates some further additions to the moral comforts of his establishment as soon as it has assumed a more permanent character. In the course of four weeks there were admitted nearly a hundred persons of all trades, many occupying the same beds for weeks together—several partially so. We strongly recommend all persons who feel an interest in this valuable experiment, continues the reporter, to pay a visit to the "Model Lodging House." They will be amply repaid in witnessing even the appearance of comfort which it presents; and they will feel, too, how much society owes to a young man like Mr. Denison, whose position might have given a different direction to the pursuits of his leisure, but who has thus devoted them and the means which Providence has given him, single-handed, to ameliorate the condition of his fellows.

GAS WORKS, STEPNEY.—The building of the large gas-holder tank and other works on the Commercial Gas Company's land, Ben Jonson's Fields, Stepney, are now rapidly approaching towards completion. The tank is of brick, 105 feet in diameter in the clear, and 32 feet deep, and entirely surrounded by made puddle 2 feet 6 inches in width: the walls are carried up chiefly in blue lias lime: there is also a small portion in Roman cement. There is a well for the inlet and outlet pipes, built in brick and blue lias lime mortar: it is 32 feet deep, and connected with the tank by a short tunnel. At a distance of 27 feet 6 inches apart, from centre to centre, in the tank wall, are 12 counterforts: on the top of each is bedded a Bramley Fall stone, which receives a cast-iron hollow column 52 feet high, secured by bolts through the stone, and penetrating 12 feet into the wall. Messrs. Knight and Son are the contractors for the tank, and J. and W. Houghton for the gas-holder. Engineer-in-chief, Mr. V. M. Christie; Mr. W. J. Caldwell the assistant engineer.

MR. BAILE COCHRANE'S FARM-BUILDINGS BILL.—This Bill has passed through the committee, and has had three clauses added to it. The first provides, that where money is borrowed under letters of entail in Scotland, the heir of entail in possession shall not obtain decret of declaration or of payment against the heirs entitled to succeed in the lands, in respect of improvements effected by the application of the money so borrowed or advanced, or grant bond of annual rent, or bond in disposition and security, in respect of said money; nor shall the entail lands be otherwise affected thereby than is authorised by the Drainage of Lands Act, 1849, and this Act. The second provides that on a rent-charge over lands held under entail in Scotland, the heir of entail in possession shall not obtain decret of declaration or of payment against the heirs entitled to succeed, in respect of improvements effected

by the application of the money so borrowed or advanced, or grant bond of annual rent, or bond in disposition and security, in respect of said money, nor shall the entail lands be otherwise affected thereby than is authorised by the first recited Act and this Act. The third provides that the rent-charges for money to be borrowed in Scotland in virtue of this Act shall not be entitled to any priority. The remaining clauses provide that the advances are not to exceed eighteen months' value of the land for which they are required. The report made on application to the commissioners to authorise any loan is to contain all the particulars as regards the land and proposed improvements deemed requisite, to enable the commissioners to judge of the expediency of allowing the application, but need not include any estimate of annual value of the improvement to the land. All the buildings erected under the proposed Act are to be insured. —*N. B. Agriculturist.*

THE BIRKENHEAD DOCKS.—Mr. Abernethy, engineer, has issued a report to the trustees on the best mode of completing the deep-water entrances to the Great Float. The plan proposed by Mr. Rendel, in 1850, Mr. Abernethy characterizes as crude and undigested, even with the modifications and alterations which he suggested, and proposes that a dam should be constructed across the great basin from the angle of the Birkenhead fork to the north reserve, having in it a pair of gates, 95 feet in width; the sill to be laid at the depth of 15 feet below the Old Dock sill, which would give a depth of 20 feet at half-tide of mean neap tides; the basin being thus converted into a half-tide basin, in which coasters and steamers would be constantly kept afloat. The outer entrance or tidal basin to be kept clear by a range of sluices in the dam, furnished from the Great Float. In regard to the entrance to the Float, he proposes to substitute two locks, with reverse gates, in place of lock and tidal gates proposed by the present plan. The greater lock to be 350 feet in length and 90 feet in width; the smaller lock 200 feet in length, and 50 feet in width. The outer sills of these locks to be laid at the level of 13 feet, and the inner 8 feet, below the Old Dock sill. Thus there will be four entrances into the float. The probable cost of the works is estimated at 234,304*l.* Mr. Rennie, C.E., Capt. Maughan, of the London Docks, and Capt. Andrews, harbour-master at Lowestoft, have also presented reports in regard to the scheme of Mr. Abernethy. Capt. Maughan considers it a great improvement on all former plans, but entertains serious doubts of the propriety of constructing so large a basin with a single pair of lock gates. It is understood that the trustees and the Dock Company have agreed to unite in carrying out the works proposed by Mr. Abernethy, and that a Bill is now before Parliament to effect this object.

NOVEL PROJECT.—The *Lafontaine Courier* has it, on indisputable authority, that there is a project to extinguish the fires of Vesuvius! "It is understood that the bottom of the main or grand crater is several thousand feet below the level of the sea. The plan, therefore, is to dig a large trench or canal from the sea to the crater, the expense of which will not exceed two millions of dollars, and thus extinguish the fires that have been burning for thousands of years. It is said that the fine lands thus to be reclaimed will more than ten times pay the expense of executing the grand design." Why should not Mr. Goldworthy Gurney make the attempt with his steam-jet and choke-damp?

THE ENGLISH AND FRENCH INTERNATIONAL TELEGRAPH.—A company is now formed with an influential directorate (among them are two directors of the Peninsular and Oriental Steam Navigation Company), and Mr. W. Cubitt, president of the Institution of Civil Engineers, as consulting engineer, to carry out the concession granted to Mr. Jacob Brett by the French Government, with sole authority for ten years to construct electric telegraphs between the two countries. By a single wire the news by the Indian Mail, on its arrival at Trieste or Marseilles, may be delivered, printed in Roman type, simultaneously at Paris, London, and

Liverpool, at which last place it will be in readiness for the departure of the American mail; while other single wires will, at the same instant, convey intelligence between Great Britain and Belgium, Prussia, Austria, and Russia, and other continental states. The company, for which a Royal Charter of Incorporation has been obtained, will divide 100,000 shares of 1*l.* each,—one quarter amongst the concessionaries and patentees, in consideration of the privileges granted, and 50,000 only of the remainder, in the first instance, among the shareholders. The charter gives power to raise a further sum, making the total 200,000*l.*

STEAM DRILL FOR DRIFT WORK.—Mr. Henry Goulding, a mechanic of New York, has recently invented a machine for doing the drift work in drilling rock, which evinces ingenuity and skill, and seems calculated to achieve results, in the particular species of work it is intended to perform, which it has hitherto been supposed impracticable to attain. It can be worked at any distance from the steam engine, by means of belts. It will work in any direction that may be desired, and this it is that renders it peculiarly adapted to drift work. Another advantage is, that it is self-feeding. When it meets an obstacle too hard to be affected, it ceases to drill, and is therefore not liable to be broken and occasion the delays which result from such an accident. The machine is also quite compact, occupying a space not more than 3 feet wide by 8 or nine long. It can be worked by two men, and is extremely simple in its operation.

THE STAIRCASE OF NORTHUMBERLAND HOUSE.—Our notice of this building has led to some inquiries, in reply to which we are enabled to state that the architect by whom the present marble staircase there was designed was the late Mr. Thomas Cundy, of Piccadilly. The late Mr. Thomas Grundy, of Westminster, was the mason.

THE GREAT COW-HOUSE OF GAINAGO.—There are 150 stalls in the great cow-house at Gainago, and not one is untenanted. Stable-boys, milk-maids, and dairy-men are in constant attendance; men and beasts equally engaged in the manufacture of Parmesan cheese. The stable itself is a masterpiece of architecture. It has a central nave and two aisles, like any Gothic minster. Its lofty roof rests on five-and-seventy massive pillars on either side. Between every two pillars one cow has her home. All along the stalls from behind there are minor alleys for the passage of the cattle. The middle avenue, never trodden by quadrupeds, is paved with bricks, and so carefully swept, that the Lombard boor declares himself ready, at any time, to eat his Indian porridge off the floor. During the winter months that central nave, or by whatever name the main walk may be designated, is converted into a magnificent saloon, and answers the manifold purposes of a common workshop, a lounge, and assembly-room for the villagers.—*Mariotti's Italian Life.*

STATISTICS OF CALIFORNIAN GOLD.—The statistics of the products of Californian gold are curious and valuable. From the latest published returns that have been received, and which we may rely upon as approximating to the truth, we find that the yield for the first three months of 1851, was as follows:—

	Dollars.
Gold Dust	10,689,000
Coined or Stamped	1,517,000
Gold Dust carried inland by miners from Mexico, Chili, Oregon, &c.	1,000,000
Shipped by merchants not on manifests	450,000
In the possession of miners and merchants on 31st March....	1,000,000
	2,450,000
	14,656,000

The above computations are at 16 dollars

per oz.
Add 1 dollar 60 cents. for mint value above market value

1,374,000

Total yield for three months, 1851.

16,030,000

The yield for April will probably exceed the average of the prior months; but assuming it at the same, it will be ...

5,343,000

For four months.

21,373,000

and quality, 72 per ton. All orders and communications by letter will be immediately attended to.

Ipswich—George Harpham.
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The Builder.

No. CCCCXXXVII.

SATURDAY, JUNE 21, 1851.

IN our present number we give a view of the Mediæval Court, in the Great Exhibition, where Messrs. Pugin, Hardman, Myers, Crace, and Minton, have concurred in producing a whole of great completeness, and considerable excellence.* We need scarcely say that the metal work and stained glass (the latter sacrificed by its position) are by Hardman, the stone and wood carving by Myers, the tiles by Minton, the hangings and some of the furniture by Crace, and the design of nearly the whole by Mr. Pugin. Our view is taken from the south-west corner, omitting a case of vestments which somewhat interfered with the other objects. The principal feature brought into view is a stone font, with carved panels, representing the fall of man, the Baptism, St. John preaching in the Wilderness, and the Crucifixion. In the shaft are eight niches, containing figures of the four Evangelists, St. Peter and Paul, St. John the Baptist, and the Virgin Mary. The cover is of wood, arranged to slide into a richly carved oak canopy, an arrangement more novel than satisfactory. Behind is a carved tabernacle, with angels in canopied niches.

One of the best specimens of stone carving which Myers exhibits is the canopied tomb, with a recumbent effigy of a bishop about to be erected in St. Chad's, at Birmingham. Some carved stone chimney-pieces deserve especial praise. Of the wood carving we noted more particularly an oak cabinet with open panels, emblems, and cresting, and a portion of an oak staircase, with the crest of the proprietor arranged to form open work in panels under the handrail.

The metal work, in the shape of lamps, coronæ, fastenings, and ecclesiastical vessels is very excellent, and displays to advantage the skill which has been attained in beaten work.

The stove shown on the left side in order, is an effective though simple combination of iron and pottery.

In the mediæval work from abroad, scattered over the eastern portion of the building, there is less purity of design than is observable in the English works of the same character.

The delicacy of the carving by some of the foreign artists is very great. Annexed we give an engraving of a carved *Benetier*, by M. Knecht, of Paris, which shows the Virgin and Child beneath a rustic canopy formed of vine branches.

Near this are some very clever sketches in clay, by Graillon, of Dieppe. In the nave, close by, are some sculptures in wood and *carton-pierre*, by Cruchet, of Paris, parts of which, those in wood especially, are very good. There are some delicate carvings, hunting-pieces, by Lienard, which deserve notice. In some of the French works, amongst the bronzes for example, the human figure is scarcely so well drawn as might be expected. There is much, however, to admire in these bronzes, both in

CARVED BENETIER—VIRGIN AND CHILD.



design and execution. Rudolphi's works in oxydised silver, are very interesting; and Leroelle's clocks and candelabra are singularly good. Near these is a Gothic candelabrum of large size (12 or 13 feet high), with 32 lights, exhibited by Rouge, which is worth notice. The price of it is said to be 400*l*.

Amongst the best pieces of carved furniture on the English side are the chimney-pieces and bookcases, intended for the side of a library, which are exhibited by Messrs. Holland, from the designs of Mr. Macquoid, architect. We give an illustration of this,* for which, as well as its companion, we are indebted to the *Art-Journal*.† The style is that of the Renaissance, with a free introduction of natural forms. These fittings are carved in walnut wood, inlaid with green and red marbles: the doors are of perforated brass.

The chimney-piece which follows is exhibited by Messrs. Brine, of London, and was manufactured after a design by Mr. T. Sharp. It is carved in statuary marble, with cast metal

ornaments electro-gilt, mounted on the pilasters, frieze, and spandrels.

As to previous notices of the Exhibition—we have received letters from various exhibitors complaining of our not mentioning their names. We, of course, exercise a discretion in such matters, and, moreover, do not pretend to point out even all who deserve praise. We may remark here, by the way, that, judging from our correspondence on the subject, although the advantage to manufacturers and others of being mentioned and praised is nothing, positively nothing—not worth acknowledgment,—yet the omission of mention of them is a personal affront and a scandalous injury. Alas, poor editors! No praise for the act, but great abuse for the omission. It is the same usually with our brother-architects: not an expression of appreciation for putting the best face on their works, and for not saying what we often could say; but black looks and spiteful remarks for even an omission. However, we must try to bear it, with a shrug for poor human nature.

Returning for a moment to the cements and artificial stones, we would mention, in justice, the specimens of Martin's cement, exhibited by

* See page 390.
† These engravings will serve as examples of the manner in which the *Art-Journal* Catalogue of the Exhibition is illustrated. The second part, just now issued, contains so large a number of engravings, that we may believe "that very few, if any, of the really meritorious and suggestive articles exhibited will be unrepresented in this catalogue."

* See page 391.

a villa, or a mansion is for the use of a family; and it is as far as the public are concerned a private house, or mansion; and the passing stranger need not know that it is anything else: the expression of "mansion," therefore, is not only what the clubhouse will naturally assume, it is really the expression it should have.

But almost every building that has a distinct purpose may have its distinct and corresponding expression,—is susceptible of receiving allegorical or other illustration of its purpose, so as to indicate that purpose; if, in the first place, it be truthfully adapted, and if the architect has the requisite mastery over the resources of the art. If a Gothic church in its perfection is a petrification of religion, a truly designed college will be a similar embodiment of literature; a palace, of royalty; an exchange, of commerce. Beauty, however, is not incompatible with any, even with the needful character of a prison, which may suggest ideas of durance and gloom, yet display general forms and proportions on which æsthetic feeling has been exercised. Guided by analogy,—a natural association of ideas,—we may find abundant means of giving at least a general tone to every edifice, in harmony with its use; among which may be enumerated the arrangement, size, and character, as simple or decorated, of doors and windows: public buildings, not much divided internally,—consisting chiefly of one great apartment for a large assembly of people, such as churches, chapels, public schools, theatres, concert halls, should have large and expansive doors of entrance, which would not only be convenient, but would assist in characterising them, as such doors would be suggestive of the idea of extensive ingress and egress of people. In places of worship in particular the entrance-doors should be prominent, rendered by ornament conspicuous and inviting, and much wider than they generally are, in order to avoid unseemly thronging and disorder during the discharge of a congregation. Many instances of insufficient means of egress might be cited, causing the exercise of devotion frequently to end with a scene too much resembling a Bartholomew fair. Windows are susceptible of great beauty, great copiousness, and truthfulness, and nice inflexion of significance; but in a religious or other building where a solemn or sublime effect is contemplated or sought to be obtained, windows might with great propriety be omitted, or confined to internal courts or gardens, leaving the exterior effect to those grandest of architectural features—the colonnade and dome. The dome contributes much to palatial dignity, and is expressive of the loftiness and breadth that should characterise great national purposes: having its type in the sublimity of all earthly spectacles—the firmament,—it can never be surpassed by any feature of any style as an element of grandeur. It has assuredly never been so applied as to fully exhibit its intrinsic beauty in modern European design.

Towers, though no longer needed for defence, are useful in expression—they signify strength and durability, and may be used to indicate a purpose that is deep-laid in our nature, paramount and indestructible. Colonnades are indispensable to the production of the more elegant and magnificent qualities. Gables, roofs, and chimneys are not to be forgotten or neglected. Every necessary part or feature may become a valuable element of expression and power. Order and style of architecture are means of expression: we are no more bound to one style than to one of the ancient orders of architecture. One is generally better for indicating a given purpose than another. I believe that one indissoluble chain unites all true styles of architecture wherever they have been developed—which are but a harmonious variety of one type. Those who suppose that only the picturesque Tudor will be a favourite in England for domestic purposes, forget the flexibility of the human mind.

Rustication must also be considered as architectural language; and the prohibition of its use would be an unnecessary and irrational limitation of the means of variety and significance. Rustics were much used by the Romans

among whom they were chiefly devoted to the grotesques of the rural deities; and among us they may be made means of beauty and power. They give vitality to a wall or pier, and are susceptible in themselves of many shades of expression. They secure relief to adjacent pilasters, and give brilliancy, and delicacy, and value—by means of contrast—to the upper portions of edifices, when employed in basements, to which, as they suggest ideas of strength, they are peculiarly fitted. If stones can be put together in a beautiful or expressive manner, and that they can be and have been none I think will deny, there appears to me no harm in making that manner so prominent as that attention will be drawn to it.

The character of a building is dependant on the choice of material employed, whether brick or stone; or its description, as texture, colour, quality; and its disposition, or arrangement. Quality of workmanship is also something towards indicating a building's destination. Character may be modified by the manner of executing details, individual mouldings, and other members. Purely geometrical ornament is expressive and poetic, and presents a wide field for imagination: an advantage of such decoration is, its not being seen elsewhere. We may have forms by drawing upon geometry perfectly unique, that do not exist entire in nature; and a new creation, so to speak, is thus called upon—

"——— An independent world,
Created out of pure intelligence."

All purposes of buildings cannot be expressed by equal beauty. The comprehensiveness of our nature enables us to embrace every shade of character and every facis of beauty, and fits us to sympathise with truthful manifestation of thought and feeling wherever seen. The arrangement, as well as the choice and design of ornaments, is an important point. Concentration is an element of power, but whether ornament be concentrated on particular and important features, or dispersed over the whole facade, depends upon the invariable laws of composition and design, and the influence of the idea that seeks to be expressed. The two sister arts of Painting and Sculpture in their higher manifestations are also among the architect's due resources for characterising his productions; for statuary, bassi relievi, or pictures, when properly applied to the embellishment of architecture, are part of the building, which would be incomplete without them, and therefore they are architectural members or features, in not too broad a view of the art: used as far as they are demanded by the architect to carry out his idea; they are architectural embellishments; part of the language of the art. Whatever else Painting and Sculpture may claim to be, they are handmaids of Architecture: one of their offices is to administer to Architecture: they are both something apart from this ministry—something on their own account,—but assuredly that is one of their provinces: they are the architect's auxiliaries, means of expression and power which he has a right to avail himself of in giving the higher tones of expression to his design. All ceiling, mural, and other paintings introduced into the different apartments of a public edifice,—all sculptural subjects, bassi relievi, or other works, placed interiorly or exteriorly, should be so chosen and adapted as to further set forth its character and purpose; and if they be so chosen and harmoniously associated with the building, and illustrative of its use, they may, I think, be considered as architectural ornaments; as no less a part of the whole than a modillion or dentil of the cornice. Sculpture originated in combination with, and in subordination and subservience to, Architecture; and the secret of the great success of the Greeks, as also of the mediæval builders, may be found, I think, in the assistance which each art rendered to the other, their union for the purpose of giving greater force and significance, like the different organs of life, which, when united, to borrow a simile, expressed the idea no single part could represent."

S. H.

* To be continued.

THE GEOMETRICAL PRINCIPLES OF BEAUTIFUL FORMS.

On 6th inst. Mr. Wyndham Harding delivered a lecture at the Government School of Design, Somerset House, on Mr. Hay's theory of the geometrical principles of beautiful forms.

Having recently* given an account of Mr. Hay's views we shall at present confine ourselves chiefly to Mr. Harding's own introductory remarks on the subject of his lecture.

The subject of consideration, proceeded the lecturer, is form as appearing primarily in nature and natural objects—trees, flowers, leaves, mountains; and, secondarily, as artistically applied in sculpture, the plastic arts, and the arts of ornamental surface design, disregarding, for the moment, the aid which colour, light, and shade lend to these arts, and confining ourselves to what is understood by the outlines and symmetry of the designs. I will not waste your time by attempting a definition of beauty. I will assume that there are certain objects which, in their form and in the proportion of their parts both to each other and to the whole object, affect the true and refined sense of human sight pleasingly, and may be regarded as fair types of beautiful forms.

Such, for example, is the human figure as generalised in such a statue as the Apollo Belvedere; such are the leaves of plants, especially those which have been widely used in architecture—the Grecian acanthus leaf and the Egyptian lotus.

For architecture we find such objects in buildings such as the Parthenon of Athens, in the moulding of pure Grecian architecture, beginning with the *Cygnia Recta Reversa* and the *Avolo*.

In plastic or fictile art, in the vases of Etruria and Greece, such as we see in the British Museum.

It would be easy to extend the list. These objects I assume to be admitted as types of beautiful and well proportioned forms.

In what, then, does the secret of their beauty consist, and how may they, or forms with similar excellent qualities, be reproduced at will? This is the problem the designer has to solve, and which Mr. Hay thinks he can assist him to do on principles so broad and comprehensive as will enable the designer himself in turn to become the creator of forms as beautiful, although original, as those which he is now in despair content to copy.

It is pertinent at this stage of the inquiry to ask, what has been the opinion of the ablest men on this somewhat subtle point. The reply is, that there is a wonderful consistency of view among the most profound physical philosophers of every age; that the principles of beauty in form consist in a certain mode of applying and combining certain simple elementary geometrical figures, and attending, in the disposition of objects and of the parts of objects, to certain simple numerical ratios. On this point I will trouble you with one or two references.

In the well-known passage from the *Timæus* of Plato, the following expressions occur:—"But when the artificer began to adorn the universe, he first of all figured with forms and numbers fire, earth, water, and air."†

Our own great authority, Sir Isaac Newton, makes use of these memorable words, in replying to Mr. Harrington's suggestion, that certain simple mathematical ratios, technically called harmonic ratios, would be found to be applicable to proportions in architecture. Mr. Harrington's words are these:—

"I have conjectured that the other most general established architectural ratios owe their beauty to their approximation to the harmonic ratios, and that the several forms of number are more or less agreeable to the eye as they suggest the ideas of figures composed of such ratios. I am sensible these matters have been touched upon before, but my attempts were to reduce matters to some further

* Vide p. 263, ante.

† He then proceeds to define three elementary triangles generating four bodies, which he conceives are the elements of the most beautiful forms in external nature, the proper understanding of which lies at the base of the study of form. We must endeavour, he adds, to harmonize the four sorts of bodies existing in beauty, and to evince by this means, that we sufficiently comprehend the nature of these.

certainly as to the simplicity and origin of the pleasures affecting our different senses; and try by comparison of those pleasures which affect one sense, from objects whose principles are known as the ratios of sound, if other affections agreeable to others of our senses were owing to similar causes."

Sir Isaac Newton to Mr. Harrington:—

"You observe that the multiples hereof (*viz.* the lines 3, 4, and 5) furnish those ratios that afford pleasure to the eye in architectural designs, and that the ideas of beauty in surveying objects arise from their respective approximations to the simple constructions; and that the pleasure is more or less, as the approaches are nearer to the harmonic ratios: I believe you are right. Portions of circles are more or less agreeable as the segments give the idea of the perfect figure from which they are derived. Your examinations of the sides of polygons with rectangles certainly quadrate with the harmonic ratios. In fine, I am inclined to believe some general laws of the Creator prevailed with respect to the agreeable or unpleasing affections of all our senses; at least the supposition does not derogate from the wisdom or power of God, and seems highly consonant to the simplicity of the microcosm in general."—*Isaac Newton, May 30, 1693.*

Sir William Hamilton, professor of metaphysics in the University of Edinburgh, writes on the very view we are about to examine:—

"Your very elegant volume, 'Science of those Proportions,' &c., is to me extremely interesting, as affording an able contribution to what is the ancient, and I conceive, the true theory of the beautiful. But though your doctrine coincides with the one prevalent through all antiquity, it appears to me quite independent and original in you."

We have, therefore, high authority for suspecting that it is in some simple mode of dealing with the elementary figures of geometry and the elementary ratios of numbers that a true way to the appreciation and the production of the beautiful in form will be found. And if so, here lies the key to that power of originally designing forms of unfading beauty, which the ancients did possess, and which the moderns do not possess, and which I humbly submit the designer of our day should never relax his efforts to recover.

Now it is precisely such a simple treatment and combination of elementary geometrical figures, and of the ratios they bear to each other, as is shadowed forth by these authorities, that Mr. Hay submits to our notice, and therefore it appears to me to demand our attention.

The basis of his theory is, that as the ear estimates instinctively the ratios of the numbers of vibrations forming the notes succeeding or combining with each other in melody or harmony, so is the eye capable of estimating the ratios of spaces and forms in succession or combination.

Further, that simplicity of proportion, which is a necessary element to the satisfaction of the ear, is essential to the gratification of the eye in objects of form.

That the eye is guided in its estimate by direction rather than distance, as the ear is by the number of vibrations rather than by the magnitude of vibrations.

Mr. Hay's view thus is, in brief, that a form is pleasing to the eye in the same degree as its fundamental angles bear to each other similar proportions to those which the vibrations of the notes bear to one another in musical composition, or a part of one, such as a common chord. It does not (I need not say) follow that Mr. Hay's is a correct view, but it is reasonable. I humbly submit to you, to say, that a very careful treatment of the subject, such as his certainly is, claims the most serious and respectful attention of all concerned with arts of design.

The lecturer then described the system,—briefly as follows:—He first grouped the figures, *viz.*, the primary right-angled triangles, which are identical with those of Plato, into three classes, arranged according to whether the relations of the angular proportions of these triangles involved the relations of the numbers 2, 3, or 5 (the harmonic primaries): out of these rectangles, so classified, proceed corresponding classes of ellipses.

He then proceeded to show how, out of these rectilinear and curvilinear figures, forms of admitted beauty might be constructed.

The examples he selected included the front of the Parthenon, in all its principal features; several instances of leaves of plants; certain of the purest of Grecian architectural mouldings; diaper designs of great beauty and variety; and, finally, the proportions of the human skeleton.

In the course of his remarks on the Parthenon, he took occasion to say, that recent and accurate investigations, about to be published, place it beyond doubt that geometry, in its subtlest forms, presided at the cutting of every stone of the Parthenon; from which he argued, after the example of the Greeks, that geometry was essential to the successful practice of the art of design.

After describing the system, the lecturer continued,—

I do not bring those examples which have been cited as *proving* the powers of Mr. Hay's rules to produce the admitted beauty of the forms these examples represent. To be frank with you, I have, personally, doubts on the subject. I doubt, for instance, if there are not several other mathematical curves which will, even more closely than the elliptical curves to which Mr. Hay draws our attention, give us the primary lines of many beautiful, natural, and artistic objects. Nevertheless, if Mr. Hay's ellipses will give us a fair approximation to several objects, as they appear *primâ facie* to do, such, for instance, as architectural mouldings, where we are at present confessedly without rule to guide us, they are worthy of all respect. There are other points on which I could express doubts, arising probably from my own ignorance. To put all these points beyond doubt, would require a closer investigation than my leisure allows me to give to the subject. But it is precisely this that I would wish each of you to do for himself.

I think you will agree with me in considering that the results we have been examining are sufficiently striking to merit grave consideration. We are aware of the want of similar principles to which we may refer such harmonious sensations of the eye as those which we possess, and to which we are able to refer the harmonious sensation of the ear in the laws of music. We need some simple rules and tests to assure us of what is good and beautiful in form as thoroughly as we are assured of what is good and sound in music. We need something to relieve the designer from the exacting caprice of the changeable taste of the day,—some law to which he may appeal as decisive upon the harmonious symmetry of the form he has designed. We have the highest authority for believing that such a law lies not far from the surface, and was perhaps known to a portion of the ancients, but is lost to the moderns, to which we may not unreasonably attribute the admitted inability of the moderns to produce original designs in objects of form which will bear comparison with the ancients. All this, I submit, should induce us to follow up the inquiry in which Mr. Hay has so ably led the way; and whatever the result of your inquiries may be as to the accuracy of Mr. Hay's views, of this you may rest assured, that by familiarizing yourself with the combinations of the geometrical figures and the application of the principle of simple proportion constantly recurring in nature, you are educating the *mind*, the hand, the eye, in the true elements of design; and when you have done this for a while, you will be led to confess the truth of Field's words when he says, "The infinite wisdom that contrived these beautiful elements (the primary geometrical figures) has fraught them with admirable properties wonderfully suited to exercise the logical intellect of the geometrician, and to the disclosure of infinite utilities for the advancement of all arts and the benefit of mankind."

WILME'S SYMBOLIC MAP OF LONDON.*—The object of this map, just now published by Mr. Wilme, is to direct visitors to the lions of the metropolis, all of which are pointed out by perspicuous marks explained at the foot. The appearance of the map is injured by the splotchy red spandrels in the corners.

* London: Baily, Brothers.

THE SEVEN PERIODS OF CHURCH ARCHITECTURE.

The high reputation of *THE BUILDER*, and its large circulation amongst a class of persons who have not always the opportunity of testing for themselves the statements which it contains, renders it very desirable to avoid inserting anything as a fact which cannot be proved to be really such. It is for this reason that I observe with regret that you have given currency to Mr. Sharpe's theory of "Seven Periods of Church Architecture," without expressing any doubt as to whether they will stand the test of examination by history or not. Mr. Sharpe's divisions are so obvious, so easy, and so natural, that the merest tyro in looking through the plates of windows in the Glossary, or any other popular series, must almost necessarily make them for himself; and it is much to be regretted that these divisions were not successive periods, but were frequently contemporaneous, as is easily proved by well-known examples and well authenticated dates. If I am not trespassing too much on your space, I will, with your permission, run rapidly through each of his periods, and show that this is the case.

1. *Saxon Period.*—The observation of Mr. Rickman that we have very few buildings known to be more than a very few years earlier than the Norman Conquest, has never been answered; and many of the buildings which it is now the fashion to call Saxon, there is every reason to believe were really built after the Conquest, as for instance, the towers at Lincoln in the low town, built on ground which was drained from the marshes after the Conquest, when the inhabitants were driven out of the fortified town at the top of the hill, to make room for the Norman castle and cathedral, which together occupied half of the site of the original town. The history of this period is, however, too obscure to be worth disputing.

2. *Norman Period, 1066 to 1145.*—What possible ground can Mr. Sharpe find for making the use of this style terminate at this particular date? which excludes one-half of our finest and richest Norman buildings, as Iffley Church, built about 1160; Peterborough Cathedral, transept and nave built between 1155 and 1177, by Abbot Waterville; Bishop Alexander's fine west doorways at Lincoln; and many others which it would be tedious to enumerate.

3. *Transitional Period, 1145-1190.*—This begins just thirty years too early: the earliest authenticated instance of the transition of style in England is the Choir of Canterbury, begun in 1175. Occasional instances of the use of the pointed arch may be found earlier, and indeed throughout the Norman style, as in the Church of the Crusaders at Jerusalem, built about 1100, to say nothing of Sicily; but the pointed arch alone is no proof of transition of style, which is characterised by a greater lightness of work, a superior finish in the details, and a change in the forms of *all parts*, not in the arches of construction only, the form of which at all periods was dictated by convenience.

4. *Lancet Period, 1190-1245.*—The latter date excludes the celebrated Five Sisters at York, in the north transept, built between 1250 and 1260. The first excludes Becker's Crown at Canterbury, built in 1184, the windows of which are as perfectly lancet-shaped as any others that can be cited. But the question here is not one of date only. Lancet-shaped windows were so very convenient, and so elegant at the same time, that they were used for a much longer period than Mr. Sharpe assigns to them, contemporaneously with windows of other forms. They are found occasionally in all the styles, especially in towers.

5. *Geometrical Period, 1245-1315.*—This includes part of two of the established styles—the Early English and the Decorated. The idea is not a new one: the same division, and the same name for it, was proposed by Mr. Freeman to the Oxford Architectural Society in 1842. That society very properly declined to adopt it, on the ground that "it is impossible to define such a style." It applies to the windows *only*, the other members of a building do not agree with this division—doorways,

foundings, and all other details are opposed to it. The earlier examples, windows of two or more lights, with foliated circles in the head, are contemporaneous with lancet windows, and are continually found together in the same building. Nothing is more common than to find the side windows of a chancel lancet shaped, and the end windows of three lights with foliated circles in the head, evidently built at the same time. Many of these foliated circles are earlier than Mr. Sharpe's first date. Mr. Sharpe's three first figures, Nos. 1, 2, 3, as given in p. 356 of THE BUILDER, as examples of three distinct periods, are, in fact, often contemporaneous. On the other hand, the later division of those windows, which have not only foliated circles in the head, but other tracery of geometrical patterns, are continually found contemporaneously with flowing tracery; and there is the same difference between doorways and other details accompanying these two divisions, as between those which accompany lancet windows on the one hand, and flowing tracery on the other.

6. *Curvilinear Period, 1315-1360.*—Examples of flowing tracery occur both before and after these dates, as in Bray Church, Berkshire, built in 1293; the Friary at Reading, in 1306; the Lady Chapel at St. Alban's, in 1308; and in Wyngington Church, Bedfordshire, built between 1270 and 1290. They are, therefore, contemporaneous, both with geometrical, and occasionally also with perpendicular, tracery.

7. *Rectilinear Period, 1360-1550.*—This is merely a change of name without any object, and the dates are not well chosen. The change of style did not begin quite so early, though occasional instances may be found. On the other hand, good Gothic work did not continue so late as 1550 as a general style, although occasional instances may be found for centuries after that date.

Another objection to Mr. Sharpe's periods that they cannot be applied to foreign countries. In some districts "the lancet period" wanting altogether; in others "the geometrical period" extends through nearly the whole of the 13th and 14th centuries. And the Flamboyant styles are as much Curvilinear as any style can be, yet they extend through the whole of the 15th and 16th centuries. Mr. Sharpe's attempt is well intended, but he is not attended sufficiently to the ascertained dates of various buildings, and neither he nor any one else will succeed in upsetting the received division of styles, which is grounded on fact, and has been subjected to the test of a careful examination of many accurate observers for a long term of years. F. S. A.

METROPOLITAN WATER SUPPLY.

The general outcry against the Government project for consolidating, or, in other words, confirming and legalising the old invidious system of supply from the Thames, &c., by the metropolitan water companies, appears to have turned the public attention upon the more hopeful, or at least more reformative schemes of others, and especially of the Board of Health, which doubt certainly has not been leavened with that spirit of pitiless futility which appears dependently and systematically to pursue a neutral course that pleases none but a pitiful minority of negatives, and then mistakes for a just medium measures which merely excite dissipation and disgust on all hands, and are decided on simply, it would seem, because they are sure to meet with such a reception.

The Board of Health reports and documents relating to this vital and important subject, have been published by order of the House of Commons. Amongst these documents, recently handed us, are the Hon. William Napier's report and papers of suggestions on the proposed gathering grounds for the supply of the metropolis from the soft-water springs of the Surrey sands (already noticed in our columns), and the recently-issued copies of the report by Mr. Rammell, an inspector of the Board of Health, and of reports subsequent to Mr. Napier's, and other information on these soft-water springs, together with estimates,

surveys, minutes, and correspondence with the General Board of Health thereon, or in relation to the combination of the new sources with other works. The heads of the Bill for constituting commissioners for the Metropolitan Water Supply, brought into the Commons by Mr. F. Mowatt, Sir Benjamin Hall, and Mr. C. Lushington, with a synopsis of the same, have also been printed.

It appears from the latest printed documents of the Central Board of Health proceedings just referred to, that subsequent investigations have in the main confirmed, and, indeed, more than confirmed, the truth of Mr. Napier's report, that abundance of excellent soft water might be gathered, at moderate cost, from the Surrey springs. The supply is even more abundant, and the cost would be even more moderate than was at first supposed. "The present proximate estimate for collecting and bringing to London the proposed soft water supplies," it is said, "may be taken at 900,000l." The Board, as may be remembered, proposed to unite the sewerage with the water supply in one consolidated system, and "the estimate made by their inspectors of the conjoint expense of new main drainage works, main intercepting lines of sewers for upper districts, discharge lines of sewer for lower districts, connecting lines of sewer, and pipes to and from engines, buildings, &c., is 710,000l."

The heads of the Bill which the Board would propose are, "That the powers vested in the present Metropolitan Sewers' Commission be executed by a special commission for carrying out the improvements required, but that the numbers of commissioners be reduced to seven, of whom shall be paid salaries not exceeding 7l. and be removable at pleasure, and that the present powers of the commissioners for obtaining water for cleansing, for street-washing, and other purposes, be continued, and their powers further extended, to enable them to distribute water for domestic use."

The cost at which the Board state it to be practicable to afford new and complete supplies is, on a maximum estimate, threepence a week each house throughout the metropolis,—that is, for a continuous supply; but this includes large supplies for street cleansing, &c., and the exclusive expense of complete supplies for domestic use, *de novo*, they state at two pence a week each house.*

While engaged, single-handed, as "the monopolist of incendiary gas intelligence,"—that is, in exciting and leading the gas movement,

*The following statement of the cost of water in thirty-two towns, &c., visited by Mr. W. Lee, superintending inspector to the Board, is interesting, and may be useful.

PLACE.	Population.	Number of Houses.	Present Cost of Water per Week.		
			1st Class.	2nd Class.	Cottages.
Market Harborough	2,667	478	3l.	3l.	3l.
Great Bowden	1,320	266	3l.	3l.	3l.
Little Bowden	508	92	3l.	3l.	3l.
Ashby-de-la-Zouch	4,175	835	6l.	5l.	5l.
East Retford	2,800	608	2l.	2l.	2l.
West Retford	613	127	2l.	2l.	2l.
Clackborough	2,302	363	2l.	2l.	2l.
Ordsall	1,168	133	2l.	2l.	2l.
Bacup	8,000	1,500	10l.	6l.	3l.
Sewallham	3,414	700	10l.	19l.	19l.
Loughborough	11,000	2,410	3l.	3l.	3l.
Knighton	1,428	261	3l.	9l.	9l.
Mileham	632	123	4l.	4l.	4l.
Godmanchester	2,132	472	4l.	4l.	4l.
Epsom	4,200	634	4l.	3l.	5l.
Holbeach	3,350	630	6l.	2l.	2l.
Newcastle-under-Lyme	10,432	1,999	9l.	5l.	4l.
Burslem	17,503	3,639	9l.	5l.	4l.
Nantwich	6,000	1,034	7l.	2l.	3l.
Ely	7,803	1,352	7l.	3l.	2l.
Selby	864	154	7l.	7l.	7l.
Diss	3,470	700	8l.	3l.	3l.
Reading	22,716	4,290	12l.	6l.	2l.
Gainsborough	3,151	1,715	7l.	3l.	2l.
Yarnworth	25,019	6,050	6l.	4l.	3l.
Gaywood	1,208	255	4l.	4l.	4l.
Alfreton	2,000	350	7l.	6l.	4l.
March	6,296	1,307	6l.	4l.	3l.
Selby	6,190	1,138	7l.	3l.	2l.
Norwich	62,344	16,383	12l.	4l.	2l.
Workshop	4,025	654	8l.	3l.	3l.
Wisbech	5,630	1,685	6l.	5l.	5l.
Total	244,913	52,675	...	...	...

which has done and is doing so much good to the public, and yielding so much profit to the gas companies, we repeatedly stated our desire in the first place to secure the success of that movement, so that thence a hopeful and instructive starting point might be gained from which reformative measures of a like or, if then practicable, of an amended nature, as regards water supply, might take their initiative. Now it is highly gratifying to observe the prominent position which the central Board of Health give to this very line of policy in their minute of date 14th January, 1851. In this minute the Board, while reflecting on the fact that almost every existing water company in the metropolis, except the New River Company, was introduced to the public upon a promise of reductions of charge, based on competition and the opportunities of free choice from more than one supply, go on to say:—

"But of late an example has been presented of reductions of charge for gas by means of the incursion of new capital into the field of supply, which has created a considerable impression throughout the metropolis; and it is scarcely to be expected that the same thing will not occur in respect to water, if the opportunity is left open by the continuance of the existing state of things."

The various gas companies introduced on the ground of competition, had, one after another, districts divided amongst them, by the consent of the rest. Within each district they had as complete a monopoly as that which the water companies now have. Their manufacture of gas was careless, and the price they charged for it was from 7s. to 12s. per 1,000 cubic feet. It may be manufactured in large quantities at 2s. 6d. per 1,000 cubic feet. A new company canvassed the shopkeepers and the larger consumers of gas, and obtained from them engagements that they would take supplies of gas from the new company if it were supplied at the reduced price of 4s. per 1,000 cubic feet of gas promised by them. Upon these engagements new capital was raised, and the works of the new company introduced. One of the old companies has been compelled to reduce its rates to 4s. per 1,000 cubic feet, a sum from one-half to one-third the former prices. Another new company has compelled a reduction of the price from 8s. to 5s. per 1,000 cubic feet.

On reviewing this proceeding, however, it may be averred that a course like that now proposed for the improvement of the water supplies, would [had it been practicable, as the course adopted alone was, under the circumstances] have been far more conducive to the public interests than the one by which the reduction of the price of gas has been effected, leaving, as it does, within the metropolis, a number of defective and unnecessary establishments, which are themselves frequently a serious nuisance [as we ourselves often hopelessly pointed out.]

In the case of the competing gas companies, applications were made from both parties for the mediation of the Board on behalf of the public, but the Board [themselves even] were compelled to decline all interference; for although there could have been no doubt that much public good might have been effected, and unnecessary waste and private loss averted by a proper mediation and consolidation of works, yet, from the urgent duties pressing upon the Board, with very limited means at their disposal, it was considered that they were incompetent to take any part in the matter.

The occupier of a first-class house, with stables, who now pays 11l. per annum for a supply of water to his house and stables, may, as has been done with gas, be assured of a constant, instead of an intermittent supply, by a new company, for 3l. or 4l. per annum; while the use of cisterns, which involve dilapidations and plumbers' bills, often equal to the water-rents, may be dispensed with. The occupiers of lower class houses may be promised reductions in like proportion, and it is clear that the promise might be made good to them in respect to water, as it has been in respect to gas.

It does not appear to be necessary, however, that the question of the value of the existing works should be entered into. That question may fairly be postponed for determination by arbitration: it is only an assumption of the continuation of a stable property in the water companies, if there be no interference with them on behalf of the public. On the contrary, the case of the gas companies shows that if there be no interference and consolidation they are all exposed to extreme jeopardy."

The commission or trusteeship in which the Board propose, in this minute, to vest the control of water supply and sewerage, is de-

scribed as analogous to the metropolitan roads commission; the body to be called the trustees for the consolidation and completion of works of drainage, water supply, paving, and cleansing in the metropolis.

The Bill of Mr. Mowatt and others, on the other hand, proposes to place the water supply under the control of a representative body of commissioners, chosen by the ratepayers, four out of each of seventeen districts into which the metropolis would be divided, besides four out of the city, and four appointed by the Government, as a general commission for the whole metropolis; these to appoint a paid executive of five, with a secretary,—one of the five to be nominated by the Government. No source of supply has been fixed by this Bill, that being left as a moot point for the decision of the proposed commissioners, with power to adopt new sources if desirable. A clause of the Bill authorises the dissolution of the present companies, or any one or more of them, on purchase of their undertakings at a rate not exceeding ten years' amount of their net annual income.

A new "Metropolitan Soft Water Contracting Company," provisionally registered in November last, has had a survey made of the numerous exhaustless springs and affluents in the neighbourhood of Farnham, as pointed out by the Board of Health, Hon. William Napier, Mr. Rammell, Mr. Simon, and the company's engineer, Mr. Bateman. It is confidently asserted that one-half the present supply is wasted through the intermittent system, which would be avoided by the company's proposed plan of having the mains always charged at high service without extra cost to the consumer—a plan instantly available in case of fire, and which would supersede the use of all cisterns, water-butts, &c., and secure health, cleanliness, and economy.

THE WESTMINSTER BRIDGE COMMISSION.

It is with no small anxiety that the determination of the commission is looked for, more particularly as a rumour is afloat that it may possibly end in the change of site to the north of Richmond-terrace. It is certainly to be expected, before such a deterioration of property is agreed upon, that the parties interested should be heard. In the first place stand the occupiers of Richmond-terrace: this was planned and constructed, with a view to privacy, about twenty-one years ago, and resorted to at enormous rents, mainly in consequence of this great and rare advantage, the Crown benefiting by an annual ground-rent of about 1,000*l.* per annum. Now, supposing the traffic of the bridge to pass under the windows of these houses, surely the owners and occupiers will have just ground for compensation. The next for consideration are the owners and occupiers of houses in Parliament-street, many being tenants of the Westminster Bridge commissioners. Have they no right to be heard? If the valuable traffic is taken from them, are they not entitled to compensation? Then, again, look at the destruction to property on the Surrey side of the bridge. The present highway has been in existence upwards of 100 years; great interests have grown up in the course of this lengthened period; and are these all to be lost sight of and destroyed to favour a pet scheme of some one behind the scenes? Looking through the several reports of committees of the House of Commons, it seems to be almost the unanimous opinion of the eminent men examined before them, that the present site is the best that could be selected; and if removed, it should be as near to the present as circumstances would permit. Mr. Rendel speaks of the present site as the best that could be found. Mr. Cubitt (president of Civil Engineers) would take it a little to the north, removing that side of Bridge-street (the removal of the south side being requisite to complete the quadrangle of New Palace-yard). Mr. Rennie would select the south of the Board of Control, and thus make way for opening another street as an approach to Belgravia, and relieving Great George-street of the traffic. Others follow much in the same

view: indeed, except the plan of Messrs. Page and Pennethorne, none contemplate so great a change as that now talked of. If the Government is prepared to compensate parties who will thus be injured, be it so; but when there is little to be hoped for on that head, surely those likely to be injured at least have a right to be heard.

It may be very convenient for the Chancellor of the Exchequer to nominate a commission, but it is quite another question whether the commission so appointed is to supersede the labours of all committees who have had the matter under consideration with power ample for all purposes of inquiry. But there is still another objection: the country is now building at an enormous cost the new Houses of Parliament. Of what advantage will be all this elaborate detail should there be no place from which it can be viewed? But if the deck of a passing steam-boat is the only point from which it may be seen (not examined) it will be justly considered a wasteful extravagance. The general detail of the inner court would have been all-sufficient, and far better adapted for view from the distant opposite shore, and nearer than that it cannot be approached if the north of Richmond-terrace is to be adopted. There appeared some time since in your journal a plan for carrying the bridge across to the north of the Board of Control, thereby affording sufficient space for a row of houses as a screen to the rear of Richmond-terrace, and thus affording, at some future time, an opportunity for another approach to Belgravia by widening Charles-street, with an entrance into St. James's-park. Either this or the schemes before mentioned would preserve the value of the property in the neighbourhood of the Houses of Parliament, and afford all the advantages that could be desired; whilst the removal of the bridge to Whitehall would seriously damage all the surrounding property without a single compensating benefit.

A. Z.

ARTISTICAL AND OTHER INTELLIGENCE FROM ABROAD.

Restoration and Re-opening of the Musée du Louvre.—This huge art-collection, founded since 1793 by a decree of the National Convention, has, after an interval of two years, been again opened to the public, much improved and embellished. The small saloon at the entrance is now occupied by the collection of goldsmiths' work, which is placed in oak depositories against a hanging of crimson velvet. The great square saloon is much admired, and is occupied by the master-pieces of painters of all schools. The walls consist of leather, painted brown and gold. Below is a border of ebony, and the frieze and dome are adorned by sculpture, painted grey and gold. The Gallery of Apollo presents a surprising aspect, which will be increased by paintings to be executed by M. Delacroix. The gallery containing the Flemish and Italian schools have been lighted from the top, and a new classification of the works has been adopted, being that of M. Jeanron, to whom also most of the other improvements are due. Some of the Paris papers state, that the restorations and improvements made during the last two years in the Louvre, are more extensive and important than all those made during the previous twenty years.

Rome.—Sculptures for the Cathedral of Caracas.—M. Tenerani, the sculptor, has just completed a statue of Bolivar for his monument, to be erected in the Cathedral of Caracas. The *Liberador* is represented in a standing position, a cloak gracefully thrown over his breast, his left hand grasping a wreath of laurel. The basso-relievo, which will be placed on the postament, represents the three republics, Peru, Bolivia, and Columbia, emblematised with much fancy and skill. Two statues, the *Giustizia* and the *Liberaltà*,—the latter pouring gold coin out of a vessel, will be placed beside the monument, as indicating the chief virtues of the departed states-founder.

Professor Carl Ritter has just completed an interesting work, "Hebron, the City of the

Patriarchs" (*Die Stadt der Erzväter*). The Arabs designate it by the name of El-Khalib, and it has much attracted the notice of tourists. Its destruction by Ibrahim Pacha in 1837 has deprived it of many of its antiquities. The citadel, most probably the Castellum or Presidium Sancti Abrahami of the Crusaders, in which King Baldwin sojourned in the year 1100, before and after his expedition to the Villa Palmarum, south of the Dead Sea, and which was, without doubt, a Roman building, has also perished by earthquakes, especially that of 1st January, 1837.

Versailles Palace.—The Minister of the Interior has demanded a grant for repairing this château, some reparations relating to constructions of a very recent date, such as the ceiling of the Salle of 1830. The pictures also of the upper stories are endangered by the want of ventilation, caused by the heat of summer. The *Orangerie*, considered by the French as one of the finest architectural works of the kind, is much damaged in its vaulted ceiling and the staircases leading to it from the town. M. Kestel is the architect intrusted with the conservation of the palace and water-works of Versailles.

The Church of Ste. Sulpice, at Paris, has been ornamented by a statue of M. Droz, representing a novel emblem of religion—the Angel of Martyrdom. It stands opposite a statue of M. Derbois, and completes the series of sculpture placed around the choir of that fine edifice.

Co-operative Might.—The Protestant Church at Rosenberg, in Upper Silesia, is to be constructed by subscriptions of one *pfennig*, rather less than a half-farthing English. Of the three millions of *pfennigs* thus required, 1,919,000 have been already raised, and the foundation of the church laid on the 5th of May.

Travelling Grants to Students of Architecture in Austria.—The Austrian Government have granted to M. G. D. Malvers, pupil of the Academy of Fine Arts of Venice, a sum of 2,400 *Lir. Austr.* for three years, as well as travelling expenses, for his improvement in the study of architecture at Rome. Two more grants of a smaller amount have been made to other pupils of the same art-academy.

Professor Rauch.—Besides the honour and distinctions awarded to the sculptor of the statue of Frederic the Great generally known, an address of the common council of the city of Berlin is to be especially quoted:—"We acknowledge the genius which with which have seized the idea of the great man to be monumented, and thus produced a memorial for the admiration and mind-elevation (*geistigen Erhebung*) of present and future generations. In thanking you for this ornament of our city, we feel much pleasure in associating your name with those honourable men, whose great and distinguished merits for our country and city will be always dear to us." Amongst the other tokens to the deserving artist is a laurel-crown sent from Weimar, and taken from the same tree from which that for Goethe had been once gathered.

MANCHESTER SCHOOL OF DESIGN.

The annual meeting of this important institution was held on Friday in last week, Mr. W. Entwistle in the chair. Mr. John Potter, the mayor of Manchester, Rev. C. Richardson, M.A., and various other gentlemen were on the platform. Dr. C. Bell read the usual report.

The treasurer's account, read by Mr. Grogan, showed that the income of the school had consisted of 600*l.* Government grant, 293*l.* 19*s.* donations, 211*l.* fourteen students' fees, 74*l.* 11*s.* fees for private classes, 30*l.* 9*s.* fees from life classes; a balance being left due to the treasurer of 399*l.* 14*s.* 7*d.* On the other side of the account, it showed a balance due to the treasurer in the previous report of 227*l.* 17*s.* 1*d.*; salaries and fees of masters, 582*l.* 5*s.* 6*d.*; rent, 195*l.*; joiners' work, gas fitting, &c., 253*l.* 4*s.* 3*d.*, and other smaller items; making altogether an expenditure of 1,737*l.* 12*s.* 7*d.* The chairman addressed the meeting, and so too did the mayor.

NOTES IN THE PROVINCES.

Swindon.—The new parish church, approaching completion, is in the "Geometric Decorated" style. The plan consists of nave and aisles, chancel, transepts, and two small chapels, with a tower and broach spire at the west end of the nave: the roof is of open timber-work, and the fittings will be of oak. The exterior has the advantage of a beautiful site, being on the brow of a hill, commanding extensive views of a rich and varied character: it forms a striking object from the Great Western Railway, which runs along the valley below. The edifice has been erected by voluntary contributions, the principal contributors being Mr. A. Goddard, who presented the site, Mr. A. L. Goddard, M.P., who headed the subscription-list with the donation of £1,000, the Rev. H. G. Bailey, the vicar, to whose strenuous exertions the success of the endeavour to raise the necessary amount may be mainly attributed, whilst the inhabitants generally have liberally assisted in providing a house of prayer suitable to the increased population, the old church being, in all respects, unfit for its sacred purpose. The latter building contains a few fragments of an ancient Anglo-Norman edifice, which we hope to see preserved; but the chief part is a specimen of the debased Gothic of the seventeenth century. The architect of the new building is Mr. Scott, and the builder is Mr. Myers.

Cranfield, Beds.—A stained glass east window has just been placed in the chancel of the parish church of Cranfield. The stone work was by Birchell, of Woburn, and the glass by Vilement, of London. The window, which is of the Perpendicular style, consists of five lights with two series of compartments in the lead, above the transom. The upper series contain figures of angels, and the lower one contains representations of SS. Peter and Paul (to whom the church is dedicated), emblems of the four Evangelists, an Agnus Dei, Pelican and her young, and the monograms AD and I.H.S. The five principal lights contain subjects illustrative of the leading events of the life of Christ, viz.:—The Nativity, Baptism, Crucifixion, Resurrection, and Ascension, with an appropriate text of Scripture at the foot of each. The window is the gift of Mr. J. C. Harter, of Manchester, who is father of the present rector of Cranfield and patron of the living.

Port of Arundel.—Tenders, in two amounts, have been received by the commissioners of this port for sundry improvements in the harbour. They were as follow:—

Henly	£838	0	0
Butt (accepted for part)	787	0	0
G. Corney	777	0	1
Smith, Woolwich	761	18	9
Bramble and Crampton	696	0	0
R. Bushby (accepted for part)	695	0	0

Moulton.—The church at Moulton, near Newmarket, is about to undergo what may be called a *renovation*. The windows generally have been found to be in so defective a state, as to defy all attempt at repair. The arch of that immediately over the pulpit and desk fell out all at once the other day. Instead of four new windows, as at first proposed, nineteen or twenty will be put in, of stone instead of brick, besides extensive works in the roof and the masonry, and the entire reseating of the church, with a view to increased accommodation. The whole expense is now calculated at nearly thirteen hundred pounds. Mr. J. F. Clark, of Newmarket, is the architect employed. The rector has declared his intention to incur the whole expense, although the principal ratepayers, who are farmers, expressed their desire to contribute. The owners of the parish lands appear to have made no such offer. According to the *Cambridge Chronicle*, which has some very fair reflexions on the circumstances which lead to the gradual decay and destruction of parish churches after repeated patchings from one generation to another,—the occupying ratepayers lately restored a large portion of the roof which had been ready to fall in.

Carlton-upon-Trent.—On Wednesday last week a new church was consecrated at this model village. The style is Early Middle

Pointed, and the building consists of a chancel, 32 by 15 feet; a nave 18 by 40 feet; aisles, 40 by 5 feet; a west tower, 18 feet square, and 66 feet high, with eight pinnacles given by Mr. James Vere. There is also a south porch. The font is of carved stone, the gift of Mrs. Hutton Riddel, and was designed and made at Plymouth. The cost will be upwards of £1,600, nearly £1,000 of which were subscribed by the 300 inhabitants of the village, including 50l. from its lawyer or solicitor. The Vere family contributed 600l., and Mr. Hutton Riddel 50l. Mr. G. G. Place is the architect. The builders are Messrs. Tinker and Huddleston, Lincoln.

Leigh.—A new church is about to be erected at Bury-lane, in Leigh. The buttresses will be of dressed stone. The style will be Gothic. The aisle and chancel will be paved with red and grey Staffordshire tiles, and the wood-work stained in imitation of black oak. The architect is Mr. E. H. Shellard, of Manchester; and Mr. John Speakman, of Astley, is the contractor. The estimated cost of the building is £2,000: it will contain 304 sittings. The site is given by the Rev. Sir H. Dukinfield, a canon of St. Paul's Cathedral, London. A small burial ground will be attached to the building. The church is to be called All Saints. There is still a deficiency in the funds.

Liverpool.—Professor Coekrell has been requested by the Committee of the Council on St. George's Hall to report as to the best mode of finishing the building. It is now said that the opening will take place at the August Assizes; but that even then the approaches and other works will not be finished.

Salford.—The foundation-stones of a new Baptist chapel was laid on Thursday week, at the junction of Bank-street with Great George-street, Salford. The chapel is to be in the Tudor style, and, when completed, will afford accommodation for from 800 to 900 persons, besides school accommodation for a large number of children in a room beneath. The erection is estimated to cost about £1,700, towards which about £1,000 have been collected and promised. There are now three Baptist chapels in course of erection not far distant from each other,—two near the Catholic cathedral, in Salford, and the other in Great Ducie-street, Strangeways.

Burnley.—On Whit-Monday the foundation-stone of a Primitive Methodist New Chapel was laid in Hammerton-street. The chapel will be in the Grecian style. The front will form an arcade up to the top of the first windows, and will consist of figured and polished ashlar. There will be two principal entrances, having three buttresses between the doors, with Tuscan pilasters. In the second story will be five windows; and a large pediment will crown the whole building in front. The building will be 24 yards by 18 externally, and including the value of the site, is calculated to cost about £2,000. The chapel will hold 1,000 persons; a gallery will be carried round, and form a semicircle at each end. There will be a school-room under the chapel, with committee-room, &c. The architect is Mr. J. M. Pollard.

Kingswood, Bristol.—The new tabernacle at Kingswood-hill, founded on the 23rd July last, was opened on Wednesday week. Mr. H. Masters, of Bristol, is the architect. The style of the building is Early English. The front is elevated and comprises two campaniles terminating with lanterns and spires. Above the porch, in the centre of the front elevation, is a tripartite window filled with stained glass. The walls of the building are of Hanham stone irregularly coursed; the quoins and other dressings of Bathford-hill stone. The roof is covered with slate of an ornamental pattern. The shutting, window-bars, &c. are of galvanised iron. The body of the chapel is divided into nave and side aisles separated by piers and arches supporting a clerestory. The length of the nave internally is 112 feet; length of side aisles, 86 feet 6 inches; width of nave, 26 feet; width of aisles, 12 feet; total width, 50 feet. The walls internally are stuccoed; the wood-work is stained; the roof open timbered. The building is calculated to hold

about 1,500 persons, the whole on the ground floor. The pulpit is of Caen stone. It was presented by Messrs. J. and J. Foster, builders. The aisles are paved with pennant stone with a border of Staffordshire tiles. The building is warmed with hot water, and attention is paid to ventilation. The pews are all open, and there is a great number of free seats. The masonry was executed by Messrs. Mizen and Co., of Bristol; the carpentry by Mr. Leonard Jefferies, of Bridge Yate; the plastering, staining, &c. by Mr. Thomas Hibbs, of Warmley; the smith's work by Mr. Edward Haskings, of Kingswood; the heating apparatus by Mr. R. M. Bryant, of Bristol; and the glazing by Mr. James Bridges, of Kingswood. The clerk of the works was Mr. Wm. Smith.

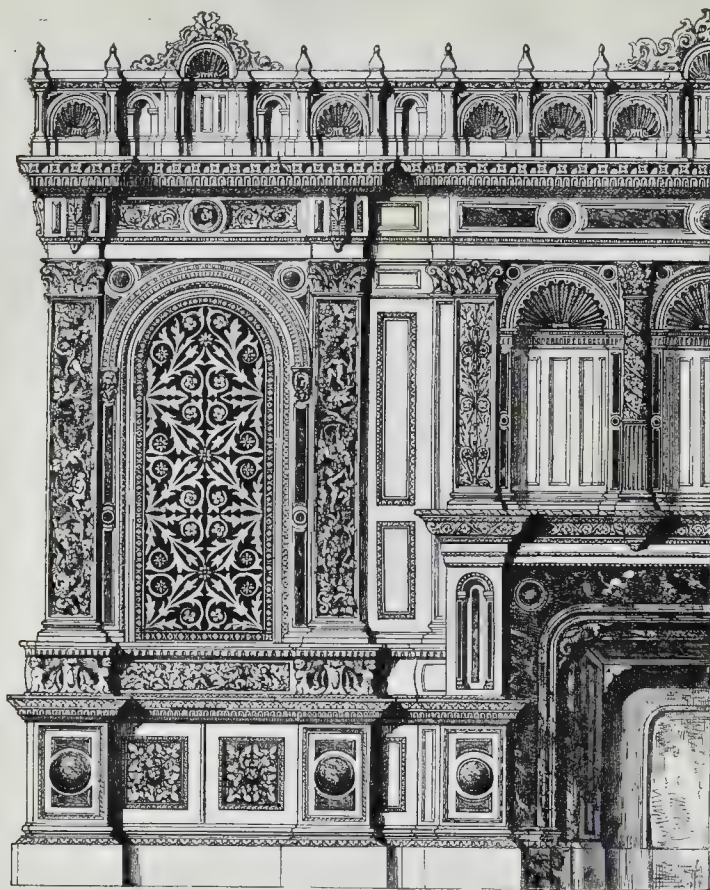
Charlestown (St. Austell).—The new church of St. Paul, Charlestown, according to a Devonshire or Cornwall paper, was consecrated on Friday in last week. It is in the Early English style, with nave, chancel, aisles, and transepts. The nave and aisles are 53 feet long, chancel 24, and total length from west door to east end, upwards of 100, the difference being made up by breadth of transepts: length of transepts, 57 feet. The height of nave, which is lighted with clerestory windows, is 40 feet; that of chancel, 33; and of transepts, 37. The pillars are of granite, and are short and massive, alternately round and octagonal. The windows are plain lancet, three at the east, two over the west door, and at the end of each transept; with a circular window in gable at each end, and a trefoil in transept gables. The chancel is raised three steps. The roof is open, as are the seats, all of which are free. The pulpit and reading-desk are of carved oak; the font of granite. The building is of slate stone; the quoins, plinth, water tables, jambs, &c., of granite. The granite is from a quarry between St. Austell and Roche: it is said to work as fine as Bath stone. The spire, when completed, will be 70 feet high. The church is planned to accommodate 560, but will contain a greater number. The architect is declared to be "Sir Christopher Eales, Esq., of Chapel-place, Cavendish-square," and the builders are Messrs. Drew and Kitt, of St. Austell. The foundation was laid November 27th, 1849.

RAILWAY JOTTINGS.

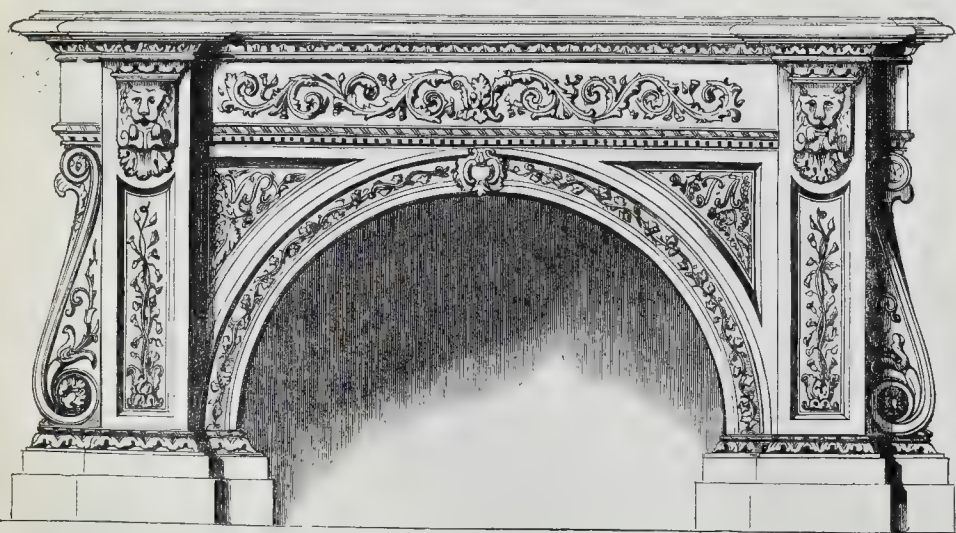
King's-cross Terminus of Great Northern Railway.—The contractors are making considerable progress with this terminus. To construct the numerous offices and buildings connected with it, and to have a sufficient area for the accommodation of the vehicles and passengers, a site, south of the Regent's Canal, of about twenty acres, has been taken, and nearly 100 houses in the various streets have been cleared away. A temporary church, which cost above 700l. in its erection, has been also removed. It is intended to carry the railway under the Regent's Canal, to effect which object it will be necessary to construct an iron tank over the tramway. For this purpose a dam is now being formed, about halfway across the canal, to divert the water. When this is completed, and the tank placed, the line will be continued to the terminus.

BRISTOL ACADEMY OF FINE ARTS.—The annual meeting of this society was held on Tuesday in last week, Mr. J. S. Harford, president, in the chair, supported by Mr. P. W. S. Miles, M.P., Mr. R. Bright, and other gentlemen. In the address read on the occasion a hope was expressed that the patronage of the Academy would soon be exerted in the establishment of a School of Design in Bristol. The report announced the union of the Academy with the Bristol Society of Architects. The time, it was thought, was not far distant when a building adapted to the study and promotion of painting, sculpture, and architecture, would be erected under the auspices of the united institutions. The president of the Society of Architects. An autumn exhibition of works of living artists was announced, to begin on 8th September.

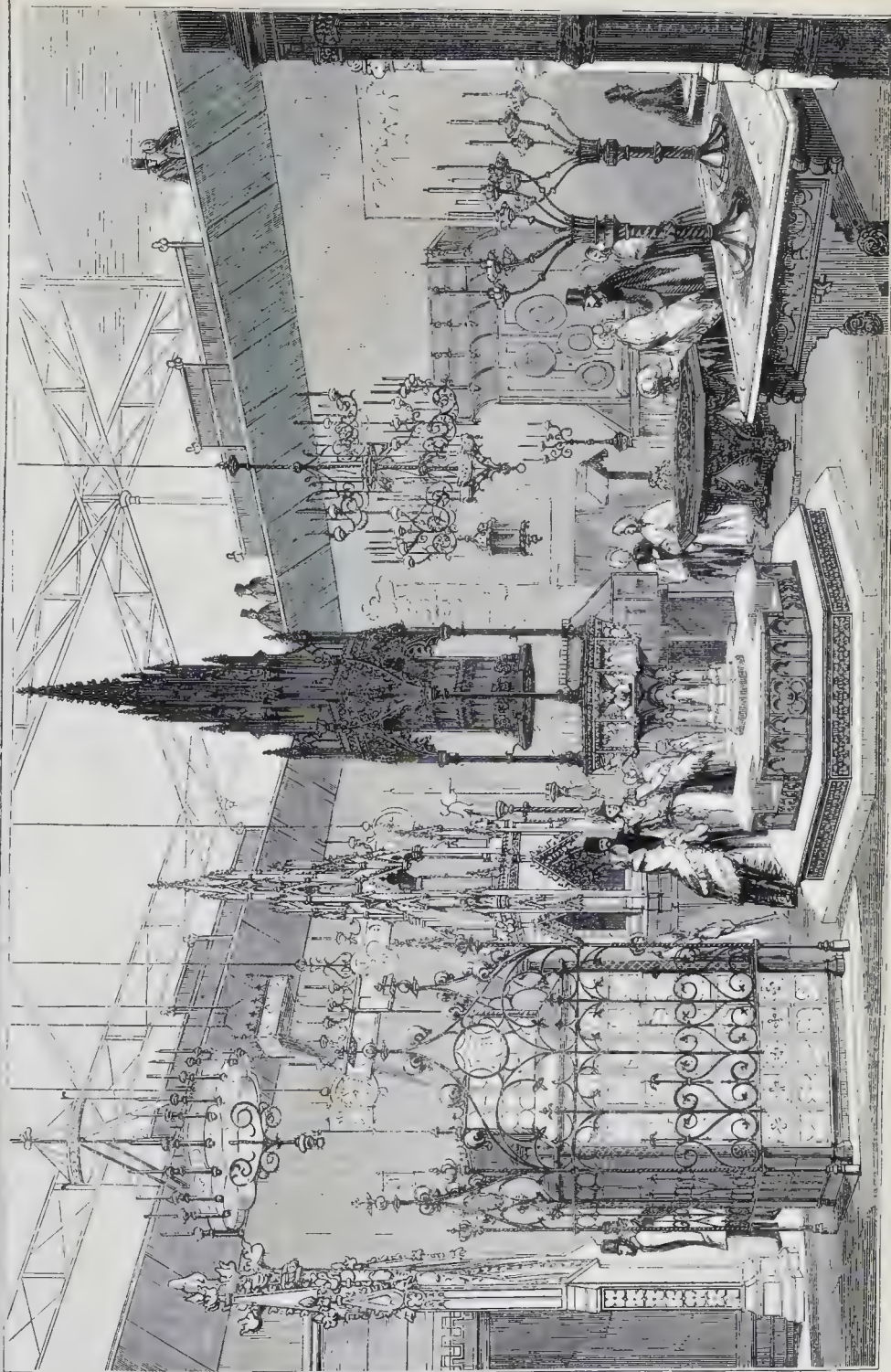
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CARVED MARBLE CHIMNEY-PIECE *



* See page 353.



VIEW OF THE MEDIEVAL COURT, GREAT EXHIBITION.

[See page 33 ante.]

CENSUS OF GREAT BRITAIN.

The following is a return of the Houses and Population in 1841 and 1851.

	1851 (31st March).						1841 (7th June).					
	HOUSES.			POPULATION.			HOUSES.			POPULATION.		
	Inhabited.	Uninhabited.	Building.	Persons.	Males.	Females.	Inhabited.	Uninhabited.	Building.	Persons.	Males.	Females.
Great Britain and Islands in the British Sea	3,675,451	165,603	29,109	20,919,531	10,134,687	10,784,844	3,465,961	198,120	30,334	18,655,981	9,074,642	9,581,339
England and Wales	3,278,975	152,670	26,329	17,905,831	8,754,654	9,151,177	2,943,939	173,234	27,468	15,911,757	7,775,224	8,136,533
Scotland	378,650	11,556	2,378	2,570,734	1,303,628	1,267,106	602,832	24,020	2,616	2,620,184	1,241,803	1,378,381
Islands in the British Sea	21,828	1,077	202	132,916	66,511	66,405	19,100	891	229	124,040	67,556	56,484
London	307,722	16,889	4,917	2,363,141	1,104,868	1,258,273	262,737	11,324	4,032	1,943,369	912,001	1,031,368

NOTE.—The army in Great Britain, and the navy, merchant seamen, and other persons on board vessels in the ports, are included in the Return for 1851: the navy, merchant seamen, and persons on board vessels, were not included in 1841.

The apparent decrease of houses in Scotland between 1841 and 1851 is attributable to the fact that in 1841 flats or stories were reckoned in many places as "houses": in the present Census the more correct definition has been employed.

GEORGE GRAHAM, Registrar-General.

TOPOGRAPHICAL MAP OF LONDON.

MR. ROBERT MYLNE has just now issued a first attempt at a contour map of London and its district.* The data for levels are founded upon the recent Ordnance survey, adopting the well-known local standard datum of Trinity High Water Mark. The contours indicated by shadings, successive steps of 10 feet elevation, by which the natural surface drainage and water shed area of the metropolitan districts are well defined. The various soils are distinguished by different colours, and, by the combination of topography with geology, it facilitates the comparison of the levels of the outcropping strata and drift deposits of gravel and boulder loam.

The sub-strata of London were studied, and sections published of them, in March, last year, by Mr. Mylne; and the present map is grounded upon that, with the result of still more recent investigation.

In the district of Woolwich and Greenwich the outcrop of five distinct stratifications are to be traced on the slope of the rising ground from the River Thames, based by chalk, which appears on the surface,—caused by a remarkable disturbance or fault in its stratum. In the neighbourhood of Highgate and Hampstead are shown the position of the sandy upper beds of London clay, which occupy a considerable area, and have been but partially known, and never before mapped, and by the aid of the contours they will be seen to dip considerably to the eastward.

IRISH ARCHITECTURAL DOINGS.

A NEW Presbyterian Church is to be erected, at Ballymore, and the foundation-stone has been laid.

The Board of Guardians of Rathkeale Union intend erecting an industrial ward 74 feet long by 18 feet wide, and two stories high, in connection with the present workhouse, and the drawings for same have been prepared by the architect to the Poor-law Commissioners, Mr. Wilkinson.

We understand that 2,000*l.* are to be expended by the New Ross Fever Hospital Trustees in the improvement of that port.

The Royal Cork Yacht Club intend erecting a new club-house.

Sundry alterations and additions are to be executed at the different churches in the King's County, County Meath, and County Westmeath, according to the specifications, &c., by the architect to the Ecclesiastical Commissioners.

The works at the grand Cathedral of Armagh, which were commenced ten years ago under the auspices of the late primate, Dr. Crolly, are to be completed immediately, and Mr. J. J. McCarthy has been appointed the architect to superintend their erection.

The Commissioners of Public Works intend to build a bridge at Ballyhoggan, between the counties of Meath and Kildare, also bridges at Moortown and Anadruise, according to drawings at the engineer's office, Kinsengad.

A new Roman Catholic church, with convent and schools adjoining, is to be erected in Enniskillen, on a site overlooking Lough Erne. Mr. McCarthy has been instructed to prepare designs for it.

The Commissioners of the borough of Cavan have determined to light the town with gas, and have invited proposals.

Advertisements have been issued by the Board of Guardians of Thurles Union for intended buildings at the present workhouse, according to the plans prepared by the Poor-law Commissioners' architect.

The Goggin's-hill tunnel, on the Cork and Brandon line, has been publicly opened. The directors and their friends were conducted through the tunnel, which is 900 yards in length, in a carriage drawn by the navvies. The entire line it is stated positively will be opened for traffic the first week in July.

The new lecture-hall of the Dublin Mechanics' Institute has been publicly opened, and a grand *soirée*, with concert, given on the occasion. The total sum collected by subscription for the erection of the new buildings was 1,311*l.* 5*s.*, and the amount expended on the lecture-hall was 486*l.* 6*s.* Messrs. Louch and Low, architects, gave their professional assistance gratis, and Mr. John O'Rourke was the contractor.

Mr. Kivas Tully, late of Limerick, architect, has (we understand) designed the model for building Trinity College Church University at Toronto, which will cost 20,000*l.* being an institution devoted to the Protestant Episcopal Church in Canada.

A new bridge is to be erected at Galway upon the site formerly occupied by the Old West bridge, and the Board of Public Works have declared Mr. Patrick Nugent the contractor. The foundation-stone has been laid with more than ordinary ceremony. Mr. Roberts is the district engineer.

The Corporation of Dublin intend having public baths and washhouses established in the metropolis, and a sum of 900*l.* is to be expended thereon. It is also in contemplation to erect a bridge across the Liffey immediately opposite the Custom-house. Model lodgings-houses are also to be established.

The railway from Dublin to Belfast will be opened by the 1st of November next with the exception of the viaduct over the river Boyne, which will not be finished until October 1852.

A new altar and tabernacle of white marble has been erected at a cost of 400*l.* in St. Paul's Church, Arran-quay. It has been manufactured by a native artist. Mr. P. Byrne is the architect who furnished the designs.

A large organ, by Talford, of Dublin, has been placed in the new church of St. John, at Sandymount (which was fully described some time since in *THE BUILDER*). It was the gift of the Hon. Mrs. Sidney Herbert.

An iron screw light-house is in progress of erection on the Spit Bank, Queenstown, under the direction of Mr. Mitchell, C.E. Two of the screws have been fixed in their respective positions.

The first stone of a new workhouse has been laid at Urrlingford by the county surveyor, Mr. Carter. The contractor for executing the works under the Poor Law Commissioners' architect is Mr. Bevinham.

New bridges are to be erected at Castlenode, Carrowmaskey, Lissonuff, Mountbrown, and Bunamucka; also at Killmod, Carrickglass, Ballyclare, and Ballinamore, according to plans at the Drainage Engineer's Office, Longford.

The board of guardians of Castletowndelvin union have determined upon the erection of a

new workhouse, and the works are to be executed according to the drawings, &c. furnished by the architect to the Poor Law Commissioners.

A new workhouse is also to be erected at Bawnboy, county Cavan, from the designs of the same architect.

The parish church of Pallasgreen, county Limerick, is to be enlarged, and tenders are being received for the execution of the works.

A new chapel, orphanage, and convent are to be erected at Mount St. Vincent, Limerick, the designs and working drawings for which have been made by Mr. John Neville, architect, Dundalk.

The new corn exchange at Belfast, which is being erected from the design of Mr. Thomas Jackson, architect, of Belfast, is situated at the corner of Corporation and Victoria streets. It is intended to appropriate the ground-floor to shops or offices, and four apartments, about 32 feet by 15 feet each, have been provided for that purpose. On the upper story is the exchange-room, 60 feet long by 32 feet wide, approached by stone stairs at one extremity of the building. There are six windows at the sides of this apartment: two retiring rooms are provided. At the extremities of the exchange-room are three doors, with piers, and entablature supported by enriched consoles; over each is a panel sunk in the wall, and curved at the head. A pedestal, with moulded capping and a series of panels in the die, is continued round the apartment. An ornamented entablature is intended to surmount the room, and thence rises a segmental roof of iron, with large lantern light in the centre. The floor is constructed on a fire-proof principle.

FORMATION OF TILE ROOFS.

IN a late number of *THE BUILDER* I gave a few hints concerning the laying of plain tiles on roofs, so as to make weather-tight work. I beg leave to submit some additional observations:—

Each tile should be curved or bent one quarter of an inch in the length of the tile, to allow a bed of mortar to be laid under the middle part of each course of tiling. The tiling should also be jointed with mortar from the top end of each tile downwards, to a little above the gauged part of the tile.

It is of importance that the tiles be all whole and entire, particularly at the top ends, as that is where the wet is most likely to find its way to the inside of the roof.

The mortar to be used should be well tempered and worked till it is of a tough consistency, so as it may not be liable to crumble away by heat, frost, or any other cause, after the work is finished. By this method the tiling will be compact and solid, as each tile will have a bearing at both ends, and also in the middle: the work will look well when finished, as the bottom ends of the tiles will fit close on the tiles under them, which is frequently not the case when the tiles are straight, and the roof will be completely weather-tight, if properly executed according to the foregoing directions. But to make the work still more secure, it may be as well to point the heads of each course of tiles in the inside of the roof. It perhaps might not be amiss to suppose that, if architects having plain tile roofs to be executed under their authority, were to specify that

* Wyls, London.

no tile to be used should have a curve or bend of less than one quarter of an inch in the length of the tile, or be bedded and jointed otherwise than as described, tile-makers would soon find it to be to their advantage to make them of the required shape. The tiles are supposed in this statement to be 10 in. by 6 in.

Concerning the execution of ornamental tiling in lozenge or chequered patterns of various colours, which is now being used in some places, this is very liable to have some defects, but by a little previous care and attention they may be avoided.

The workman should commence the laying of the tiles at the hips and valleys, and continue along to the gables, where it may terminate as it happens, as it is of less importance to have the figures there incomplete than at the hips and valleys.

Where the work terminates at both ends by hips or valleys, the workman should ascertain, in the first place, whether the figures will come all in of their proper sizes or not: if not, then the borders at the terminations could be widened, or the one least exposed to view could be made narrower, so as to meet the requirements of the case; but on no account should it be left to turn out at random, as there will be as much difference in the effect of the work being finished properly or improperly, as there would be in the appearance of a garment made and fitted properly for the use of the wearer, and one made at random, having the nooks and corners cut off afterwards to fit it for the same purpose.

When the roof is of a high pitch, with any intersections, the tiles will require to be made longer or narrower, to suit the pitch, as the height of it, and, consequently, the angle of the intersecting line, regulates the shape of the figure of the tiling, which will be longer in proportion to its width, the higher the pitch of the roof may be; and as it is essential that each tile should have at least two inches lap, the difficulty will perhaps be easiest overcome by this expedient. The half-pitch roof will require a gauge of about 4½ in., so that the common-sized tiles will answer the purpose for it.

A. PATERSON.

THEATRES AND SCENERY.

Her Majesty's Theatre.—"Il Prodigio," the *Enfant Prodigue* of Scribe, and the "Azael" of Drury-lane, has been produced here with a *mise en scène* (as the French call it) of extraordinary splendour and beauty. With pretty music, picturesque groups, gorgeously attired, filling the scene, and novel and exciting dances, it cannot fail to draw large houses. As an instance of rapid production it is very remarkable: one of the principal scenes in Memphis was begun and finished, we are told, on the day on which the opera was first represented. The costume of Massol, who, as Reuben, sings touchingly, is worthy of an artist.

The Royal Italian Opera House.—The revival of the favourite here has brought back some beautiful scenery to the stage of the Italian Opera House; for example, the vaulted Moorish loggia at the end of the first act and beginning of the second, decorated with mosaic work, and showing in the back ground gardens and residences. The last scene, the interior of a ruined monastery, is exquisitely beautiful in effect, though not without solecisms architecturally. Grisi, Mario, and Tamberlik have the chief parts in this opera, and sing them finely. The crowds now in London begin to tell in other places besides the park, and no where more than here. On Saturday in last week, when the Queen ordered *Don Giovanni*, every inch in the theatre was occupied.

The Lyceum Theatre.—The revival of Mr. Planche's smart little comedy, "The Court Beauties," with all its pristine elegance in costume and "getting up," was *à propos* of the Queen's ball. To those who appreciate close adherence to truth in time and circumstance, and refinement in every detail, it will afford a great treat. Mr. Charles Matthews seems to delight in the sparkling impudence of Buckingham, and emulates the character by his

consummate acting. The regal ease with which Mr. Vining assumes Charles II., the unction of Mr. Roxby in the happy illustration of an empty-headed conceited courtier of the time, and the irresistibly comic humour of Mr. Frank Matthews, as old miserly Sir John Hunks, are admirable studies. As for the representatives of the "Beauties," they would have made old Sir Peter Lely stare, for we doubt if the originals were half so charming; great artistic pains and skill are evinced in their arrangement.

DRAIN-PIPES GLAZED AND UNGLAZED.

At page 352 of *THE BUILDER* (Vol. IX.) I observe some remarks as to glazing drain-pipes for sanitary purposes.

I approve of the remarks that are made relative to the glaze not adding at all to their durability, as I have discovered in the course of my sewerage operations vast quantities of Roman and ancient British pottery, the unglazed being quite as sound and good as the glazed after being buried beneath the surface of the ground, even in damp and wet situations, for at least fourteen centuries.

In some portions of the Roman pottery (Samian ware) that I have found, the glaze is chipped off in places, and the Roman drain-pipes or tiles are not glazed at all. Mr. Austin, in his evidence before the Metropolitan Sanitary Commission (page 126 of report), says:—"The drain-pipes of ancient Rome are at the present day perfect, although of far inferior material to the vitrified glazed stone ware now manufactured in this country" (which I very much doubt).

"At the ruins of Trajan's bath," (erected A.D. 110), "near Civita Vecchia, I recently examined some of these pipes, which are still perfect," a strong argument of their durability even without the glaze so strongly insisted on by some parties.

I think if the manufacturers, instead of paying so much attention to glazing their pipes, would endeavour to perfect them in quality of material, strength, shape, and uniformity, and burn them well,—in fact turn out a perfect article, which, I am sorry to say, is not generally the case,—a greater benefit would be conferred upon the public.

If the manufacturers burned a perfect article, correct in contour, perfectly straight, and made it to fit truly at the joints, we should hear little of the "cuckoo cry" of glazed pipes, because we should have conduits quite as smooth as the interior surface of iron pipes, and capable of discharging as much fluid, and all that would be required would be care in laying them so as to give them a sufficient inclination to discharge the sewage.

I believe the introduction of glazed pipes, like the modern plan of flushing sewers, to be nothing more than a weak attempt to support a "rotten" system of town drainage.

BAYLIS.

DISCOVERY OF A CRYPT UNDER DEANERY HOUSE, WATERFORD.

At a meeting of the Kilkenny Archaeological Society, held on the 7th, the Dean of Waterford made a communication on the above, from which we take the following. It was always known, the Dean said, that a large vault existed beneath the Deanery House at Waterford; but it was never explored, nor was it known how far it extended. On coming to reside here, I found this an object of interest to the antiquary, and proceeded to explore and re-open the Crypt.

At the commencement, we found the end of the Crypt filled with rubbish, so that no more than two-thirds of its entire extent was visible, and all was darkness, no ray of light being admitted into it. On removing some of the rubbish, there was discovered at the extreme end (the south), a pointed-arch doorway, and on proceeding with the work, this was found to lead to a spiral stair. Proceeding up these stairs, we found ourselves in an apartment adjoining the coach-house, the entire staircase having been filled up with rubbish, and part of the offices built over it (the present Deanery, &c., was erected about

150 years since). Having removed the building, the staircase was made to open into the garden. This was evidently the stair of a round tower, leading to the upper story of the ancient buildings.

The whole length of this crypt is 60 feet—the breadth, which is uniform, 19 feet. The arch of the vault is a semicircle, and the whole is supported, and divided into two equal aisles, by "massive arches, broad and round," springing from

"Ponderous columns short and low," evincing the character of the original building, when, like that of Lindsafarne,

"In Saxon strength the abbey frown'd." The counter arches are semicircular, springing from pillars, square but chamfered at the corners. Of these pillars there are five distinct, and two pilasters, forming six arches, running from north to south. The height of the crown of the arch is 11 feet; that of the pillars 6 feet 2 inches; the distance between the pillars 8½ feet. The entrance at the east side is 5½ feet wide. From floor to threshold of this entrance are five steps of 9-inch risers; and from thence to the original level are five steps more.

The spiral stair at south end is 8½ feet in diameter, and consists of twenty-one winding steps of 6-inch risers. The pointed door-arch at foot of stairs is 7 feet to the point of arch. The window of stairs is 3 feet below the present exterior level.

The greater part of the pillars and the entire of the pointed door-arch are built of a white soft stone, which I believe to be Caen stone: the rest is of native limestone, beneath the outer surface, at the west side,—some at the end of the east side. It is probable that the crypt extended further, but was cut off to erect the deanery at one end, and the Town Hall at the other.

A second vault, hitherto used as a coal cellar, extends from the northern end of the crypt above described—which is curious, as containing in the roof large quantities of the *hurdle*, used for the centring of the arch in the original building of the edifice. In a brick partition dividing off a wine cellar in this vault, I found, built up and plastered over as part of the partition, a finely carved piece of oak, apparently part of an altar-screen, measuring seven feet by twenty inches—in good preservation.

Within 20 yards of the deanery are the ruins of a Franciscan Abbey, containing some fine lancet windows, and pointed arches, and several curious tombs of the 15th, 16th, and 17th centuries, and a fine mural monument. On several of these tombs are the four letters, I. M. R. A. The meaning of these I have not been able to learn. On one of the tombs representing the crucifixion, &c., is the *sword* used by Peter, and the *right ear* of the servant which he cut off. These were quite new to me.

INSCRIPTION ON A TABLET IN LIMERICK CATHEDRAL.—"Memento Mory. Here lieth Little Samuel Barinton, that great Under Taker, of Famous Cittis Clock and Chime Maker; He made his one Time goe Early and Latter, But now He is returned to God his Creator. The 19 of November Then He Seest, And for His Memory This Here is Pleast, By His Son Ben 1693." The correctness of this copy, in every respect, may be relied upon.—R. J. R.—*Notes and Queries.*

ROAD BRIDGES.—More than ever, I think, does the crowded state of our public thoroughfares at this moment show the necessity for the erection of light foot-bridges over the crossings of some of the most thronged streets, for the safety and convenience of the multitudes of foot passengers; and I have no doubt but that with the skill of our engineers, light structures, well adapted for the purpose, could be readily provided at a moderate cost. It would be well if an experimental one could be immediately erected on one of the principal routes for foot passengers to the great Exhibition; for example, from the Green-park to Hyde-park, across Piccadilly, where, from the width of the street, it could be done without at all interfering with the roadway for carriages.—W. C. TREVELYAN.

MOUNTAIN COTTAGES.

In the neighbourhood of the Lakes, these dwellings, even at the present time, are found scattered over valleys, under hills, upon rocks, and in retired and secluded places without any intrusion of more assuming buildings.

These erections are, in many instances, of the colour of the native rock, out of which they have been built:—

"Clustered like stars; some few but single most,
And lurking dimly in their shy retreats;
Or glancing on each other cheerful looks
Like separated stars, with clouds between."

The dwellings, in most cases, have descended from father to son, yet necessarily with changes in their circumstances: they have received without incongruity additions and alterations adapted to the need of each successive occupant; so that these humble dwellings remind the contemplative spectator of a production which has risen from the native rock. Among the numerous recesses and projections in the walls, and the different stages of the roofs, are seen bold and harmonious effects of light and shade: nor will the singular appearance of the chimneys escape the eye, some almost upon a level with the roof, others of a quadrangular shape, rising one or two feet: the covering of the roof is generally of rough slates, rudely taken from the quarry; and being very uneven in their surface they have furnished places of rest for seeds of lichens, mosses, ferns, and flowers. Hence buildings, which, in their very form, call to mind the process of nature, do thus, clothed with this vegetable garb, appear to be received into the bosom of the living principle of things as it acts and exists among the woods and fields, and, by colour and shape, affectingly direct the thoughts to the tranquil course along which the humble-minded inhabitants have, through so many generations, been led.

G. J. R.

UNION OF ENGINEERS AND ARCHITECTS.

As a beautiful design for a building is useless, however well it may look to the eye of a casual observer, if it cannot be put into execution, so is a project unavailing, unless the object it has in view can be practically effected. I therefore trust you will allow me to follow up some former suggestions which I made in a letter addressed to you on the important question of a union between the members of the architectural and civil engineering professions, to which I must beg in the first instance to refer your readers, who will find it in *THE BUILDER*, of the 8th of February, 1851. The subject is one of such consequence to the position and advancement of constructive art, that I sincerely wish to see it taken up *con amore*, by influential members of engineers' and architects' Institutions. In our isolated state as bodies corporate, we may be compared to like quantities in Algebra, having positive and negative signs, and consequently neutralizing each other's efforts and destroying one another's very existence, instead of combining in a formidable array of numerical strength to further our common aims. I would propose, then, as a prelude to our acting in concert,—a consummation I hope will be realised at no very distant period,—that the societies of engineers should invite members of the architectural profession to a series of *soirées or conversazioni*, where they would have the opportunity of reading papers on some subject connected with the principles of construction, or the decoration of structures, and where members of both professions could discuss all matters of mutual interest. Architects should then, in their turn, afford a like occasion to engineers for reciprocating ideas which would tend to the common good, and thus a solid foundation would be laid for the construction of a united society, which would be cemented by an enduring and mutually supporting bond of friendship.

I think, also, that much good might be done by the establishment of a club, as a place of resort for engineers and architects, to which military engineers should also be eligible. For this purpose, they might all combine to-

gether, as the naval and military professions have done, and find the benefit of doing, in their United Service, Army and Navy Clubs, &c.

W. H. V. S.

LONDON IMPROVEMENTS AND THE POOR.

UPREAR the gorgeous palace high!
Let column after column rise,
And art put forth its symmetries,
And sculpture warm 'neath royal eyes.
Oh! 'tis a goodly sight to see,
In Britain, wealthy, proud, and free,
Her monarch's home a temple fair,
Bedeck'd with all things rich and rare
A tributary world can bring
For England's queen or England's king.
Build for the queen!—forbid it not;
But, ah! who builds the poor man's cot?

Build for the merchant, rear the mart!
For commerce make a splendid home:
Tax well each architectural art:
Boldly upraise the spacious dome.
There shall a mighty congress meet,
The lords of Britain's merchant-fleet,
The busy traffickers, whose stores
Are garnish'd from a myriad shores:
But, oh! the squalid home that mocks
The labourer of our merchants' docks!
Be not the earnest cry forgot,
Who builds, who builds, the poor man's cot?

Build high the column to the dead
Who died for England! it is well.
"Those stones might give the living bread,
Might build warm homes where men might dwell,"
The poor man thinks—a churlish thought,—
But he were quickly better taught
If those who rear'd that column's height
Would give the next "convenient site"
To build homes, where at moderate rent
The labouring man might rest content.
We cannot change, then cheer his lot—
Who builds, who builds, the poor man's cot?

Who builds? who builds? Alas, ye poor!

If London day by day "improves,"

Where shall ye find a friendly door?

When every day a home removes?

Wide streets "low neighbourhoods" reclaim,

Where virtue lives next door to shame.

Who will build homes to house again

Those we are making homeless men?

"Down with you house of vice," we cry—

Alas! there poor men live and die.

Then ere we triumph o'er the spot,

Who builds, who builds, the poor man's cot?

R. J.

Books.

Hore Egyptiaca: or, the Chronology of Ancient Egypt, discovered from astronomical and hieroglyphic records upon its monuments, including many dates found in coeval inscriptions from the period of the building of the Great Pyramid to the times of the Persians. By REGINALD STUART POOLE. With plates. Murray, Albemarle-street. 1851.

This elaborate inquiry is an enlarged edition of a series of papers on the ancient chronology and history of Egypt published in the *Literary Gazette* by Mr. Poole, who is a nephew of Mr. Lane, celebrated for his Egyptian lore, and his (shall we say) destructive exercise of it on "the Arabian Nights" of our childhood. The work is published under the auspices of the Duke of Northumberland.

The peculiar feature in Mr. Poole's researches is the maintenance of the assertion that many of the kings in the interminable dynasties of Egypt were contemporaneous; thus greatly altering our ideas of the chronology of ancient Egypt. On a subject already teeming with perplexities and differences of opinion, we have thus one more difference added, either to increase the sum total or to clear it all away. "I am aware how greatly I disagree with all others who have written on this subject," the author observes, "but it is a sufficient consolation to me, since all differ, that it is little more to differ from all others, than to differ from all of them but one." It remains to be seen, therefore, how this bone of contention will be picked by the already differing Egyptian archaeologists in future works. For our own part we confess that in studying the majority of authors on this subject, we have ever felt as if we were walking on thin and brittle ice, and liable to fall through at every step. We would advise a still more patient and penetrating research amongst the

records of Egyptian theurgy, the rolls of magical records, and other stores of the "wisdom" of ancient Egypt—or rather, of the superstitious remains of that wisdom: there we doubt not some light would be got whereby to decipher much that is obscure on its monuments.

On the subject of the pyramids, of course, the author gives his peculiar views. "It has been supposed," he remarks, "that each pyramid was the tomb of a sovereign or sovereigns, and that all the pyramids were built before the Shepherd invasion, being the tombs of successive kings. It is enough to remark that ancient authority, the evidence of the monuments, and the relative positions of pyramids, are against this theory; and the monuments distinctly show that contemporaneous kings were buried in the pyramids around Memphis."

Hand-Book of Natural Philosophy and Astronomy. By DIONYSIUS LARDNER, D.C.L., formerly Professor of Natural Philosophy and Astronomy in University College, London. First Course—Hydrostatics—Hydraulics—Pneumatics—Sound—Optics, with upwards of four hundred illustrations. Taylor, Walton, and Maberly, Paternoster-row. 1851.

LARDNER and Mechanical Philosophy, though not exactly synonymous terms, have long been associated somewhat as the sublimer subject of Astronomy has been with the name of Herschel; not so much as a discoverer certainly, but as a teacher and interpreter of nature's laws. No one, therefore, can be far wrong in recommending a work on Natural Philosophy by Lardner. In the composition of the present work the author has had in view the satisfaction of those who desire to obtain a knowledge of the elements of physics without pursuing them through their mathematical consequences and details. The methods of demonstration and illustration have accordingly been adapted to such readers. The work has been also composed with the object of supplying that information relating to physical and mechanical science which is required by the engineer, the artisan, and others such as those who are preparing for the universities, and, in fine, by those who, having already entered upon the active pursuits of business, are still desirous to sustain and improve their knowledge of the general truths of physics and of those laws by which the order and stability of the material world are maintained. The second course will contain heat, electricity, magnetism, and astronomy.

As a specimen of the work we may quote a portion of the author's remarks on the strength of materials:—

"Strength of a beam increased by partially sawing it transversely and inserting a wedge.—According to Peschal, the transverse strength of a beam of timber may be greatly increased by sawing down from one-third to one half of its depth, and driving in a wedge of metal or hard wood until the beam is forced at the middle out of the horizontal line, so as to form an angle presented upwards. It was found by such an experiment that the transverse strength of a beam thus cut to one-third of its depth, was increased one-nineteenth; when cut to one-half of its depth, it was increased one twenty-ninth; and when cut to three-fourths of its depth, it was increased one eighty-seventh.

Why the strength of a structure is diminished as its magnitude is increased.—It follows from the principles which have been explained, that if any structure be increased in magnitude, the proportion of its dimensions being preserved, the strength will be augmented as the squares of the ratio in which it is increased. Thus, if its dimensions be increased in a two-fold proportion, its strength will be increased in a four-fold proportion; if they be increased in a three-fold proportion, its strength will be increased in a nine-fold proportion, and so on. But it is to be considered, that, by increasing its strength in a two-fold proportion, its volume, and consequently its weight, will be increased in an eight-fold proportion; and by increasing its dimensions in a three-fold pro-

portion, its volume and weight will be increased twenty-seven times; and so on. Thus it is apparent that the weight increases in a vastly more rapid proportion than the strength, and that, consequently, in such increase of dimensions, a limit would speedily be attained at which the weight would become equal to the strength, and beyond this limit the structure would be crushed under its own weight. On the other hand, the more beyond this limit the dimensions of the structure are kept, the greater will be the proportion by which the strength will exceed the weight.

The strength on the large scale not to be judged by that of the model.—The strength of a structure of any kind is therefore not to be determined by its model, which will always be much stronger relatively to its size. All works, natural and artificial, have limits of magnitude which, while their materials remain the same, cannot be exceeded. Small animals are stronger in proportion than larger ones. We find insects and animalculæ capable of bodily activity, exceeding almost in an infinite degree the agility and muscular exertion manifested by the larger class: the young plant has more available strength in proportion than the forest tree.

An admirable instance of beneficence in the consequences of this principle is, that children, who are so much more exposed to accidents, are less liable to injury from them than grown persons."

The Patent Journal and Inventors' Magazine.

Vol. X. Charles Johns, Chancery-lane. We are glad to see that this useful journal is progressing, and that it still sustains its character. To inventors and to all interested in new inventions it must be valuable for reference as well as for news. One of its latest novelties relates to the patent-specification and special claims of Mr. Paine, the American electrician, only recently published, the report having been delayed at the particular request of the assignee of the patent in England. In his specification the patentee states that "although water has been spoken of as decomposed by the electric currents, he wishes it to be understood that it is merely to accord with the generally received doctrines and phraseology, and that water, after all, may be a simple element." He claims—

"Firstly,—the use of helices, in which are hollow helical coils, to be filled at pleasure either with water or other electrical absorbent. Secondly, the use and construction of the electrodes, as described. Thirdly, the mode of applying electricity to the decomposition of fluids by pulsations or intermittent discharges. Fourthly, the construction and use of governors for regulating the electric current, as described. Fifthly, the method of catalyzing or rendering hydrogen gas luminiferous, by passing it through spirits of turpentine, or other hydrocarbon at ordinary temperatures. Sixthly, the use of non-conducting pipes and isolated gasometers, for the purpose of conveying and holding the gases for the purposes of this invention."

Miscellaneous.

ASSESSING WATER COMPANY'S WORKS TO LAND-TAX.—In the case of *Chelsea Water Works v. Bowley*, the Court of Queen's Bench has decided that the company are not liable to be assessed to the land-tax. Lord Campbell said they would have had no difficulty in coming to that conclusion, but for the decisions which had been come to by the Court, that these and similar companies were liable to be assessed to the poor-rate in respect of the land which they occupied. The 4th section of the 38th George III. chap. 5, enacted that all bodies having or holding any land or hereditaments should be liable to be assessed to the land-tax; and the question was, whether the Chelsea Water Works Company, in the enjoyment of the right conferred upon them by the 8th and 9th sections of the 8th George I., chap. 26, of laying down their pipes, could be said to have or hold any land or hereditaments within the meaning of the Land Tax Act, so as to be liable to be assessed to that tax. The right which the company enjoyed was rather in the nature of an easement than the occupa-

tion of land or a hereditament. It consisted in the right to convey water through the land of another; and whether the water was conveyed over the surface, or in covered drains, or in pipes, did not signify. The right was not assessable, nor were the pipes. The Land-Tax Act contemplated property which could be let to a tenant, and the 17th section of the Act provided that, though the tenant should pay the tax in the first instance, the amount might be deducted by him out of his rent. The company, however, were not the owners of the land where the pipes passed, and there was no rent out of which, if they were tenants, the amount of the tax might be deducted. The cases of the Bath, Brighton, and Chelsea Waterworks Companies touching the relief of the poor, had been much relied upon, for they were closely in point; but the Court, without overruling those cases, or saying whether or not they had been rightly decided, were of opinion that the word "land" had a different meaning in the statute of Elizabeth from what it bore in the Land-Tax Act.

THE DECIMAL SYSTEM OF MEASURES, &c.—In the last number of your journal, I see allusion made to the system of decimal coinage, weights, and measures, as used in France. In addition to the arguments there used for its adoption, might be added the facility for calculations,—a matter of no small importance to architects and surveyors. The complication of measures, for building works, adds in no small degree to the difficulty of making estimates, &c., in which we have to calculate the price of a foot of brickwork at so much per rod: this, in some parts of the country, is done in a different way, to add to the difficulty: then there is to reduce cube yards into feet; though, perhaps, the greatest trouble of all consists in the troublesome reduction of feet and inches, from its frequency and almost universality: in fact, there is not a decimal in the whole list. The proposition for adopting the decimal system is sensible, especially as from the present time we shall have more communication with foreigners, and it will, in all respects, be desirable in such cases to adopt a convenient standard.—A. J. B.

ENGLISH TENDERS FOR IRISH WORKS.—We have received a statement and complaint made by various respectable Irish ironfounders, to the effect that, although they had tendered for a new bridge of malleable iron to carry the line of the Dublin and Kingstown railway across the river Dodder, and although the plan accompanying the tender of one of the parties was identical with that of an English firm ultimately adopted, while the tender was for a considerably lower sum, with offer of sufficient security for its due execution, one and all of the Irish tenders were rejected; and that this is no mere isolated case, but one of a system by which gross injustice is done to Irish enterprise, and in which the prosperity of every member of the Irish community is more or less directly concerned.

TOWN-COUNCIL PROCEEDINGS.—The surveyorship of the city of Londonderry, with a salary of 150*l.* a year, having been declared, prematurely it would now appear, vacant, advertisements for a new surveyor were issued, and nineteen applicants appeared. The advertisement was published in Belfast and Dublin, as well as Londonderry, and consequently the greater number of the applicants were not Londonderrians. They no sooner responded to the call, however, than they were told that none but a citizen of Londonderry would be elected. The majority, therefore, returned to their respective homes, and five candidates remained, whom Mr. Newlands, the borough engineer of Liverpool, was engaged to examine. The report of Mr. Newlands stated that two of them might do for clerk of works, but these were the *elite* of the lot so far as regarded fitness for a surveyorship, abstractly speaking. The report was publicly read at a council meeting, and a discussion followed thereupon, when it was resolved "to advertise again in Derry, Dublin, and Belfast for a person to fill the office of town surveyor," and that "persons from a distance might rely on receiving the favourable consideration of the council, should their professional qualifications entitle them."

A letter was then read from Mr. S. Gordon, urging that he had been appointed city surveyor as well as surveyor for the county, and that as he could not be removed without the sanction of his Excellency the Lord Lieutenant, and as that sanction had neither been sought nor obtained, he conceived that he was still the city surveyor, and that any new election whatever, under the circumstances, would be void and null. Mr. Gordon, it was stated, did not seek compensation: in fact, some of his labours had been taken off by the appointment of a town surveyor without any reduction of his salary; but he anticipated such a reduction by the grand jury, and therefore offered to pay 100*l.* to an overseer of works, and still to retain the city surveyorship in his own hands.

RAILWAYS versus ROADS.—When we consider the almost total diversion of traffic from off the turnpike-roads of this country, arising from the introduction of railway transit, it is a matter of some surprise, where the capability and power of the locomotive are so well known, that the trustees and others interested locally in the annual repair of such roads, never have, in any single instance, attempted to compete with the great monopoly. The idea has been suggested by several scientific gentlemen, showing the practicability of the scheme, at a very light comparative cost in construction. I, myself, think the project is well worthy of the attention of those more immediately interested. The question of cost may have been an objection, but there are many advantages which would tend materially to promote the enterprise. For instance, there would be no purchase of land, or law or parliamentary charges, added to cheap materials and labour. I am, from my experience, persuaded that the practicability of such is that it only requires an impetus by some influential party to show the necessity of similar modes of travelling. It is well known that, from our present lines of railway, many important towns are wholly destitute of that accommodation which the railway companies assured the public they would afford them: by the introduction of the wooden railway with a light rail and reduced gauge, they would ultimately prove an advantage to the existing lines in drawing the traffic from our lateral towns and villages to their principal stations. The suggestion for such mode of transit is of sufficient importance in itself to engage the attention of those gentlemen locally bound to improve the revenues arising from the various turnpike-roads of this kingdom. No class of men would benefit more than the farmers of this country, who, by adopting the railway at their own door, would reduce their horse-power very considerably.—ALPHA.

YORKSHIRE UNION OF MECHANICS' INSTITUTES.—The fourteenth annual congress of delegates from these associated institutes was held at Leeds on Wednesday in last week, when between seventy and eighty delegates assembled, for the purpose of comparing their experience, so as to enable them to know what are the best means of conducting such institutions, and making them conducive to the welfare of the community. The condition of the institutes this year, as compared with the last, is said to be very gratifying. The following is the state of those institutes whose reports give the means of comparing their condition in 1850 and 1851:—Comparison made with returns from 83 institutes, in 1850,—males, 12,442, females, 991; 1851, males, 13,173, females, 1,054, increase, 794, 58 per cent. In 79 institutes the annual income was in 1850, 6,855*l.*; in 1851, 7,420*l.*; increase, 571*l.*; 83 per cent. Comparison of 70 institutes for books in the libraries in 1850, 63,294; in 1851, 70,589; increase, 7,295; 115 per cent. Comparison of the circulation in 70 institutes, in 1850, 289,271; in 1851, 520,467; increase, 31,196; 107 per cent. In 77 institutes—comparison of totals of lectures paid and unpaid, in 1850, 620; in 1851, 715; increase, 85; 94 per cent. In 47 institutes, of which the total income was 2,737*l.*, the portion of incomes contributed by those who derived no advantage was 520*l.*, or 19 per cent.

ART-UNION OF GLASGOW.—In the report read at the recent distribution of prizes, it was stated that there had been an increase of 1,224 subscribers over the year preceding. The committee recommended that for the next year the same course should be followed as on that preceding, namely, offering a premium of 50*l.* for the best painting, scriptural, historical, or genre from any British artist, and in addition a premium of 25*l.* for the best landscape painting by a British artist. The report also stated that the West of Scotland Academy, following the example of the Glasgow Art-Union, had agreed to give a premium of 10*l.* and a gold medal for the best picture painted in Scotland; also a medal, value 5*l.* for the best picture painted in the West of Scotland.

FOREIGN HARD WOODS.—At the Great Exhibition, in class 1, near the agricultural machinery (south wall), there is a very interesting classification of specimens of foreign hard woods, for cabinet work, turnery, dyeing, and machinery, exhibited by Messrs. Fannin, and Sons, of London. It may be usefully studied.

BURY AND WEST SUFFOLK ARCHEOLOGICAL INSTITUTE.—The institute held its quarterly general meeting lately under the presidency of Mr. C. J. F. Bunbury. A paper by Sir Henry E. Bunbury, Bart., on the nature of the Roman occupation of Icklingham, having been read, Mr. Tymms gave a brief account of the Saxon antiquities found at Stow, showing how they agreed with some peculiarities observable in the remains of the same people discovered in other parts of the kingdom, and calling attention to the singular fact that the spot at Stow, where nought but Saxon remains have been met with, closely adjoins that in the neighbouring parish where only Roman objects are turned up. The meeting went to the church of All Saints, where the fine Early English scroll-work in iron on the church chest, and the decorated chancel pavement, excited particular notice and gave rise to some interesting conversation. After hearing a paper by Mr. E. K. Bennet, they proceeded to the church of St. James, and thence to Mildenhall. Mr. Tymms read a paper descriptive of the fine church of Mildenhall, pointing out its many interesting details.

FALL OF A BUILDING.—A wall of some new buildings in course of erection at Preston, according to the local *Guardian*, lately fell in consequence of five labourers almost simultaneously throwing out their hod loads of bricks, weighing nearly 5 cwt., on the scaffolding in use in the erection of the wall. Several men were seriously injured.

PUBLIC BATHS AND WASHHOUSES AT OXFORD.—On Tuesday in last week, the committee for carrying out the establishment of public baths and washhouses in this city, met for the purpose of opening the estimates for erecting the buildings, in accordance with the design which was selected a short time ago. The tenders were eight in number, and the amounts were as follow:—

Piper, London	£3,279	0	0
Hayward and Nixon, do.	2,870	0	0
Hoppe, Oxford	2,823	3	0
Mary Wyatt, do.	2,750	0	0
Myers, London	2,695	0	0
Waterborne, Oxford...	2,583	0	0
Castle, do.	2,334	4	10
Plowman, do.	2,309	0	0

In consequence of all the estimates exceeding the amount which the committee contemplated laying out, no decision was come to.

TENDERS

Delivered for two pairs of houses for National Freehold and Society, at New Maldon, near Kingston. Mr. George Rippon, architect.

Walker and Keyer	£1,614
Cooker and Bottomley	1,673
Patman	1,437
Brooks	1,470
Brown	1,410
Sewell	1,369
Lugg	1,300

For the erection of part of the works of the Catholic post-office Church, Gordon-square, London. Messrs. R. Brandon and Co. architects.

In Horeley Castle	In Bath
Stone	Stone
Kelk	240,540
Hayward and Nixon	84,800
Piper	80,828
Myers	83,267
Mr. Myers's tender in Bath-stone accepted.	27,157

The quantities were furnished by Mr. Thomas Percy.

TO CORRESPONDENTS.

"Holland v. Lord Harborough" (we cannot pursue this matter further), "A Subscriber to the Charity" (we give general principles, we cannot attempt to prescribe for special cases), "T. W. v. J. L." "Johnny" "and Co." "Assistant Clerk" (enquire as to the Architect's Benevolent Institution), "R. P. W. v. A. Constant Reader," "F. G. Jones v. G. L." (we do not recognise any novelty in the arrangement), "J. L." (Belmont), "J. L." (desired: the gateway we may perhaps engrave), "J. L." "W. D." "J. P." "J. E." "Mr. H." "W. P." "W. W." "A. H. P." "Wm. J. W." "One of the Committee," "William" (are obliged to refer), "A. B." "Subscriber," "H. M." "J. P. H." "E. W. S." "The Transcript of the Crystal Palace, drawn and engraved (on steel) by John Sadler," Layton, Fleet-street, "A Description of Two Model Farms," &c., at the International Exhibition, Buxton and Son, Levens, "Illustrations of Medieval Costume in England," Part IV, Bosworth, Regent-street.

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor." All other communications should be addressed to the Editor, and not to the Publisher.

ADVERTISEMENTS.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN.—NOTICE IS HEREBY GIVEN, that a General Quarterly Court of the Directors of the Provident Fund for the relief of aged and infirm Foremen, will take place at the BAY TREE TAVERN, No. 10, Whitechapel-road, on Thursday next, June 24, for the purpose of transacting the ordinary business of the Quarter.

W. ALLARD, Secretary.

WANTED, TO PLACE A RESPECTABLE YOUTH, 16 years of age, as IN-DOOR APPRENTICE. A moderate premium will be given.—Address, A. Z. 5, Hatfield-road, Kinsland.

WANTED, BY A GENTLEMAN IN THE COUNTRY, for a permanent residence, three French hands, as a PLUMBER, PAINTER, and GLAZIER. Your usual apply with. Address to A. B., Mr. Noble's, 5, Dowd-street, Piccadilly, London.

WANTED, A SURVEYOR, USED TO PLAN taking in Town, who is a good plain draughtsman, and writes a good plain hand; and also a good LEVELLER, one who is used to measuring and staking out, and is preferred. Apply by letter, proposal, to A. B., care of Housekeeper, Old Court-Church.

WANTED IMMEDIATELY, THREE first-rate FOREMEN OF JOINERS, BRICKLAYERS, and MASONS, fully competent to superintend the execution of the Clerk of the Works—Apply by letter, stating references and salary required, to J. B. H. New by Whisk, near Titchfield, Yorkshire.

WANTED, BY A YOUNG MAN, A PERMANENT SITUATION AS PLUMBER; no objection to fill up his time in the zinc work. Address X. Y. No. 30, Carrot-street, Alington-street, Garden-road.

WANTED, A RESPECTABLE PERSON (CAR- penter and Joiner) to superintend general work in London, where about thirty men will be engaged.—Address, M. P. Miller and Field's, Bridge-road, Lambeth.

WANTED, BY A MARRIED MAN, AGED 34, a TOWN OR COUNTRY, OR A GENTLEMAN'S ESTATE.—Direct V. Z. Mr. Chapman, 10, A. Leader-street, Chelsea.

WANTED, BY THE ADVERTISER, A RE-ENGAGE- ment as ASSISTANT; he perfectly understands surveying and levelling. It is a desirable and excellent situation. Satisfactory references will be produced. X. B. No objection to the country.—Address, G. E. F. 9, Grove-street, Tottenham-green.

WANTED, BY THE ADVERTISER, EVENING EMPLOYMENT in making copies or tracings of drawings or copying specifications, &c. Terms very moderate.—Address by letter, to Z. Y. Office of "The Builder," 1, York-street, Covent-garden.

WANTED, BY A PERSON WHO HAS LATELY left an Architect and District Surveyor's office, an ENGAGEMENT in a similar capacity. Can have a six years' testimonial and give most respectable references.—Address, free, to S. W., Post-office, Hackney, Middlesex.

WANTED, AT NEWCASTLE-ON-TYNE, A STEADY industrious MAN, who has been accustomed to shop work, to whom constant employment will be given. No applications will be attended to unless accompanied with a reference as to character and ability.—Apply to W. G. WILKINSON, Plasterer, &c., Newcastle-on-Tyne.

THE ADVERTISER, WHO HAS HAD MANY YEARS' experience in office work, practical construction, measuring, and levelling, and also superintending excavations, is desirous of an ENGAGEMENT. Satisfactory references will be given; no objection to the country.—Address, A. B., at No. 10, Tottenham-green, Tottenham.

TO LANDED PROPRIETORS, ARCHITECTS, AND OTHERS.

AN EXPERIENCED SURVEYOR AND DRAUGHTSMAN, accustomed to lay out building land, furnish designs, specifications, estimates, to superintend, measure and value works, to survey dilapidations, and who is also a good accountant, wishes for an ENGAGEMENT. Satisfactory references will be given, or upon the estate of a gentleman where architectural and building experience is required.—Address L. M. N., 97, Upper Seymour-street, Tottenham, London.

TO ARCHITECTS AND BUILDERS.

A BUILDING SURVEYOR, OF VERY CON- siderable experience in all the departments, an excellent all-round practical man, having most extensive knowledge and value works, to survey dilapidations, and who is also a good accountant, wishes for an ENGAGEMENT. Satisfactory references will be given, or upon the estate of a gentleman where architectural and building experience is required.—Address by letter, only in the first instance, to M. R., Office of "The Builder," York-street, Covent-garden, London.

TO BUILDERS.

AS MANAGER OR SURVEYOR, &c., a person of great practical knowledge and many years' experience, offers his services either occasionally or permanently. Address A. H. No. 8, Thornton-street, St. Pancras-road.

TO BUILDERS AND PLUMBERS.

A PLUMBER IN WANT OF EMPLOYMENT.—one that well understands all branches of his business. Can do painting and glazing, if required. Satisfactory references can be given. Address, W. L. 5, Clarendon-street, Regent-street.

TO PLUMBERS, &c.

A YOUNG MAN, WHO HAS SERVED HIS TIME, wishes to place himself with a person for IMPROVEMENT. Wages to object.—Address Proprietary, P. S. 5, Office of "The Builder," 1, York-street, Covent-garden.

TO ARCHITECTS AND OTHERS.

AN ENGAGEMENT IS REQUIRED BY a quick and experienced DRAUGHTSMAN, well acquainted with Gothic, the various styles of architecture, perspective, and all kinds of works and measuring. Terms, reasonable. Apply free, to B. A. Mr. B. 11, Great Portland-street, Tottenham.

TO BUILDERS AND MERCHANTS DEALING IN BUILDING MATERIALS.

A MIDDLE-AGED MAN, WHO IS WELL experienced in the routine of a Builder's office, is desirous of meeting with EMPLOYMENT, at a moderate salary. An acquaintance with accounts and business generally would render services available in various lines connected with the building business. He would be able to prove a satisfactory and economical character, &c. From his last employer, his engagement with whom was of several years' standing.—Address, H. W. 11, at Mr. Davis's, No. 5, King's-row, Finsbury.

EASTERN COUNTIES RAILWAY.

The Directors are prepared to receive TENDERS for LOANS for periods of three, five, or seven years. All applications to be addressed to the undersigned. In consequence of the recent alterations in the Stamp Laws, sums not less than 10*l.* will now be received by this Company.

By order, C. P. ROSEY, Sec.

Bishopsgate Station, May 29, 1881.

TO NAPHTHA DISTILLERS.

WANTED, TENDERS FOR THE PURCHASE of all the TAR made at the GREAT CENTRAL GAS WORKS, Bow common, during the ensuing six or twelve months (being about 20,000 gallons per annum). Tenders addressed to the Superintendent, Bow-common, will be opened on the 27th June next.

TO ARCHITECTS.

COMPETITION AND OTHER DRAWINGS.—MR. THOMAS S. BOYS, Member of the New Society of Painters in Water Colours, and author of "The Future of the Art of Painting," &c., &c., of London as it is, offers his services in Ghent, Bruges, and all the principal public buildings of the metropolis, begs to inform his patrons, and his friends in particular, that he has been enabled to increase his establishment, and is now enabled to undertake, on the shortest notice, the embellishment of private and public buildings, in any style of the Classical, Medieval, or Modern Styles.—Apply to S. BOYS, 24, Abchurch-lane, London.

DECORATIVE PAINTING.—MR.

FREDERICK BANG, from the Royal Academy of Munich, DECORATIVE ARTIST IN FRESCO, and in all other manner of painting, whose work may be seen in the principal public buildings of the metropolis, begs to inform his patrons, and his friends in particular, that he has been enabled to increase his establishment, and is now enabled to undertake, on the shortest notice, the embellishment of private and public buildings, in any style of the Classical, Medieval, or Modern Styles.—Apply to S. BOYS, 24, Abchurch-lane, London.

ALTAR AND COMMUNION CLOTHS.

ECCELESIASTICAL CARPETS, CHURCH DECORATIONS, ROBES, &c.—HARRISON, 21, Dronow-street, Bedford-row, London.—Decorations from the most simple to the most elaborate designs, at moderate prices.

BILLS OF QUANTITIES.—DAY & SON.

Lithographers to the Queen.—Lithograph Bills of Quantities with the greatest despatch, and at a vast saving on the prices generally charged.

7, GATE-STREET, LINCOLN'S INN-FIELDS.

TO BRICKLAYERS.

MR. ROBERT TEBBITT, Builder, Boham, Cambs, wishes to dispose of his Bricklayer's business.—For particulars inquire of G. T. A premium will be required.

SUB-MARINE TELEGRAPH COMPANY.

NOTICE IS HEREBY GIVEN, THAT APPLICATIONS FOR SHARES IN THE SUB-MARINE TELEGRAPH COMPANY will only be received until TUESDAY, the 24th day of June, 1881, after which day the list will be closed, and the allotment forthwith made.—Dated the 17th June, 1881.

THE SUB-MARINE TELEGRAPH COMPANY.

COMPANY between ENGLAND and FRANCE.—Under a decree of the French Government conferring exclusive privileges. Incorporated by Royal Charter. Capital, 100,000, in 100,000 shares of 1*l.* each. To be paid up without further liability.

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Offices—8, Moorgate-street.

Copies of the prospectus may be obtained, and applications for shares in the following form, may be made at the office of the Company, or of Messrs. Davies, Son, and Campbell, Solicitors, 7, Warwick-street, Regent-street; of Messrs. Davidson and Whitehead, 5, Royal Exchange-buildings; and of Messrs. Cowdrey and Survey, 11, Royal Exchange-buildings.

FORM OF APPLICATION FOR SHARES.—I, the undersigned, do hereby certify that I am entitled to the shares of 1*l.* each in the Sub-Marine Telegraph Company; and I hereby agree to accept and to pay for the same, or for so many shares as shall be allotted to me, immediately upon the allotment thereof, and on notice from the Secretary, to execute the deed of settlement, to be prepared in accordance with the Royal Charter incorporating the said Company.

Address and occupation.....

Date.....

Reference.....

To the Directors of the Sub-Marine Telegraph Company, No. 8, Moorgate-street.

The Builder.

No. CCCCXXXVIII.

SATURDAY, JUNE 28, 1851.

THE treatise on screens and rood-lofts recently published by Mr. Pugin* is directed, apparently, at certain members of his own communion, who object to screens, and the main argument he uses for their introduction requires for acceptance a belief in the doctrine of transubstantiation, which the members of the Reformed Church reject.

"Christians of the present time," says he, "have but little idea of the solemnity of the ancient worship of the Catholic church: ordained ministers were alone permitted to fill the humblest offices about the sanctuary: every object connected with the sacred rites was considered deserving of the most loving care: even in the very early ages, the vessels of the altar were usually of precious metals, and studded with jewels. The books of the holy gospels were written in golden text on purple vellum, bound in plates of silver encasing ivory diptychs, and deposited in portable shrines, like relics. Though all this should fill us with admiration, there is nothing to excite surprise, when we reflect on the very sacred nature of the Christian mysteries—no sign typical and prophetic, as under the Mosaic law, but our blessed Lord truly present and abiding in the temple in the holy sacrament of the altar—it is by no means wonderful that the Christian worship should assume a form of solemnity formerly unknown, and we are only astounded that with the perpetuation of the doctrine the practice of external solemnity should have so lamentably become decayed in the latter times."

Here, then, in truth, lies the whole question,—a question to be discussed, not by architects, but by theologians,—a question which has been discussed through centuries, and has slain its thousands,—a question on which "Christians have burnt each other, quite persuaded, that all the apostles would have done as they did." We have no intention of discussing it here, or of attempting to interfere with our readers' views in this respect; but it is desirable that every tub should stand on its own bottom, and that those who, like ourselves, profess the reformed religion, appreciate its blessings, and would not willingly see brought back the errors that the reformers cleared away, should be cautioned against receiving doctrines and adopting practices on artistic grounds or antiquarian precedent, calculated, if not insidiously intended, to produce that effect. Mr. Pugin treats the subject as one of great importance:—

"It is not," he writes, "a mere question of architectural detail, respecting a few mullions and a transverse beam, but it involves great principles connected with discipline, and even faith, and it is a question in which all those who either wish for the revival of ancient solemnity and reverence, or even the preserva-

tion of what yet remains, are most deeply interested."

And then, farther on, his earnestness leads him to this coarse assertion:—"If any man says he loves pointed architecture, and hates screens, I do not hesitate to denounce him as a liar, for one is inseparable from the other, and more, inseparable from Catholic arrangement in any style, Byzantine, Norman, Pointed, or debased. We have now to contend for the great principles of Catholic antiquity,—tradition and reverence against modern development and display. It is not a struggle for taste or ornament, but a contention for vital principles. There is a most intimate connection between the externals of religion and the faith itself; and it is scarcely possible to preserve the interior faith in the doctrine of the holy eucharist if all exterior reverence and respect is to be abolished."

The first portion of the quotation is 'unsound, not to say nonsensical: the second reasserts the point actually at issue, and should serve as a warning to some professing members of the Reformed Church. He repeats, again and again, "that the very vitals of (Roman) Catholic architecture are assailed by the opponents of screens." Let the Protestant advocates for their reintroduction on doctrinal grounds, look then to the doctrine which they thereby teach.

Mr. Pugin does not attempt to prove scripturally the necessity for screens. He gives a list of examples and an interesting series of drawings of screens, but these all relate to a time when man's views and devices had been engrafted on religion.

After his stern assertion of the principle involved, the following sounds moderate in tone,—almost, indeed, contradictory:—

"I do not think that the theory, which some writers have advanced, of these close screens being erected to increase the mystery of the celebration, and to procure greater respect for the sacrifice, is tenable: the mass is not more holy in one church or one altar than another, and it is most certain that no parochial churches, built as such, ever had close screens, but always open ones: and, indeed, we very often find altars erected outside these close screens of cathedral and conventual churches, for the benefit of the people, as will be seen by the plates given in this work, which would involve a complete contradiction in principle, supposing the high altar to be hid on symbolical grounds. The close screens belong properly to the choir rather than the altar, as in many Italian churches served by religious, the clergy sat behind the screen, while the altar is partly without, so that the celebration served for both the religious and the people.

At Durham Abbey, the Jesus altar was outside of the great screen; and at St. Alban's Abbey, in the screen which traverses the nave, there are the evident marks of an altar which doubtless served for the parochial mass.

It will be seen from these remarks that close screens, as a principle, are only suitable for churches intended for cathedral chapters or conventual and collegiate bodies; and they are certainly most unsuitable for any churches to be erected in this country under existing circumstances, where the limited extent of means and number of the clergy render it necessary for all services to be available for the faithful in general, and the bishops' churches, like the original basilice, to be in a manner parochial."

There seems no doubt that the introduction of close screens resulted from the use of the long offices, and were "necessary for those who were compelled to remain so many hours in choir, and who would have been unable to

resist the cold if exposed to the free passage of the currents of air which prevail in these large edifices."

Amongst Mr. Pugin's incidental remarks, he gives a slashing to "the huge room called the *Madeleine*," in Paris:—

"Designed by infidels, built by infidels, and suited only for infidel purposes, and then turned over, for want of another use, to become a church! The very decorations are an insult to Christianity: an ambitious conqueror, set up as a deity, occupying the place of our divine Redeemer himself, a mockery and a terrible blasphemy against that God to whose service the place has been unfortunately devoted; moreover, this monument of absurd impiety has been raised at a greater cost than what would have produced one of the fairest churches of mediæval construction, and it is so practically unsuited for even the ordinary requirements of a church, that there are no means for hanging bells, but a vain attempt was made of suspending them in the roof, where they stunned all *within* the building, and were inaudible to those *without*, for whose benefit they were intended, and, after a short trial, they were finally removed."

Our author has altered his opinion as to the destruction of sacred edifices consequent on the change of religion in England, and feels compelled to admit that the most fearful acts of destruction and spoliation were committed by men who had not only been "educated in the ancient faith," but who were contented externally to confess its doctrines:—

"Few persons are aware," writes our author, "that the choirs of three of the English cathedrals were completely restalled, and after the old arrangements, by the munificence of churchmen in the seventeenth century; moreover, the completion of some towers and extensive works date from the same period. It is a consoling fact, that the cathedrals of England retain more of their old Catholic arrangements and fittings than most of those on the continent: and as regards the fabrics, they have suffered less injury, and have preserved their original character most wonderfully. Architecturally, we must certainly admit that the Anglicans have been good tenants of the old fabrics: we must not test them by the works of preceding centuries, but by the corresponding period; and when we reflect on the debased state of design and art that prevailed, even in those countries which were nominally exclusively Catholic, we may be thankful that our great religious edifices have been so well handed down to our own times, when the recognition of their beauty and grandeur is daily increasing."

The recollection of how differently Mr. Pugin spoke on this subject in a former work, and how greatly his views have changed on other points during his life, should make him more humble and tolerant now. There is little evidence, however, that this is the case: take the following sentence as an evidence to the contrary:—

"It has been most justly said, that there is no legitimate halting-place between [Roman] Catholic doctrine and positive infidelity; and I am quite certain that there is none between a church built on Christian tradition and symbolism and Covent Garden Theatre, with its pit, boxes, and gallery."

And again:—

"It is remarkable what a similarity of feeling against screens is to be found among Puritans and Paganisers."

Mr. Pugin gives four pathetic tales, called "The Calvinist Ambonoclast," "The Pagan Ambonoclast," "The Revolutionary Ambonoclast," and "The Modern Ambonoclast," showing how that an abbé who caused the rood screen in his church to be removed, and

* A Treatise on Chancel Screens and Rood Lofts, their Antiquity, Use, and Symbolic Signification. London: Dolman, 1851.

an iron railing substituted, was afterwards executed by the very man he had employed to take down the rood. On which class of his readers our author expects these to have effect we cannot pretend to say. In the last of them he thus sketches the modern ambonoclast, a character which, he states, was not "seen about in this country previous to the consecration of St. George's Church:"—

"It has been asserted that their first dislike of screens arose from a desire of literary notoriety, and that, finding several old women of both sexes had taken a most unaccountable and inexplicable offence at the ancient division of the chancel, and the restoration of the crucifix, which had been so wisely destroyed in the good old days of Queen Bess, they profited by the occasion to increase the sale of a periodical. But this may be mere calumny; and, indeed, it is very probable that it is a case of pure development, as at first they did not exhibit any repugnance to pointed churches, which they rather lauded, and only took objection to certain upright mullions and painful images; but they speedily developed other propensities and ideas, and latterly have exhibited symptoms almost similar to hydrophobia at the sight, or even mention, of pointed arches or pillars. The principal characteristics of modern ambonoclasts may be summed up as follows:—Great irritability at vertical lines, muntains of screens, or transverse beams and crosses; a perpetual habit of abusing the finest works of Catholic antiquity and art, and exulting in the admiration of everything debased, and modern, and trumpery; an inordinate propensity for candles and candlesticks, which they arrange in every possible variety; they require great excitement in the way of lively, jocular, and amatory tunes at divine service, and exhibit painful distress at the sound of solemn chanting or plain song: at divine worship they require to sit facing the altar, and near the pulpit, and then, if the edifice be somewhat like a fish-market, with a hot-water pipe at their feet, a gas-pipe in the vicinity, and a stove in the rear, they can realise a somewhat Italian atmosphere in cold and cheerless England, and revive some sparks of that devotion that the gloomy vaulting of Westminster and the odious pillars of a new rood screen had well nigh deprived them of."

And our author charitably points out, that they might have caused some serious mischief to Catholic restoration: "but the cloven foot is now so visible, that men are looking out in expectation of the tail, and are already on their guard." We wish others were.

The whole of Mr. Pugin's argument rests on the bodily presence of our Lord in the sacramental bread. Unless this belief be entertained, the whole falls to the ground. The introduction of screens as separations and means of mystification in the churches for the reformed religion, none the less Catholic because termed Protestant, would tend to the restoration of a whole train of errors calculated to keep the mind in bondage and debase the world.

COMPETITION SURVEY OF BRADFORD.—The council of this borough, acting as the local Board of Health, on the 17th instant accepted the tender of Mr. James Waddell, surveyor, Manchester, for the survey and plans of the borough, the amount being 860*l*. The council received thirty-one tenders, varying from 400*l*. to 3,750*l*.—a nice question of profit and loss.

DISCHARGE OF WATER THROUGH PIPES.—The following is a simple practical rule for finding the quantities of water discharged by pipes of different diameter, and under different heads of water deduced from the rules of M. Bossut and others. Multiply the area of the pipe by the square root of the head of water, and that product by 1147.25 for the theoretical quantity, $\frac{2}{3}$ of which will be equal to the actual quantity discharged in imperial gallons per hour.—H.

HOW BIRMINGHAM TREATED ITS VISITORS.

ALL things seem to favour the Great Exhibition: it unquestionably has luck on its side as well as good management, and even the various entertainments which have been given in connection with it have been a series of successes unqualified even by the weather. This was especially the case with the Birmingham *fête* last week: it was an unmitigated success: not a single thing occurred during the whole affair to lessen the pleasure of those engaged in it, notwithstanding that, so far as the London visitors were concerned, it began about seven o'clock in the morning of the 19th and lasted till one in the morning of the 20th. It was no mean achievement to take 300 persons 112 miles, show them all that was to be seen in that wonderful hive of industry, where the busy bees elaborate usefulness and beauty out of rough metals instead of honey out of flowers; to give them breakfast, dinner, and a *soirée*; a little music, and a good deal of speaking, and then to bring them over another 112 miles to their homes again without a disaster or cause for a grumble. Right liberally and well did the people of Birmingham will it, and ably were their views carried out by their worthy mayor, Mr. Lucy. If Shakespeare had been there, who said of the mayor's progenitor, Sir Thomas,—

"Though lucies a dozen he paints in his coat,
His name it shall Lowrie for Lucy be wrote,"
he would have withdrawn his denunciation for the sake of the descendant.

We will not speak of the bustle and breakfast at the station when the train arrived at its destination, or stop to expostulate with the North-Western Railway for want of liberality in their arrangements with the town for the transport, because in the latter case we can scarcely suppose that the directors, when they have been able to think over the unmixt advantage which the Exhibition has been and will be to their company, will refuse to co-operate in the kindly expression on the part of Birmingham. Let us say a word or two of some of the manufactories which were opened to view on the occasion, and to which the visitors, polyglot and pell-mell, rushed off in detachments, each provided with a lucid sketch of the manipulatory processes they might see, written by an intelligent superintendent of one of the principal establishments. Of course there was not time for the same person to see all the manufactories, so each visitor selected the two or three that most interested him. Some went to see the glass-blowing, cutting, and engraving, at the establishments of Messrs. Bacchus, Mr. Harris, or Messrs. Osler; some to the papier-maché works of Messrs. Jennens and Bettridge,* while others went to the workshops of Fox and Henderson. At the glass works some saw for the first time the operation of pressing glass, now much practised, and for which the moulds are formed of cast-iron, and are hinged, in order that the article made may be removed with

* "Papier maché," says the writer of the sketch we have named, "is formed out of a paper of a peculiar kind, which is made to adhere together by a paste composed of glue and other ingredients; the shape of the mould or centre on which it is formed determines the general contour of the tray, caddy, table-top, workbox, or inkstand to be produced. Between the several additional sheets, as they are applied, repeated dryings take place, which in the end results in the production of a light, strong, and anyielding substance, which may be cut with the chisel, filed, or rasped, turned in a lathe, or fitted in the ordinary manner in which timber objects of the same class are: an ordinary varnish is applied in repeated coatings, and a stoving between each; when sufficiently coated, the irregularities are removed with pumice-stone, and the artist introduces his design, if in colour; if pearl is introduced, scales of the required size and form are attached by means of an adhesive substance, and the inequalities filled up with a varnish; when dried, the whole is reduced to a plane by friction with pumice. If ornaments or flowers have to be introduced, they are now done in the ordinary manner with the brush; the whole surface is covered over with a transparent varnish, which, when dry, is polished up with rotten-stone, and the brilliantly-reflective surface produced by rubbing with the palm of the hand. Of the various improvements, that of the introduction of pearl behind glass in connection with papier maché, as also that of imitation gems in the same position, are among the most recent; in the former case, the design is painted on the reverse side of the glass; certain portions with opaque, others with transparent or varnished colour; behind the latter are introduced the laminae of pearl-shell, which shines through by means of its reflective properties, and under certain circumstances it appears well fitted for particular purposes and situations."

greater facility. The operation is this:—A screw press, with solid plunger, corresponding to the interior of the object to be produced, is fitted to the screw. The servitor collects at the end of his rod sufficient glass; he approaches the mould, and drops it therein; the plunger is screwed down, then reversed, and a complete copy of the interior of the mould is the result. This is, however, covered over with a number of minute cracks: these are removed by heating it again, and causing it to rotate, during which a piece of wood traverses the surface, and fuses the whole into an uniform surface of much brilliancy.

At Messrs. Elkington's, the process of electro-metallurgy was explained and demonstrated: by passing a current of electric or magnetic fluid through a solution formed, say, by dissolving an oxide of silver in cyanide of potassium, the metal held in solution is thrown down upon objects suspended in it, which thus become coated with silver. Gold is thrown down with greater rapidity than silver, and if it be desired to gild only partially, portions of the object suspended are covered with a varnish, which prevents adhesion. Thus it is that the investigations and discoveries of the man of science in his closet are brought to bear on the social progress of the masses. The world has often said, "What's the good?" to abstruse mathematical inquiries and minute physical investigations without immediately obvious results, which have ultimately enriched the country, and increased the comfort of all. The thoughtful recluse, abstracted and, it may be, a "bore," develops a principle, and is scarcely thanked; and the bustling practical men of the world apply it, are duly thanked, and, very deservedly, make fortunes.

At Mr. Winfield's establishment for rolled works and brass founding, an incident occurred that gave much pleasure to those who witnessed it. The men engaged there asked leave to present an address to Lord Granville and Mr. Cubitt, who represented the Royal Commission on the occasion: having obtained it, in they came from their work to a new school-room, built by the proprietor for the instruction of the children employed in the works (a large and fitting apartment), and a detachment ascended to the gallery and sang harmoniously and well our loyalty-giving anthem, and some other compositions. They came without changing their dress, and the leader of the choir wielded his baton, like one who felt he was master there, without turning down his shirt-sleeves.

The address was exceedingly well written, and was read by a clerk of twenty-five years' standing with an earnestness and gravity that showed plainly the matter was not to be treated lightly. They said in it to the commissioners—"Our intention in the present instance is to congratulate you in connection with the executive committee upon the success of your labours, to convey to you our admiration of the manner in which you have fought the good fight, overcome indifference, put an end to doubt, and manfully subdued opposition. In tendering this our humble tribute of the estimation in which we hold your efforts, we do so with respect; we know your exertions have been lauded by those with whom we may not for one moment compare ourselves. The Exhibition of 1851 is, however, but one great history of industry, written by labour, on metals, on stone, on clay, on silk, and on cotton, bound up in iron, glass, and timber, and as supplying a page in the volume, we are emboldened to approach you, for in that assemblage of all that is useful, rich, and rare, it is proved that indeed 'all is the gift of industry—rich power.' For the first time the varied skill, talent, and industry of England and Englishmen have been rendered apparent to themselves and to the world; labour has been elevated by collecting together its results; the whole is replete with instruction to this and all succeeding generations; it presents and will present a spectacle unsurpassed in moral grandeur in the history of the universe."

Lord Granville responded to it as it deserved, and took occasion to compliment Mr. Winfield on the mutual good feeling which existed between the employer and the em-

portion of Greek mythology and allegory will apply to our general purposes; and, as far as they are so applicable, they are unimprovable. There is something so exquisite in the conceptions of these ideal and figurative beings, which so beautifully personify the different qualities, physical or moral, that they represent,—their roots are so deep in nature,—that they must ever have a potent spell upon our feelings and imagination. For emblematic illustration, what could be superior to the attributes and emblems of the mythology? The helmet and lance were the symbols of war, and may be such while war continues. The lyre and laurel branch are still appropriate symbols of harmony and fame. The myrtle-branch and the dove were to characterise affection, and may still do so, as the palm branch and wreath may announce victory, and the olive, peace. Though symbols of a vanished creed, do they not belong to humanity? No more natural and beautiful emblem of justice than the equal balance could be conceived; the hoodwink of Impartiality, the veil of Modesty, the bridle of Temperance, are unrivalled in their significant beauty. Festoons, wreaths, garlands, to whatsoever they owe their origin, have been universally received among cultivated nations as representative of certain ideas, and may still be so employed while art shall need them. Symbolism and allegory are a source that has been inadequately drawn upon in modern architecture: yet it is surely an artistic one. The Greek architecture spoke by it, and emblems were invented when ancient art had reached a high point of perfection. The trope and metaphor of poetry and Scripture are used on the same principle,—to illustrate and strengthen the intended idea. What striking morals are conveyed by allegorical persons and things in poetry! The destination of some buildings cannot be distinguished from that of others by an appeal to analogy alone, and therefore a further language is required; and here is one of almost infinite scope, that supplies genius with a boundless field of invention,—a rich and beautiful language, and, withal, a natural one, for we are instinctively prone to allegorise: personification is the natural language of feeling and imagination.

But whatever mode of illustration we adopt, we must not neglect our own national resources. In drawing from British literature and history, and embodying in stone the creations of our poetry, or the great historical personages of our country, we follow the highest ancient examples, and such subjects generally will be more interesting to English hearts than the brightest imaginings of Homer and Hesiod. Thus enriched, we should find no difficulty in characterizing our respective works. The destinations of modern edifices are not too numerous in their variety to be distinguished, when all our resources are drawn upon, and all our unwrought elements organized. The various arts and sciences,—the different virtues, have their respective natural emblems; the Romans deified all the virtues, and gave them their appropriate attributes, or distinguished them by their attire, and such creations we could not improve. The instruments used in the various arts and sciences have been employed on buildings as indications of their devotion to these arts, and they may be still employed with the greatest propriety. We do well to immortalise in stone the fading forms of nature; but artificial forms are often called for, and may not only be useful in expression, but conducive to beauty: many musical and other art instruments are graceful in form, and, while so, they are, though the work of man, also reflections of the work of God.

The representing literally the use of a building by means of sculpture or painting, with a view to rendering the work completely phonetic, good taste, I think, would not sanction: the phonetic quality is not called for or desirable in architecture,—nor are painting and sculpture higher arts than architecture, from being phonetic: if they were, the lowest branch of literature might claim precedence of it. The subject of Paul preaching at Athens, on the façade, or in the pediment of a building, would speak plainly enough of Christian worship; but this mode of expression would be more

prosaic than poetical, and would remind us too much of the significant hat or boot of colossal dimensions, that project into some of our trading streets.

I observed above that one style is better fitted for expressing a given character than another. Now, this peculiar and exclusive fitness for one purpose, eminently characterizes the Gothic or pointed style of architecture, which deserves separate notice here. The Gothic system is not what many of the advocates of the classic styles have asserted it to be,—an incoherent style, unnatural and false in principle, devoid of all harmony and proportions. Nor is it full of inconsistencies and caprices, as contended by others. Inconsistencies and caprices appear only at first sight, and to superficial or prejudiced observers. The great monuments of this style evince the most striking intention of purpose, and a power of expressive grandeur and sublimity in harmony with that purpose, which no other system could have secured. But Gothic architecture, notwithstanding, will never become the universal style. It is only adapted to the expression of qualities analogous to sacred uses, and will be the more sacred in its associations from being exclusively devoted to such uses. The cathedrals and churches erected during the Gothic period were exactly adapted to the Roman Catholic ritual—the form of devotion then in use, to processions and every other ceremony connected with the religious service of the day. Music, for example, was an important part of the service, and the cathedrals were built so as to give the finest effect to music: they were covered interiorly with sculptural and pictorial decoration in harmony with the spirit, and symbolizing the leading points of belief; and like the maze of material beauty in nature speaking also of the eternal splendour and sublimity. There was a completeness of adaptation, a conspiracy for the expression of one idea, perhaps never before or since exhibited. "Then," says Menzel, in his History of Germany, "the pile resounded and spoke, like God from the clouds, from its lofty tower, or alternately sorrowed and rejoiced, like man, in the deep swelling organ: the arts of the founder and musician were each devoted to the service of the Church." The Tudor style is suited to all buildings of a domestic character, but ecclesiastical Gothic, applied to civil or domestic purposes, is out of its natural element, and must present to the eye of taste inconsistency of the grossest kind. It can have no harmony or sympathy with ideas and enterprizes of earth, which it seems to spurn. It speaks not home to men's "every-day business and bosoms." It is all-aspiring, like the flame, heavenward; and finds a solution of its mystery only in the faith that points to worlds

"Far above the clouds and beyond the tomb."

In respect of mere sensuous beauty, it (Gothic architecture) cannot compare with the Greek, which possesses the most exquisite adaptation of form and style to every variety of purpose; but I have spoken of it as regards its vitality and power and truthfulness to its original and peculiar purpose: as regards its application to ecclesiastical uses and power of analogous and symbolical expression, Gothic architecture is a perfect system; it fills a high and holy place in art, to which it is wonderfully, we might almost say divinely, adapted; and I would have it respected like a thing set apart, and which nothing secular should profane.

It must, however, be observed that for general purposes of expression, an architect need not fetter his genius to the particular mode or style of any age or country past or present. Indeed so fettered he cannot give suitable expression: his self-imposed manacles will be among the causes of his failure. On observance of distinct style beauty is not dependant, and an expressive character may be given without it: nay, architecture itself may be conceived of as distinct from style: style is the servant—an useful one—of architecture, but not its master. A building, I apprehend, might be so designed and erected as to exhibit no trace of any style known in the world, and yet be good architecture,—a real work of art. The circumstances of climate and situation under which

an edifice is to be built, and its destined use, may be so peculiar as to dictate a form of structure and style of decoration differing from anything existing; yet an unbiassed attention to such dictation might result in an artistic and meritorious production. It belongs to the very idea of a fine art as distinguished from the mechanical arts, to yield the utmost scope to the inventive faculties throughout; and the remark applies to architecture as far as consistent with the prior demands of utility,—the first law. The critic should therefore be taught to judge of architecture independently of style, and in reference only to philosophical, *i. e.*, abstract architectural principle. We should not consider whether two or more features we would wish to introduce into a design belong to one style, and were employed together in ancient examples; but whether they would naturally harmonize. With all due reverence for Italian architecture, I hesitate not to say, that as a style or system of architectural design, we have nothing to do with it. With its members, its mouldings, as with words, we have to do. We have to resolve it into its original elements, taking due advantage of what Italy or modern design has contributed to the general stock as additional words enriching and swelling the antique languages, for the expression of English ideas. Using it otherwise, might remind one of a tradesman or shopkeeper going to his brother trader instead of the merchant for his goods. We might as well take the French architecture, or the Spanish modification of the classic: the error, different indeed in degree would be the same in kind. Why use a translation when we can read the original? Or go to a derived system when we can have access to the parent source?

But whatever the style, or whether we have style or not, the present purposes of our buildings, be those purposes what they may, must govern the form or plan, which should be precisely what the purpose requires,—adapted to situations and circumstances without reference to the associations of past art, or the requirements of deceased institutions. The signs of language or elements we use, must be employed not in repeating ancient thoughts, and feelings, and purposes, but in clothing the ideas of today with a material form. The purpose or destination is to a building what the subject or fable is to a poem, and like the subject in the poem, this purpose should thrill, as it were, through every part, and beam from every feature. The idea of its design must be conceived in accordance with our English habits and manner of life, customs, worship, &c., according as it is public or private, and that idea of its use or destination must pass like a spirit into the building, and pervade and animate it. Art owns nature and reason, not precedent, for her law-giver: "it is not metre, but a metre-making argument, that makes the poem." Nor is it columns and entablatures, nor arcades and buttresses, that constitute architecture. "For works which are the result of the mere connexion of even beautiful forms," observes a German writer on Art, "would themselves be without all beauty, as that which gives beauty to the whole cannot be form. It is beyond form—it is the essential, the universal, the aspect, and expression of the indwelling spirit of nature."*

S. H.

VIEW OF THE EXHIBITION BUILDING.—A capital view of the transept of the Exhibition Palace, showing the interior, looking north, has been drawn and engraved by Mr. John Sadler.†

KENSINGTON TURNPIKE TOLLS.—A strong feeling of injustice has induced the inhabitants of Kensington to organize an energetic agitation against the numerous turnpike-gates existing within the limits of their parish, mulcting the passers through them, it is said, to the extent of 20,000*l.* a year, while the just proportion due for keeping the metropolitan roads in repair is estimated at less than 2,000*l.* One consequence is said to be that out of every ten houses in the parish one is unoccupied.

* To be continued.
† London: C. and E. Layton.

ON THE DIFFERENT SYSTEMS OF FILTRATION IN USE FOR THE SUPPLY OF LARGE TOWNS.*

Or the impurities existing in water, some are merely held in suspension, while others are in a state of chemical solution; the purification, therefore, which it is desirable to effect, must participate in the nature of the impurities:—that is to say, a theoretically perfect filter should produce both a mechanical and a chemical purification. There are three principal means of obtaining these results,—first, deposition; secondly, re-agents; thirdly, passing the water through the pores of certain substances, or filtration.

1st. *In the purification by deposition*, the whole operation consists in allowing water to flow into large basins, in which it remains a sufficient time to part with any extraneous matter by mere mechanical separation. This is the system most commonly adopted, but it is open to very serious objections. The operation is necessarily very slow, and it therefore requires the construction of very large reservoirs at a great expense. Moreover, if the impurities arise from organic causes, the stagnant state of the water in the reservoirs is the one most calculated to further the progress of their decomposition; and the absorption of the gases, necessary to enable them to pass through the different stages of this change, must seriously affect the quality of the water. Consequently, it rarely happens that water treated in this manner is fit for domestic use.

2nd. *In the purification by re-agents*, the object proposed is to hasten the separation of any heterogeneous substances in suspension, by the use of certain salts, which by a double decomposition with those contained in the water, form other salts of a specific gravity sufficient to allow of their rapid deposition, and of their drawing down with them any other impurities. But as the proportions of the re-agents require to be modified, according to the continual variations in the proportions of the salts in solution, this mode of purification requires great care and skill, and its application upon a large scale becomes the more difficult. Alum has been applied as a reagent with the selenitic waters of Paris. Dr. Clark's process of precipitating the bicarbonate of lime, by the introduction of pure caustic lime (the oxide of calcium), has been applied occasionally in England. Both have answered in laboratory experiments, or upon a small scale; but no system of this kind has yet been largely adopted, and as it is possible to obtain precisely similar results, with greater rapidity, by filtration, that method has been generally adopted.

A very serious objection to the use of this mode of purification is to be found in the fact, that all solutions capable of producing a slight alkaline re-action, are likely to give rise to local concretions of the oxide of iron, thus diminishing the sectional area of the pipes. Solutions, producing on the contrary an acid re-action, do not generate these concretions with the same rapidity, but occasionally even these latter have been observed to interfere seriously with the discharge from the pipes.

3. *In the purification by filtration*, it is desired, as far as possible, to arrest in their passage the mechanical impurities, by causing the water to flow through the interstices of some porous substance; and at the same time, in the best modern filters, such materials are presented, as are capable of re-acting upon the chemical ingredients which the water may contain. The operation of separating substances in suspension is sometimes effected in nature, by the passage of water through the different strata composing the crust of the earth, and advantage has been taken of the porous nature of some stones to convert them once into filters. It is not often, however, that such stones are to be met with, and their use is usually supplied by several layers of sand and gravel, through which the water is allowed to pass: the matters in suspension are arrested in their passage, and if such filters be

properly taken care of, the water flowing from them is tolerably limpid. These artificial filters possess the advantage of being more easily cleansed than the natural filtering stones. Practically, uniformity of flow is one of the most important conditions in the value of a filter; but as it must be exposed to be obstructed in proportion as it retains matters in suspension, it becomes as necessary that a filter should be easily cleansed, as that it should be able to retain extraneous matter.

Only three descriptions of filters have hitherto been extensively used in the supply of large towns, and they are all based, in fact, upon the plan by which the water is made to traverse a considerable thickness of sand, gravel, or comminuted stone, of certain mineralogical nature. As examples we have—

1. The filters used at the Chelsea Water-works.

2. The filters used by Mr. Thom, at Paisley.

3. The filters used by Mr. Thom, at Paisley.

1st. The filters used at the Chelsea Water-works, and at many similar establishments in the country, are thus described by Mr. J. Quick:—"The process of cleansing consists first of a series of reservoirs of subsidence; large open reservoirs, between four and five acres in area, and 13 ft. 6 in. deep, faced with gravel. These reservoirs have an invert of brick, about 6 ft. wide and 3 ft. 6 in. deep, laid in cement. The depositing reservoirs are made to hold four days' supply, and the filters placed by the side of them are composed of—first, coarse gravel, about 1 ft. deep; secondly, a stratum of rough screened gravel, about 9 in. deep; thirdly, a stratum of fine screened gravel, about 6 in. deep; fourthly, fine gravel, 9 in. deep; fifthly, fine washed grey river sand, about 3 feet 6 in. deep. The water permeates these materials, and is drawn off by means of brick tunnels to the well of the pumping engine." Filters of this description yield quantities varying from 75 to 63 gallons per foot superficial, and cost, with working expenses, under the most favourable circumstances, about 2l. 4s. per million gallons. From the nature of the materials through which the water is made to percolate, it must be evident that they can only act upon the water mechanically, by separating matters in suspension.

2nd. The filters used at Nottingham and Toulouse. When the strata in which the subsiding reservoir is intended to be constructed consist of clean sand and gravel, through which water can percolate freely, advantage is taken of this circumstance to effect filtration, by causing the water to flow through it previously to entering the reservoir. At Nottingham, the course adopted by Mr. Hawksley is thus described by himself:—"The reservoir, which lies on the banks of the Trent, is excavated in a natural stratum of clean sand and gravel, through which the water percolates to the distance of 150 feet from the river. The adventitious matter is deposited on the bed of the river, from which it is washed by the action of the stream. Sometimes the water comes down the river exceedingly thick, and discoloured by peat and other vegetable matters; nevertheless filtration through the bed of 150 feet renders it perfectly pellucid. The reservoir being exposed to the action of the sun, vegetation takes place, but it is removed at short intervals by pumping out the water, and using the broom. To prevent the small communications from being choked by the introduction of extraneous substances, the water is drawn through large sieves of fine strainer cloth. In addition to the reservoir there is a filter-tunnel, which passes through a similar stratum for a considerable distance up the adjoining lands: this tunnel is 4 feet in diameter, and half-brick thick, and being laid without mortar or cement, costs only 10s. a foot, including the excavation to a depth of 12 feet."

At Toulouse, the geological nature of the bed of the river was analogous to that at Nottingham, and the course adopted was in principle the same. A trench was cut in the banks of the Garonne to a depth of 12 feet, and a dry brick tunnel was formed about 3 feet high and 2 feet wide in the clear, and covered

with stone: upon this stone a stratum of gravel, carefully washed and screened, of about 2 feet 6 inches deep, was laid, and the remainder of the excavation was refilled with the sand previously extracted. From the tunnel the water is led directly to the well of the pumps, without the intervention of any storage reservoir, and consequently the length of the filtering tunnel is very considerable. The construction of this filter for a town of 40,000 inhabitants, cost about 5,500l. to 6,000l. It is evident that this description of filter can only be applied when the nature of the strata traversed by the stream, from which the supply is derived, is such as to allow the operation of purifying the water to take place easily, and, we may say, naturally. Such is not often the case, because rivers usually hold so much alluvial matters in suspension as to puddle up their course; it is only exceptionally that the bed is formed of a clear bright sand, such as is requisite for the purposes of filtration. The results obtained at Toulouse, however, would appear to prove that if properly executed, a filter of this kind is one of the most economical; for the cost of one million gallons purified in this manner is not more than 1l. 6s., without interest and depreciation.

3rd. The filters used by Mr. Thom at Paisley. These filters differ little from either of those previously named in their real principles of action, although some of the working details display much ingenuity and skilful arrangement. They are described by their author as consisting of a filter bed, divided into three compartments, so arranged, that one may be in process of cleansing whilst the other two are at work. The site of the filters is on a level piece of ground, excavated to a depth of six or eight feet, with impermeable retaining walls and bottom. The whole of this bottom is divided into drains, or spaces, one foot wide and five inches deep, by means of fire bricks laid on edge, and covered with flat tiles of the same material, perforated with small holes like those used in a kiln for drying malt. The perforated tiles are covered to the depth of one inch with clean gravel about $\frac{1}{8}$ in. diameter: this is followed by five other layers of gravel, each of the same depth, and each succeeding layer a little finer than the preceding one, the last being coarse sand. Over this very clean, sharp, fine sand, two feet deep, similar to that used in hour glasses, but a very little coarser, is placed, and about six or eight inches of this fine sand nearest the top, is mixed with animal charcoal. There is a longitudinal filter at the outfall of the drain or pipe connecting the filter and the pure water basin, and on each of the openings between this pipe and the filters there is a stop cock to close the communication when necessary. There are also two drains to carry off the foul waters in cleansing, and others to prevent the water from rising too high in the filter. The head of water is stated to be from one to two feet at most, and the proportion of animal charcoal to sand as about one to ten.

Mr. Thom states that the expense of a filter of this kind would be about 2s. per foot superficial, if applied on the scale, and under the circumstances of the works at Paisley, where a filter of 6,000 feet area is said to have cost 600l. He does not, however, state the cost of maintenance, which must be considerable; because the portion containing the charcoal, precisely the most expensive, is the one most likely, and the most exposed to be choked, and the sum of 600l. seems to be very much below the real cost. The rate of passage of the water is 115 gallons per foot superficial.

In addition to the filters above cited, numerous others of various qualities and merits have been constructed, which, when tried, have yielded equally dissimilar results. Amongst these, the filter patented by M. Maurras has been conspicuously noticed in the report of the Health of Towns' Commission. The principle of the filter is merely that of passing the water through sand of different degrees of fineness, contained in boxes, so as to admit the current alternately upwards and downwards: as no other material than sand is proposed to be employed, the action must be purely mechanical. It is stated that a filter of this

* From a paper by Mr. G. B. Burnell, read at the ordinary Meeting of the Institute of Architects, on the 10th instant.

description of 60 feet area can pass as much as 150,000 gallons per day, or 1,500 gallons per foot superficial, with a 12 ft. 6 in. head; but no immediate reason appears for supposing that the slight difference in the arrangement of the filtering medium in this, and in the old system of horizontal sand beds, can give rise to so vast a difference in the results. The cost of each filter to pass 150,000 gallons per day is about 220*l.*, with an addition of 100*l.* for foundations. To filter 1,000,000 gallons per day would then require an outlay, for this part of the establishment alone, above 2,000*l.*, whilst, upon Mr. Thom's statement, the Paisley filter only cost 870*l.* for that quantity. According to the statement furnished by the patentee, the cost of filtering by Maurras's system is about 1*l.* 3*s.* 4*d.* per million gallons.

Among the domestic filters, Lipscombe's deserves favourable mention. The process adopted is, to pass the water through a series of nine layers of animal charcoal mixed with sand, or some other material, for the purpose of maintaining the porosity. Each layer is about one inch in thickness, and is confined between thin perforated slabs. More satisfactory results would, it appears, be obtained, if the thickness of the filter beds were increased, as their constituents are precisely of the nature best calculated to act both chemically and mechanically. The peculiarities of the apparatus known as Stirling's patent, consist in a series of boxes, or cisterns, so contrived, that the reservoir or pipe by which they are supplied has a head of 2 ft. 6 in. The water enters each filter at the bottom, and after passing through three strata of filtering media, flows off from the top. The filtering materials consist of sand and vitrified limestone; but the patentee, although he states that the water has no decomposing effect upon the latter, appears to regard it as contributing much to the chemical purity of the water.

Within a short period, Messrs. Ransome and Parsons have proposed an application of their filtering stone, which appears likely to satisfy the conditions essential to the success of that operation. The stone itself is an artificial sandstone, whose degree of porosity can be regulated at pleasure. It is obtained by dissolving flint in a caustic alkali, under pressure in a steam boiler. For the purpose of town filters, it is proposed that slabs of this stone, about two inches in thickness, should be substituted for the common tiles used in the other filters. Upon the top of these slabs is next to be placed any medium capable of acting chemically upon the water; indeed, under all circumstances, it is necessary to introduce something between these slabs and the unfiltered water, which may be capable of retaining a portion of the impurities, and of being itself easily removed; but as the principal filtration is performed by the stone, only such a quantity of sand is required as is necessary to retain the grosser matters,—probably from 3 to 6 inches would be sufficient. The top of this sand could be cleared off very easily by a trowel or rake. If it be desired to act chemically upon the water at the same time, the animal charcoal, or the silicates of lime, or of alumina, would be placed under the sand, by which the total thickness would be increased to about 1 foot from the under side of the slabs. The head of water required to work these filters is very small; with 4 feet pressure, the two slabs, covered with 3 inches of sand, have filtered at the rate of 340 gallons per foot superficial per day. The price of the slabs is stated to be 3*s.* per foot superficial; and if the additional works necessary in the construction be also taken into account, the total expense of a filter of this description, calculated to yield one million gallons per day, would not exceed 1,400*l.*

In the course of the conversation which followed, Mr. Donaldson said, the nature of the water supplied must regulate the mode of filtration. Some water contained foreign matters which could be disengaged by mechanical means; but still the water might be of an objectionable nature chemically, and require another operation to purify it. He thought, therefore, that a strict analysis, before filtration, was desirable, because water might

be filtered, and even distilled, and would yet become impure in a few hours afterwards, whereas without those processes it might be preserved pure for many days. With regard to the Government scheme for the water supply of the metropolis, he thought that Government control in any such matter must be condemned, and the undertaking ought to be left to private enterprise and competition, due regard being given to the public interest.

Sir Thomas Deane said, that in the year 1815 he erected a very large tank in the dock-yard at Cork, to afford a rapid supply of water for twenty sail of the line. It contained 5,000 tons of rain water. It was intended to make the tank below the surface, but on excavating it was found that the water would percolate through the limestone; the tank was, therefore, put upon the surface. The water passed through two layers of sand, of different quality, and charcoal, and the water so filtered remained sweet and good after a voyage to the West Indies; longer, indeed, than the water from the best springs. It was covered over and protected from the action of the sun; and after a trial of thirty-five years the water was preferred by naval men to any other supplied to the fleet. The tank was built of mountain limestone; on the ground, which was levelled, a course of brickflat in cement was laid; next a course of brick on edge, in cement; over that a thickness of cement; and then 6-inch limestone flags, well worked on the edges, and set in the best cement. The sides of the tank were of limestone ashlar set in cement, and backed with stock brickwork in cement. The size was 200 feet by 100. It had a story over it for a cooperage, covered with slate. To form the floor of this latter, there were cast-iron columns and girders, on which three and a half inch gauged Yorkshire flags were laid, with cement run into a groove in the edges of the joint.

Mr. Tarring mentioned a plan for filtration, successfully adopted at Willesden, in which the water from a large pond, 9 or 10 feet deep, supplied by the surface drainage and land springs, was conveyed through boxes 2 feet square by 18 inches deep; the first filled with sand and coarse gravel; the second with finer gravel; and the third with charcoal and chalk. At the distance of 50 feet the water was received in a shaft, 9 feet deep and a foot square, from which it was pumped up into the house.

Mr. C. H. Smith adverted to an accidental filter on some land belonging to the Duke of Portland, between Mansfield and Clipstone-park. The thick and turbid water of a canal cut for the purpose of irrigation, was so filtered during its gradual progress over the surface of the meadow which it fertilised, that it appeared again in a channel at the lower edge of the ground, as a bright and transparent stream; all the earthy and other impurities having been mechanically separated from it.

THE GREAT CARTOONS OF BERLIN.

Kaulbach's Frieze of the New Museum.—These most recent conceptions of the masters excite the art-writers of Germany to exultation. The cartoon for the above frieze is either completed or sketched; thought merely fixed down in a bird's-eye view, but from an eagle's height. It is again the well-known world-typifying of Kaulbach; first the myths of India, then the graces of Hellas. Amor shapes the lyre, but the shepherd has anticipated him with the tube of reed. Here the architect, instructed by the beaver. Later the box of Pandora, out of which, amongst other untowards, "war" also takes its origin. Then come groups of enslaved nations. Another side of the frieze begins with the Egyptian myth, making a transition into that of Rome. The wolf follows Ibis. Enslaved nations cringe before victorious Rome. Then appears the cross: the Roman cohorts, heavy-armed, shrink back: the old empire crumbles to pieces. Then comes infatuation (*Verblendung*). Nemesis with a branch of the poison-tree in her hand. The last picture shows a veiled personage—*Futurity!* The figure of Sais again. A peacock, the emblem of vanity, sits beside this veiled representation of our times. Two

slender libellulas vibrating in the air, are approached by a yawning serpent's head. The painters express more than most others might dare otherwise.

Cornelius's Frescoes for the Campo Santo.—The Campo Santo, the royal cemetery, will be erected near the Cathedral (Dom) of Berlin. Its four walls have a length of 180 feet each. On the first and second are represented the life and deeds of the Saviour; on the third those of the apostles—their speaking with the tongues of the spirit. The fourth wall, here also, is destined for the myth of futurity. Each wall will have five principal paintings above each an appropriate medallion. Beneath the great pictures runs a frieze, representing the works of Christian charity. Of the five paintings of each wall, that in the middle is the principal one, those on the sides representing a figure or group of a more plastic character, some of them being representations of the blessings mentioned in the "Sermon on the mount." The main picture of the fourth wall represents "The Last Judgment." On the right "The Fall of the Evil Ones." All demons and dark powers are striving here—evil break upon Babel. Over it, in the medallion—Hail on high! who, gloomily and hesitatingly still ordains accomplishment—the unavoidable Quiet, elevation, and simplicity tower over these conceptions,—a quiet most seizing and absorbing. The second side's picture of the fourth wall represents the four horsemen of the Apocalypse, whose hoofs rage over the nations, trampling down everything. Underneath are the people writhing in despair. A gigantic stir and impulse pervades these delineations. The medallion above represents the avenging angels, who pour out the cups of wrath, even into the sun, which becomes eclipsed. The cartoons of the four raging horsemen were completed by Cornelius a Rome some years ago, and all has been as he foresaw. He said lately to a friend (*Emm. Niendorf*)—"All this must break over the nations, that they become purified."

"SHALL WE KEEP THE CRYSTAL PALACE?"

An able, and it appears a well known though anonymous, writer, under the title of *Denarius*, formally puts this question to the public vote in a brochure wherein he himself pleads strongly in the affirmative. "Shall we keep the Crystal Palace, and have riding and walking in all weathers among flower-fountains, and sculpture?" That is the taking, title of the pamphlet, and in itself it deprecates all denial. And although it would be a fine idea certainly that so extraordinary an edifice should perish with the unparalleled object it carry out which it was called into existence, and thus in history be indissolubly and exclusively associated with that object alone, knowing no decay or disaster, still we should deeply regret that a building so great and so capable of useful appropriation, either as winter garden, as first suggested in our columns indeed, or otherwise, even as a mere sheltered riding-ground, should at once be cleared away.

Denarius calculates that an annual revenue of 14,000*l.*, on a moderate estimate, would be realised by small charges of admission, such as one penny each for foot, and one shilling each for equestrian, promenaders, and would be quite sufficient to keep the edifice in repair. Occasionally, he suggests, there might be fêtes, horticultural, floral, agricultural, &c. others, during which higher rates might be charged. The maintenance of the building, moreover, would secure the establishment of similar exhibitions for the future; and he reminds us that there will be a surplus in the hands of the Exhibition Commissioners of about 140,000*l.* at the close of the present Exhibition. At the same time he warns the public, that, unless they make their wishes on the subject known most emphatically before the close of the present session, "The Chief Commissioner of Woods holds the warrant (for its removal), and when we remember the firmness with which he exacts as a public guardian, the scrupulous observance

of every form connected with the use of the site, no hopes can be entertained that he will not insist on the speedy and immediate execution of the sentence of removal." We fully concur in the recommended application.

NOTES IN THE PROVINCES.

Devonport.—St. James's Church, Morice Town, was consecrated on Wednesday week. The foundation-stone was laid on 26th July, 1849. The building, which was designed by, and has been erected under the superintendence of, Mr. J. P. St. Aubyn, of Fumival's-inn, architect, is in the decorated style, and consists of a nave, chancel, and side aisles, with tower and spire at the south-western angle. Its length, including chancel, is 116 feet; breadth, 57 feet; affording accommodation to 720 adults and 364 children. The tower and spire are 150 feet high. The windows are of bath stone. All the external designs and quoins are in Bath stone, and the walls of rubble lime stone. The clerestory walls have been constructed on a double tier of richly moulded arches and columns. The roof, of fir, is an open one: the timbers have been stained and varnished, to imitate oak. It is boarded and covered with slate. The flooring of the aisles and chancel is formed of Heywood's 6-inch black and red tile. The contractors were Messrs. May. This is the second newly-erected church within the borough of Devonport consecrated during the last three months, and a third is in course of erection in the south-western portion of the town, the sites for all which, together with that for a proposed fourth building in the south-eastern district, have been presented by the trustees of Sir John St. Aubyn, Bart.

Portsmouth.—St. Jude's Church, near Southsea Common, was consecrated week before last. The church is of flint, with a tower and a light spire. It has been erected at nearly the sole expense of Mr. J. E. Owen.

Maidstone.—The County Assembly Rooms are in the market for sale next month. The propriety of purchasing them in order to convert them into club chambers for the middling classes, or a model lodging-house for the poor, has been suggested. Either speculation, if conducted with spirit and liberality, would probably be remunerative.—A monument has just been erected in the parish church of All Saints, to the memory of Lieut.-Col. Havelock, of the 14th Light Dragoons, and some of his comrades, non-commissioned officers, and privates, who were killed in the campaign of the Punjab. It is of white marble, in an arch of Caen stone, resting on a base of same material, it was executed by Westmacott.

Lamborne Woodlands.—The Maidstone Gazette states that in consequence of the dilapidated and very insecure state of the church of Lamborne Woodlands, it has been found necessary to erect a new church, and to shore up the old one for present use. In this emergency the foundation-stone of a new church (to bear the name of St. Mary the Virgin) was laid on the 27th ult. The church is to be middle pointed, and will consist of a nave, chancel, north aisle, an octagonal bell turret surmounted by stone spire, a south porch, and a vestry. The dimensions are—length of the nave, 45 feet; width, 18 feet; aisle, length, 45 feet, width, 8 feet; chancel, 28 feet long by 15 feet wide; height to ridge of roof, 34 feet, and to top of bell turret, 54 feet. It is calculated to hold 220 persons. The materials are faced flint, with Bath stone dressings. Mr. Talbot Bury, of Welbeck-street, London, was the architect.

Great Grimsby.—A railway hotel has lately been completed for the Earl of Yarborough at Great Grimsby, in Lincolnshire. The building is in the Italian style; the fronts are of red brickwork, relieved by moulded white brick window dressings, strings, cornices, and quoins. The hotel contains a large coffee-room, commercial and smoking rooms, five additional sitting-rooms, thirty-eight bed-rooms, kitchens, &c. The coals are lifted by machinery to the upper floors: an artesian well supplies abundance of water. The cost of the whole building was 6,500*l.*, which sum includes grates, bell-hanging, and chimney-pieces. The

architects were Messrs. A. and G. Williams, of Liverpool. The hotel has been taken by Mr. Longhurst, of London.

Brooklesby Hall.—The Earl of Yarborough has lately added a conservatory, 60 feet long, to Brooklesby Hall, his seat in Lincolnshire. The facade is of stone, in accordance with the character of the house: the sashes are glazed with plate glass: the floor is of encaustic tiles and diamond flagging; the interior is heated by hot-water pipes. The building cost 1,200*l.* and was erected from the designs of the last-named architects.

Sherborne.—An examination of the tower of Sherborne Church has been made by the architect, Mr. Carpenter, with Mr. Grimsdell, builder, recommended by Mr. Peto, M.P. The tower, it is said, was found to be in a deplorable state, and trusses were at once ordered to be put up under each of the arches. After the timbers are erected, a more minute examination will be made by Mr. Grimsdell, whose report will decide the future proceedings of the committee.

Weymouth.—The Esplanade is being extended to the end of Greenhill, and it is intended to complete it this summer. The breakwater advances 1,200 tons a-day. The staging has been carried out 1,150 feet from the shore, and the deposit of stone about 1,100 feet. There are 800 convicts employed in the labour of getting the stone out of the quarries and placing it upon the railroad formed for its conveyance down to the breakwater. Michell's pile system is introduced.

Stafford.—For the enlargement of the county gaol there were six tenders: that of Messrs. A. and G. Holme, of Liverpool, was accepted: amount, 13,628*l.* The works have already been commenced. The building is to be covered in by Christmas, and ready for occupation by 1st June, 1852.

Wolverhampton.—The council have resolved "That the Markets' Committee be authorised to accept the tenders of Messrs. Lilley for the builders' week of the New Market-hall, at 6,966*l.*; and that of Mr. Hayward for the ironwork, at 1,849*l.*; and that the committee be authorised to carry out the same in accordance with the plans of Mr. G. T. Robinson."

Liverpool.—A dispute exists between the Liverpool cabinet-makers and the men in their employ, as to the number of hours per week which the latter should work—the men contending that sixty hours are ample, and the masters wanting one or two more. The masters, it is said, have combined to resist the demands of the men, and the workmen in two extensive workshops have left their employment, and in most of the other establishments notice was lately given to the men employed to leave their work.—"Smoke can be consumed," says the *Liverpool Times*.—At the meeting of the Health Committee, on Thursday week, a lengthy report was read from Mr. Perkes, engineer, in regard to the consumption of smoke. Mr. Perkes said that, in compliance with the request of the late stipendiary magistrate, he had made various inquiries throughout the country, had inspected marine and land engines in the principal parts of the kingdom, and the facts which he had gained were sufficient to show that the evil could be cured, while the proprietors of the chimneys would be considerable gainers, and the public saved from a most vexatious nuisance. He alluded particularly to an apparatus now in operation in Manchester, in one of the largest twist-mills in that town, and which succeeded perfectly in consuming the smoke. The principle consisted mainly in the presence of two furnaces, the smoke being disposed of by alternate firing. This was the best adaptation he had seen for land engines, while for marine purposes he recommended an apparatus like that on board the Thames steamer *Ariel*. It was arranged that a deputation should visit Manchester, to inspect the apparatus first alluded to, before adopting it at the Pighead Baths.

Lynn.—The building mania seems to be raging just now at Lynn. Every vacant piece of ground is eagerly seized on and covered with houses, and although great numbers remain unlet, there seems to be no abatement in the energy with which fresh ones are erected.

It is said that, with those in course of building, there are not fewer than 400 empty houses in Lynn.

Hulme (Manchester).—The foundation stone of a new church was laid here on Monday week. The plans have been designed by Mr. G. H. Shellard, of Manchester, architect, in the perpendicular Gothic style. The exterior of the walls is to be entirely of stone. The dimensions of the nave will be 70 ft. by 50 ft. 9 in., and 46 ft. in height; and those of the chancel 20 ft. 6 in. by 23 ft. The nave will be separated from the side aisles by five arches on each side, which will support the roof of the galleries. There will be galleries on the north and south sides, and at the west end. The ground floor and these galleries together will afford accommodation for 1,010 persons, and of this 572 sittings have been set apart as free. At the west end there will be a square tower, 21 ft. by 21 ft. and 34 ft. in height. This tower will be quite plain, having buttresses at the corners and battlements at the top, but without pinnacles. The north side, or front of the edifice, will face City-road, and will be pierced with five large traceried and mullioned windows between buttresses. The clerestory of the nave will be filled with five smaller windows of corresponding character. The east end of the chancel will be filled up with a large window, divided by four mullions, with enriched traceried head of characteristic form. The walls are throughout finished with a plain parapet and moulded cornice. The clerestory is supported upon four polished stone pillars on each side, with moulded arches, separating the nave and aisles. The roofs will be open, the trusses and ribs ornamented with traceried panels. The gallery fronts, and the doors, roofs, pews, and other woodwork, will be stained dark, to imitate old oak.

Boroughbridge.—The foundation stone of a new church was laid here on 12th inst. The proposed church will be middle-pointed, and will contain accommodation for about 505, 346 free. The estimated cost, including burial ground and site for parsonage, amounts to 2,100*l.*, of which 1,624*l.* has been raised by voluntary subscriptions, including a grant of 180*l.* by the London Incorporated Society. Messrs. Mallinson and Healy, of Bradford, are the architects; and Messrs. Freeman and Gatenby the contractors.

Graham.—At a meeting of the gas company here lately, it was stated that since the present price (7*s.* 6*d.*) was fixed, the dividends have generally been seven per cent., and that the consumption of gas is on the increase, so that it was proposed to lower the price, and extend the works. An extension of the works was agreed on.

Carlisle.—A few days ago, says the local *Journal*, the workmen engaged in excavating the foundations of a new house now being erected by Miss Carruthers, of Stanwix, discovered two ancient walled wells, much worn with use, about seven feet below the surface. They were filled up with rubbish, and covered over with troughs. A quantity of red and buff-coloured Roman pottery, two corn grindstones, and an iron spear head were turned up. The grindstones are formed of a black porous substance resembling slag, and are evidently of artificial composition—probably brought by the soldiers from Italy. Another well, in which were found some coins and a beautiful blue cameo set in silver, was discovered when the foundation of Mr. Farrar's house was laid—making three wells within the space of 40 feet. Their site, it may be explained, is close to one of the principal stations on the Roman wall.

Glasgow.—A public meeting was held on Monday week in the Burgh Court Hall Anderson, for the purpose of taking steps towards the establishment of public baths in the district. A committee was appointed to carry, if possible, into immediate effect, the unanimous resolutions adopted in favour of the project. A working man in the meeting took an opportunity of explaining that the funds formerly subscribed for public baths in Glasgow were lying in the bank unapplied, and stated his belief that some portion of them might be obtained to aid in the erection of the

Anderston baths. The whole expense is estimated not to exceed 150*l*.

Miscellaneous.—Messrs. Taylor and Son, bell-founders, Loughborough, have received an order to take down and recast the fifteen bells in the tower of the Royal Exchange, London. —Lord Ward has accepted the presidency of the Worcester School of Design. —The new workhouse for Merthyr is, we hear, at last contracted for by Messrs. Thomas and Norris, of Cardiff. —The Belfast Gas Company have laid down mains in Victoria-street and Corporation-street, to meet the wants of that rapidly-extending portion of Belfast. —It is proposed to erect a new public building at Haslingden. —The first stone of a new school-house, at Hiltop, Lingard's, chapelry of Slaithwaite, near Huddersfield, was laid on Whit-Tuesday: it is intended to accommodate 200 children. —The contract for the erection of gas works at Droydsden has been let to Mr. Stephen Moore, of Manchester, for 392*l*.; and that for gasometer, retorts, and other iron work, to Mr. Glasgow, of Manchester, for 500*l*. —A new parish school was opened at Falkland (N. B.) on Thursday week. —It is stated that a large number of the best and most experienced of the men employed in the extensive slate-quarries in North Wales are preparing to emigrate, during the ensuing summer, to the United States. The rate of payment in the American quarries, it is said, is nearly three times greater than the amount which can be realised in the Welsh workings. Several instances have recently occurred where men who left their native land deeply involved in debt have been enabled to remit the amount of their debts in full.

LIGHTING THE STAGE.—NEW THEATRE IN PARIS.

The seeds sown by *THE BUILDER* germinate.

A singular edifice has silently sprung up in one of the least frequented streets in Paris, and is thus described by *Galignani*:—"It is a large theatre, externally in the Ionic style, capable of containing 3,000 persons. The portion of the house intended for the public is a large elliptical vaulted hall, 126 feet by 66 in surface, and about 55 in altitude, with a ground floor, gallery, and two upper ones, for spectators. The stage, situated in a semi-circular recess at the extremity of the transverse axis, encroaches upon the pit in a circular curve, so that the whole stage may be said to form a circle. The orchestra, instead of being placed between the spectators and the actors, is situated in the upper portion of the recess aforesaid, and is invisible to the public, though visible to the director of the band, who is seated in front of the stage, where the prompter generally sits. Besides this band, a second one, equally invisible to the public, may occupy a circular gallery surmounting the lustre, accessible by a winding staircase descending between iron bars from the vaulted ceiling of the house in the boldest way imaginable. This second orchestra is calculated to produce singular acoustic effects, hitherto unknown to the musical and theatrical world.

The stage is raised 6 feet above the pit: the space allotted to representation is 30 feet broad and 48 feet deep. But the most singular part of M. Barthélemy's contrivances consists in his curtains and back scenes, which, owing to the form adopted for the stage, are curvilinear also; notwithstanding which, by means of cylinders of a peculiar construction, they are made to rise or drop as if they were flat. He has, moreover, introduced transparent as well as opaque scenes, so that extraordinary effects of perspective and distance are produced by different strata of gauze intercepting the view. Vertical as well as horizontal cylinders are used; and the powerful illusions created by the simultaneous rolling and unrolling of partly opaque and partly transparent scenery leave those of ordinary theatres far behind. These contrivances have, of course, called for important modifications in the system of lighting both the house and the stage. There are no footlights, and the whole space is illuminated from above by an ingenious combi-

TOMB OVER A GATEWAY AT VERONA.



nation of reflectors. The house is, besides, so constructed that theatrical representations may be given by the sole aid of daylight, transmitted through panes of coloured glass."

By reference to Vol. V. of *THE BUILDER*, p. 281, article on "Scenery and Decoration of Theatres—Lighting the Stage," it will be found that the idea of lighting the stage exclusively from above was suggested by ourselves in 1847, on the basis of experiments actually and successfully made some years before in a provincial theatre in Scotland; and that the substitution of dioramic for ordinary scenery formed part of the entire scheme. Since, an improved mode of lighting was tried in Her Majesty's Theatre with brilliant effect and success, by aid of the electric light, as we noted at the time.

FRENCH PLAYS.—Madlle. Rachel, at the St. James's Theatre, is delighting every lover of fine acting. For purity and elevation of style, high finish, and power of expressing the most subtle emotions, this great actress stands alone.

WILD ESTIMATING.—Will you do me the favour to insert in *THE BUILDER* the following amounts of tenders received for finishing eight houses, in Hammersmith, New-road, for Mr. J. A. Jones:—

Cooper and Bottomly	£898	0	0
Emming and Wilson	791	10	0
Brittain	673	17	0
Cowland	650	0	0
Jacob	649	0	0
Gell	470	0	0

—JOHN THOMAS, Surveyor to the works.

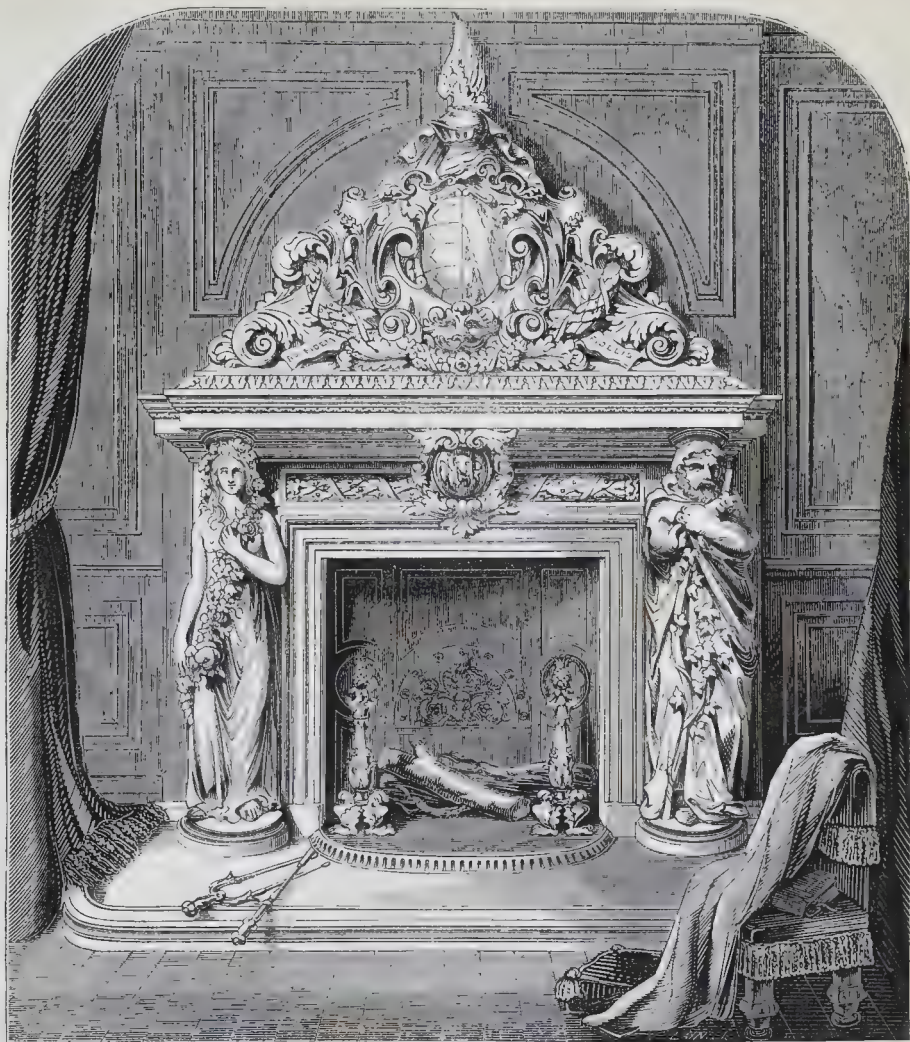
TOMB OF GUGLIELMO DI CASTELBARCO, VERONA.

ANNEXED is a view of the tomb of Guglielmo di Castelbarco, which is constructed over a gateway beside the Church of S. Anastasia, in Verona. It has considerable elegance, and, as a piece of masonry, is very remarkable. It is ascribed to the year of our Lord 1234.

METROPOLITAN BUILDINGS BILL AND THE INSTITUTE OF ARCHITECTS.

It will be remembered that when this Bill was before Parliament, a deputation from the Institute of British Architects waited upon Lord Seymour, to explain the views of a committee of that body, as embodied in a report. His lordship received the deputation courteously, and, in order to fortify himself with opinions on the subject, suggested that a general meeting of the members should be held, to consider further that report, preparatory to the introduction of a fresh amended Bill. On Thursday, 19th, a special general meeting was held at the rooms of the institute; but, although a circular had been sent to every member, and ample notice given, there were not twenty members present. Mr. Hardwick, R.A., took the chair, and the meeting proceeded to discuss the committee's report, and the proposed alterations in the Bill, section by section. The intended court of summary jurisdiction met with general approval, as a great improvement on the present system; and there was an animated discussion on the question, whether it was expedient that the presiding judge should be a barrister, with an

CARVED CHIMNEY-PIECE FROM SOMERLEYTON HALL.



CARVED CHIMNEY-PIECE AT SOMERLEYTON HALL.

IN our account of Mr. Peto's residence, Somerleyton Hall,* we mentioned the carved stone chimney-piece in the dining-hall, and promised a view of it. This we now give. It was designed and executed by Mr. John Thomas, and includes two figures personifying Summer and Winter.

PARIS.

A STRANGE accident has occurred in the Quartier de Montmartre, not one of the meanest of the French capital. A journeyman had imprudently thrown the match for lighting his cigar in the drain of a commodity situate in the fourth story of the house, and the quantity of the pestilential gas there congregated was so great that an explosion ensued which shattered the drain to pieces and wounded the man. Future ages will not believe, that a sensible race of men could have lived in dwellings thus circumstanced.

* See p. 355.

—It is proposed to erect on the space lately cleared between the Tuilleries and the Louvre a new district of houses built after an uniform plan, with a wide central street, affording a perspective view of the two monuments, whose axes, however, are not in a straight line. The example of Brussels is cited, where Government created a new district around the park in clearing the spot of cumbersome buildings and laying down a clear plan for the new construction. In Paris a similar experiment has been tried of late with the vast extent of the Boulevard Beaumarchais, and has been equally successful. But in thus strengthening (architecturally) the positive pole of social life, the other extremity, the dwellings of the poor, claim attention, lest a disturbance of polarity might ensue.

—There exists in the vast collection of the "Conservatoire des Arts et Métiers," in Paris, a very heavy and cumbersome carriage with three wheels, on which an equally heavy boiler is placed, which, by the means of a piston moved by coarse machinery, moves the fore-wheel and puts the curicle into motion. This machine, destined to drive on the ordinary

architect as his assessor, or *vice versa*. The committee had left that question open, but a motion being made by Mr. Fowler, in favour of a legal officer, seconded by Mr. Mayhew, it was supported by several members, who pointed out what they thought the advantages to be derived from such an arrangement. An amendment was proposed by Mr. Roberts, to the effect that the report should be left as it originally stood, without pledging the Institute to either view; but on being put to the vote the original motion was carried by six votes to three. The general principle of relieving the district surveyors from responsibility as to the internal construction of private buildings, leaving that responsibility with the parties employed in their construction, was unanimously affirmed; as also was that part of the report which deprecated any change in the mode of appointing the surveyors. The report, indeed, was adopted with few essential alterations. The parties present did not separate till half-past eleven o'clock.

The meeting cannot be construed as representing the profession.

road, has been constructed at the cost of the Duc de Choiseul, by the French engineer, M. Cugnot, in 1770. It is moreover asserted, that this machine was put to work at the Arsenal of Paris, and acquired such an impetus, that it had run down one of the walls of that establishment. As the conservator of the above collection, Colonel Mornin is preparing the catalogue: he has found several documents, interesting for elucidating the history of steam power in France: one of these documents states that it was a Swiss officer, M. Planta, who first submitted the discovery to Choiseul. At any rate, a practical experiment on steam power is thus vindicated for France, and the press of that country are of opinion, that if the nation had not been taken up by wars and revolutions, it would have been on French roads that steam would have been first put in action.

RAILWAY JOTTINGS.

The electric light has been tried at the station of the London and North-Western Railway at Lime-street, Liverpool. The other lights were all put out, and a small electric machine is said to have sufficiently illuminated the whole station.—The plant of the Great Northern is said to be at length definitively fixed to be at Doncaster. Plans for the extensive buildings in connection with it are to be out immediately. At least 500 men and 200 boys will be employed in the plant. This same plant was promised to the citizens of Lincoln, it appears, as an inducement for them to support the Great Northern in preference to the Cambridge and Lincoln line.—On Whit Monday, at the Euston-square terminus, there were as many as twenty excursionist trains from the various towns and largely populated districts on the main and branch lines from Oxford, Northampton, Rugby, Birmingham, Wolverhampton, Manchester, and Liverpool. The fare for a third class with a return ticket from Liverpool was 20s., considerably more than single fare, as usual in so many excursions by rail. The fares on shorter trips were proportionate. On the Great Western the Exhibition trains were well filled. Early in the day a heavy one arrived from Bristol and Bath, the passengers being charged but 6s. for the double journey. The Great Northern brought up a fair portion of visitors from Yorkshire and more northern districts, London being reached from York with a return ticket for 18s. 6d. third class. By the Eastern Counties line, trains from Colchester, Peterborough, Ely, Norwich, and Yarmouth, brought several thousands to the metropolis. The inhabitants of Dover, Ramsgate, and other towns reached by the South-Eastern line.—Since the introduction of railways, an influx of visitors such as that from this late whitsuntide was never witnessed; although it is evident that the fear of a still greater influx prevented the rush of thousands more, who will spread their excursion visits over the course of the whole summer, in a leisurely but continuous stream, turned off or on just as the directing turncocks who fix excursion fares put on the screw, more or less, in the vain hope of increased benefit by a diminished stream, or in the hope, less vain, of increased benefit by a contrary process.—The facilities for travelling offered at this season by the Eastern Counties Company, in the way of special trains and return tickets, may be gathered from the fact that third-class return-tickets, at Parliamentary fares, are issued by every Saturday evening's mail-train from London, available for the return journey by the up-mail on Sunday night, or the first train on Monday morning; that first and second-class return-tickets to London are available by any train up to the Saturday night following the day of issue; special trains every Monday morning (at very low fares), due in London about noon, tickets available for the return journey by 7 a. m. train any day up to and including the following Sunday; special trains provided for clubs guaranteeing 250 passengers; first and second class return-tickets for London, available for the down mail-train only of the same day, issued

on Tuesdays, Thursdays, and Saturdays, at reduced rates; tickets for Yarmouth and Lowestoft issued at single fare every Friday, Saturday, and Sunday, available for return journey by any train up to and including the following Thursday. The foregoing are exclusive of various arrangements on the local branches, and also of the excursion train to Cambridge every Sunday.

ENGLISH AND FOREIGN FURNITURE IN THE EXHIBITION.

THE *Times*, of last week, in taking a survey of the furniture department in the Crystal Palace, and drawing a comparison between Foreign and British articles, with a kind parental feeling advises our upholsterers to study the productions of the former, because of their superior artistic and utilitarian qualities. Now, as this advice is, no doubt, meant as much for the artist whom the manufacturer employs, as the manufacturer, and, as I am somewhat connected with them, I am very anxious to profit by these very good-natured suggestions; for I need not tell you that artists have never done studying, and that therefore I am very willing to learn. But it happens that the *Times* directly afterwards, and in its usual masterly style, cuts the Austrian furniture all to pieces—the bed never could be slept in, the chairs are almost immovable, and under the tables it would be impossible to smuggle one's legs: the bookcase is a cathedral in miniature; and thus severely criticising these contributions, unfortunately concludes without giving our countrymen the slightest idea where to direct their eager steps to find those excellent studies which the critic considers them to stand so much in need of. Under these circumstances I address myself to you as an acknowledged friend to the manufacturer and artist, if possible to assist them. The Austrian furniture having been, when the Exhibition first opened, set down as the very best thing the Continent contributed, but proving now, according to the *Times*, unworthy of imitation, leaves nothing but the specimens from other states as worthy examples—so one must naturally conclude;—but as the lion of the exposition has turned out such a distorted creature, what can be expected from the remaining feline tribe?—nothing at all! With the exception of the sideboard from Paris, to hold which, in this country, it would be necessary to build a house expressly, and which does not at all agree with utilitarian principles, although in other respects a most creditable production; or, with the exception of some cabinets, with exceedingly minute detail, and with exquisite ivory carvings, and one or two things from Russia, there is not a foreign article of the description in question that could give our upholsterers a single new idea, or help to raise the mind of the artist or artisan employed by them. It is a fact of which the public at large is becoming daily more sensible, that the British furniture department is infinitely more elegant than the foreign. The English are full a generation in advance of the German States, as far as elegance, variety of design, and regard for the great principle which enjoins the greatest possible effect with the least possible labour is concerned. It is true that we have our share of monstrosities conjointly with the Prussians, the Wurtenbergers, and the Swiss, for which it is impossible to apologize; but, upon the whole, the English upholsterers have made extraordinary advances within these twenty or thirty years, which the present Exposition is calculated to prove to all those who can remember the character of household furniture of a previous time. Stove-makers come out well, too, and will soon be equal to the French in whatever these may yet be superior.

No other party having taken up the subject, which is really a serious one, considering the quantity of household furniture brought over and sold to the nobility and gentry, I have reluctantly clutched the gauntlet; but, sir, it is scarcely, earnestly speaking, a question for an artist; for, in most instances, manufacturers derive their designs from carvers, working cabinet makers, ditto upholsterers, ditto chair-

makers, and from all sorts of persons who have dabbled in drawing; or when the educated artist is employed he has the mortification of having his design murdered by injudicious alterations, through a disregard of his superintendence—or in consequence of the lowest estimate for executing the parts determining the workman, regardless of requisite abilities. Better times, I trust, are coming, to which the Grand Exhibition of the Industry of all Nations will not a little conduce—but we must wait a little longer. Aesthetic education must make itself felt with the master, as it will certainly do with the working man.

H. WHITAKER.

ANOTHER VIEW OF COMPETITIONS.

THINKING that some things, though very distressing, ought to be discussed, a professional man who attended at the meeting in Lyon's Inn Hall would be glad to know why competition for Architecture and Sculpture should be good and right, but not even be thought of for Divinity, Law, Medicine, and hardly ever in Music, Painting, or Literature. Taking the view that it is a system destructive to the practitioner in a pecuniary point of view, it is no doubt patriotic in him to respond to invitations for public works; but this observation does not answer the question quite avoided by the meeting, which seemed to consider that competing was an "acted fact," and beyond recall; and that it had only to settle the best mode of regulating it.

But this is contrary to reason, which is supposed, when evil effects are perceived, to ascend to their cause, to determine if it be right or wrong, and, if right, to point out how and in what manner it fails to produce proper results. Admitting, however, that competing may be a duty (which the writer wishes to have shown to himself and to the public), it does not follow that the present mode of competition is right: it is agreed to be a very bad one; and it is proposed to induce all practitioners to abide by a code of regulations for its improvement. This step is futile, in the writer's opinion, as he knows of two men, of high repute, who are in the habit of declaring that they will hesitate at nothing to secure new connections, and that they despise "professional etiquette." While these men are capable of disregarding the "code of regulations," the writer will not only follow their example, but endeavour to induce his friends to imitate it. Nothing can stop such people but their pecuniary inexpediency, or a sure punishment: no court can be instituted to take cognizance of it; and, as to opinion, the writer begs to ask if those men who have succeeded, by the practices now denounced, are not quite as well, or better received, than their purer and less fortunate brethren: this cannot be denied. The pecuniary inexpediency of such practices can only arise from the wariness and good faith of the committees who act as judges.

Now the questions of the institute, &c., addressed to the committees, are useless: on the one hand, no person out of the profession can draw up a satisfactory programme: no secretary of a committee will take responsibility upon himself: no committee can be brought to account. On the other hand, the chairman's usual professional adviser will have immense advantages, equivalent to extra time for executing the drawings dependant upon a scheme completely fulfilling his master's wants, and matured a week before any other competitor can possibly know those details whose consideration has been equivalent to an active canvas by a man already favourably known.

Supposing the architects to keep the code strictly and honourably, what is to be the guarantee for the justice of the committee? Supposing that a committee, without any reservation, advertises the execution of the work as the first premium, or as the only one, and chooses to say to the lucky competitor, we really do not like to trust you, and will not employ you; there is no remedy for him, and his labour returns to him as trash; for his ideas have been promulgated at a public ex-

hibition, and are public property: that is an unforeseen consequence of the code: they may throw him aside, and erect his design without remunerating him in any way: this I have seen done, and have heard of more being done. Did no committee resign, to allow itself to begin *de novo*?

A reliance on the good faith of the committee is one of the most extraordinary instances of a delusion affecting a peculiar class of people that is to be witnessed at this day; for not only does the mass of mankind repudiate it, but the very victims never believe in the faith of any committee of which even they themselves form a part. It is all very well to require the committee to take a professional opinion; but if it be not binding on the committee, it is useless: if binding on the committee, the judge must be indicated beforehand, and his relations or pupils, if allowed to compete, prepared for disappointment. Yet, will a professional opinion be satisfactory? Certainly not; and this brings me to a consideration of some curious points.

What right has Mr. A. of London, the judge, to say that Mr. B. of Edinburgh, cannot execute his design for 10,000*l.*, and so exclude it from consideration? Are there no examples of contracts properly carried out at ten, fifteen, twenty, and even more, per cent. off a surveyor's estimate? Perhaps Mr. B. has a friend who wishes to give him a start, and will be content with no profit on a work (this is a case which has happened); or one builder wishes to enter the connection of a neighbourhood new to him, and will take, knowingly, work at a loss as an advertisement. Is the judge to deprive the committee of this fair commercial advantage? or is a competitor not entitled to calculate upon the advantages of the contract system, as exemplified in "wide estimating?" It has recently been proposed, and warmly urged, that during public exhibition before and after adjudication, the names of the competitors, especially in local competitions, should be openly avowed: then canvassing can never be prevented; for if a professional man will not break the new "etiquette," his wife or his sister may speak, as many ladies do, with more fascination and total impunity: a man is not responsible for his friends' interest in him, even if he avail himself of their bribery and corruption.

After all, a decision by the competitors themselves is the best and quickest; but the difficulty generally started is that of sending the drawings to London: this is nothing; for, if submitted to eminent men, they would make the same demand as a matter of economy to their employers.

If the "code of regulations" be adopted and observed by the profession, how many new men will quietly commence their practice by helping those committees which will not acknowledge the proposed system? men of no knowledge, theoretical or practical; or simply builders who have bought the brains of an architect's pupil (Nash is not without comparison); and if a very few "total failures" in public works occur, the existing race of architects observing the code will catch the benefit of all the blame. Already no architect is fit to build a bridge of ten feet in span; but if an engineer should let it fall he is not troubled about it. If the code be not adopted, the movement is as useless as that of 1839. But would it not be more successful to push the matter *ad absurdum*, by agreeing in the propriety of canvassing, of false but showy drawings, of guess-estimating, and total non-responsibility towards the committees? Then a very few instances would lead the judges to find it more economical and shorter work to decide as fairly as they possibly can, which is not saying much, to be sure; so I repeat the question with which I started. C. C. C.

GAS FROM BITUMEN.—Accounts from the West Indies state that an experiment has been tried for the production of gas from the Trinidad bitumen: 100 lbs. of the bitumen made, it is said, about 1,000 feet of gas of exceeding purity, and at a slight cost as compared with coal gas.

IRISH ARCHITECTURAL INTELLIGENCE.

The new Roman Catholic Church of St. Kevin, Glendalough, co. Wicklow, was lately consecrated. The church stands on a considerable elevation, at the entrance to the celebrated valley of the "Seven Churches." This site was given by Captain Hugo. The arrangement of the new church has been copied from that of the old churches in the valley, viz., a nave with chancel, a south porch, and sacristy on the north side of the chancel. The style which has been adopted is the Early English. The east end of the chancel contains a triplet of lancets, under a continued drip stone, and the west end of the nave is entered by a deeply moulded door, above which is a couplet window, and a bell cot, intended for a single bell, is intended to surmount the gable. Floriated crosses from the termination of all the gables, and a figure in Caen stone, carved by Mr. James Cahill, pupil of the Dublin school of Design, occupies a niche in the gable of the south porch. The roofs are of open timber work. The furniture and fittings are all of a temporary character in consequence of the interior of the building not being completed. Mr. McCarthy is the architect.

Her Majesty's Board of Ordnance intend building regimental schoolmasters' quarters at Limerick and Kilkenny barracks.

Sundry works are to be erected at the Richmond Lunatic Asylum, Grange Gorman-lane, Dublin, according to plans prepared by the architect to the Board of Public works.

The Board of Guardians of Castletown-delin have determined upon erecting a new workhouse, according to the drawings furnished by the architect to the Poor-Law Commissioners.

A new church is to be erected at Spiddal.

Great improvements are being made at Queenstown: first-class dwellings are being erected in all directions. An extensive town-hall and market is being built in the new square, at the expense of Mr. James Smith Barry. It is intended to contain markets 100 feet square. The principal room over the entrance will be 130 feet in length, to be used either as a town-hall, petty sessions house, or ball-room. The building will have a tower, in which a clock is to be placed. It is being erected from the designs of Mr. Alexander Deane, of Cork, and the contractor is Mr. Joyce.

Outbuildings are to be erected to the Hospital at Youghal barracks.

A new flax factory is to be erected on an extensive scale, convenient to the ship building yard of the Messrs. Russell, of Limerick, and the estimated cost of its erection, is 35,000*l.*; we understand that it is to be proceeded with immediately.

A new convent is to be erected at Skibbereen, the recent scene of extermination during the famine. The town is much improved: it has been lately flagged at an expense of 800*l.*, and several houses are in progress of erection.

A Protestant hall is to be erected at Belfast: the general dimensions of the contemplated building are 100 feet in length by 50 feet in width.

A new workhouse is being erected at Corrafin by the Poor Law Commissioners, and the Messrs. Crowe, builders, of Dublin, are the contractors for the execution of the works at 5,600*l.*

Mr. Anderson, late of Cork, is the architect for the enlargement of the Capitol of New York. The new wings are connected with the present building, by lobbies outside the doors of the new hall and senate chamber. They are to extend about 100 feet east, and 20 feet west of the present building. The voice is carried over the house and galleries on a French principle. The wings will project about 150 feet, and there will be an octastyle Corinthian portico in the centre. On the east side there are to be three of these porticoes. The present house and senate chamber are to be divided into committee-rooms. Under the senate chamber the new court and offices will be situated. Attention has been paid to the system of ventilation. Mr. Anderson is also the architect to the penitentiary workhouse on

Blackwell's Island and the house of refuge at Baltimore now in course of erection.

DISEASES OF INTEMPERANCE.

LONDON.

At a meeting on the 16th of June, the Right Hon. Lord Overstone, President, in the chair, a paper was read by Mr. F. G. P. Neison, on the "Rate of Mortality among Persons of Intemperate Habits."

Mr. Neison commenced his paper by explaining that the primary reason for collecting the data then brought forward, was to apply the results to life assurance operations, and he had consequently only included well marked cases of intemperance, and not brought into his observations mere occasional drinkers, or what is termed generous or "free livers."

Throughout the whole of the tables the mortality shown was frightfully high. In the 6111.5 years of life, to which the observation extended, 357 deaths had taken place; but if these lives had been subject to the same rate of mortality as the general population of England and Wales, the number of deaths would have been 110 only, or less than one-third. At the term of life 21—30, the mortality was upwards of five times that of the general community; and in the succeeding twenty years it was above four times greater, the difference becoming gradually less and less. One intemperate person of age 20 has an equal chance of living, 15.6 years; one of 30 years of age, 13.8; and one of 40 years, 11.6 years; while a person of the general population of the country would have an equal chance of living 44.2, 36.5, and 28.8 years respectively.

Some curious results were shown in the influence of the different kinds of drink on the duration of life; beer drinkers averaging 21.7 years, spirit drinkers 16.7, and those who drank both spirits and beer indiscriminately 16.1 years. These results, however, were not more curious than those connected with the different classes of persons. The average duration of life after the commencement of intemperate habits among mechanics, working and labouring men, was 18 years; traders, dealers, and merchants, 17; professional men and gentlemen, 15; and females 14 years only. But perhaps the most curious circumstance disclosed was the remarkable similarity between the proportion of crime in the sexes to the proportion of deaths from assigned causes of intemperance. It was shown that the tendency to crime in the male sex is nearly five times greater than that of the female, or more strictly in the relation of 336 to 1,581, while the ratio of deaths to the population from assigned intemperate causes at age 20 and upwards are in the relation of 8,011 to 36,769—a most remarkable agreement, the difference being under 2½ per cent.

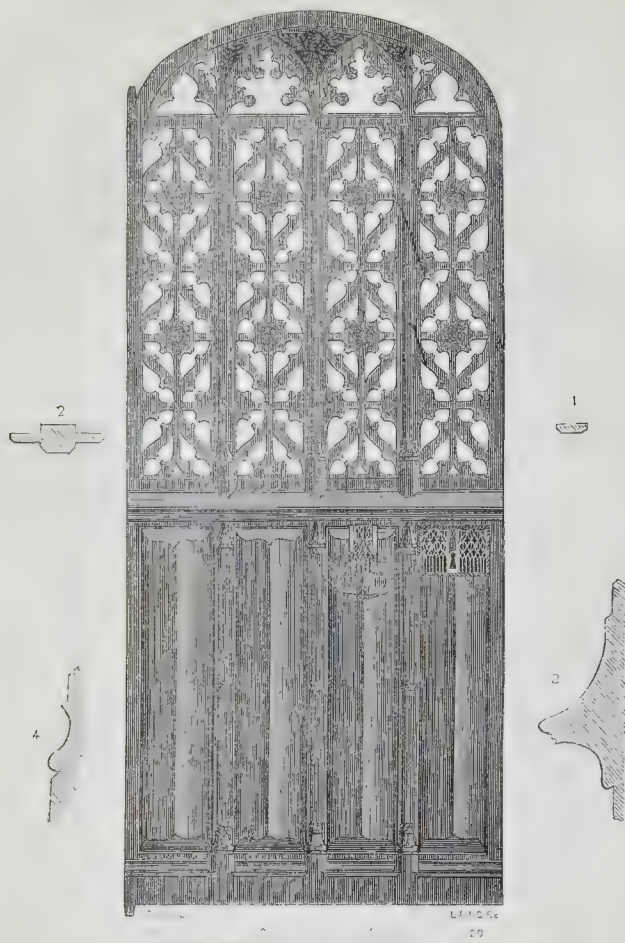
The principal cause of death among intemperate lives was shown to be from head diseases (nervous system),—the number of deaths having been 97, of which 57 are recorded under the head of "delirium tremens;" from diseases of the respiratory organs 82; and nearly the same number from liver disease and dropsy.

Mr. Neison concluded by giving an estimate of the number of drunkards in England and Wales; from which it appeared that the number of males was 53,583, and females 11,223, making a total of 64,806, which gives one drunkard to every 74 of the male population, one to every 434 of the female, and one in 145 of both sexes. The following abstract shows the proportion as shown at different ages:—

Ages.	Males, one in	Females, one in
21—30	176	755
31—40	80	515
41—50	57	297
51—60	52	226
61—70	64	298
71—80	253	1812

Among persons addicted to decidedly intoxicating habits, 3,182 males and 671 females die yearly in England and Wales, or 3,853 of both sexes.

WROUGHT IRON DOOR FROM ROUEN CATHEDRAL.



DOOR FROM ROUEN CATHEDRAL.

PHILIPPE DE LA ROSE, Chancellor of Rouen, who died in 1460, bequeathed a legacy for the adornment of the cathedral: with this was erected the beautiful stone screen that encloses the entrance to the sacristy, the curious wrought-iron door of which is represented in the annexed engraving.

The accompanying sections are one-fourth full size, and show—1st. Tracery bar; 2nd. Mullion; 3rd. Cornice in middle part of door; 4th. Plinth.

The rose introduced in this work is evidently (in accordance with a practice prevalent at that period) a rebus, allusive to the name of its founder.

J. G. H.

THE BLOOMSBURY BUILDING SOCIETY.

HARSANT v. CRANE.

IMPORTANT DECISION.—This was an action brought in the Shoreditch County Court to recover the sum of 21l. 2s. 6d. for thirteen quarters' ground-rent of a house leased to the defendant by the plaintiff (who is director of the Bloomsbury Building Society), on the 1st of March, 1848, and which the defendant had mortgaged to the society for the sum of 500l.

The attendance of the attesting witness having been dispensed with by the consent of both parties, the defendant's attorney proceeded to state that his client, who is a poor man, finding the premises

were not suitable for the purposes of his business, and that he was getting considerably in arrear and utterly incapable of paying the fines imposed upon him by the society, gave up the key of the premises in compliance with a proposition made by Mr. Saunders, the secretary to the society, who promised him that no further claim should be made upon him, and that the society would undertake to pay all rates and taxes then due or which might accrue in respect of such premises. He (the defendant's attorney) therefore contended that the taking of the key through the agency of the secretary was in law a surrender of the property. In support of this view a passage was referred to in Comyn's Treatise on the Law of Landlord and Tenant, p. 340, and it was submitted that if there had been any claim on the part of the plaintiff either in law or in justice, the matter would not have been allowed to go on for thirteen quarters. The society had, moreover, received the rent of the house, and had therefore paid themselves.

His Honour (Mr. Serjt. Storks).—But you must go a great deal further. You must first prove that the money was paid to the lessor, or that he assented to the payment of it to the society.

The defendant's attorney submitted that there could be no doubt as to the plaintiff being an assenting party. He, as the director of the society, was one of the recipients of the money, and could not surely turn round and say it was received without his knowledge.

The plaintiff admitted that he was director of the society, but could not say positively whether they

had received the rents, or whether they had taken possession of the premises. If they had done so they had acted without his authority.

His Honour thought it extraordinary that the plaintiff had allowed his claim to be sleeping so long, and inquired how it happened that he had not applied to the defendant before.

The plaintiff said the fact was the defendant had mortgaged the house for considerably more than it was worth, and he had allowed the claim to stand over from time to time.

Mr. Clarke, the plaintiff's attorney, observed that the defendant, after having mortgaged the house for 500l. had thrown it upon the hands of the society to whom he was considerably indebted. He (Mr. Clarke) submitted that there had been no surrender on the part of the lessor. The defendant's attorney had confounded that gentleman with the mortgagees.

Mr. Robt. Saunders (the secretary) denied that he had made any such proposal as that which had been stated, or that he had requested the defendant to deliver up the key.

His Honour was clearly of opinion that the delivery of the key did not amount to a surrender, and that opinion was confirmed by high legal authorities. The plaintiff must be made a party to the transaction; but the delivery of the key did not dispose of the covenants of a deed under a seal. The Statute of Frauds required a surrender of a demise to be in writing. It might be very unjust going on making this poor man pay, but as the case stood the plaintiff was entitled to a verdict. It was true the

plaintiff was a member of the society; but he (his Honour) did not identify him and the society at all, he being the lessor of the premises in question. The law was perfectly clear.

Books.

The Art of Etching on Copper. By ALFRED ASHLEY. London: J. and D. Darling.

THE increasing attention now being paid by amateurs to this beautiful art, has induced Mr. Ashley to lay down in simple words rules and directions, by pursuing which it may be successfully mastered.

The book is nicely got up, and contains many examples, some of which, the frontispiece, and plates 8, 9, and 10 for instance, are very good.

Knight's Cyclopædia of the Industry of all Nations. 1851. Charles Knight, Fleet-street.

Knight's Excursion Companion: Excursions from London. 1851. Charles Knight, Fleet-street.

Knight's Traveller's Joy.

THE public is and has long been greatly indebted to Mr. Knight for his varied issues of useful knowledge. There is even a merit, and to the public a mighty advantage, in the re-issue of works already paid for at a great expense, and hence, in a condensed or selected form, capable of being reissued at a cost the trifling amount of which is really wonderful. Witness the valuable and costly cyclopædia, albeit the "penny" one: here we have something like a concentration of it all into a volume of more than eighteen hundred octavo pages, illustrated by thirty-seven full-sized engravings, and all at a published price of 8s. The contents of this cyclopædia are even more varied than might have been anticipated; for it not only contains information as to most or all of the products of human industry, but as to raw materials, and places noted for industry in its various branches. Nor is it a mere mechanical extract from the larger cyclopædia: it is only in a manner based on that, and is brought up to the present time in regard to advancement or improvements in industrial processes and products.

The "Excursion Companion" appears to be a portion of the pith of "The Land we live in," with all its appropriate illustrations. We have, therefore, something worth reading in many instances, where, in ordinary excursion companions, we would have only childish stuff. We rejoice to think that we lent a hand towards the establishment and extension of the excursion system, and that it already calls for the publication of such volumes as this: as remarked in the introduction,—

"The excursion train is one of our best public instructors. It is also one of the cheapest. At a rate for second and third-class passengers, varying from twenty miles to fifty-five miles for a shilling, or from a little above a halfpenny to less than a farthing a mile, hundreds of thousands of travellers from London, during 1850, have been carried into the heart of our most beautiful inland scenery—to our watering-places—to our ports—to our universities—to our great seats of manufactures and commerce. Upon the same principle, excursion trains from the provinces have duly brought visitors to London. Nor is this all. From all the great manufacturing and commercial towns, excursion trains are constantly bearing the active and intelligent artisans, with their families, to some interesting locality, for a happy and rational holiday. The amount of pleasure and information thus derived, and of prejudice thus removed, cannot be estimated at too high a rate.

In 1851 this wonderful system will probably be carried out to an extent of which we can scarcely form an adequate conception. To provide the excursionist in every direction through 'The Land we live in' with a cheap and intelligent guide-book, illustrated with elaborate wood-cuts, will be the object of 'Knight's Excursion-train Companion.'"

The "Excursion Companion" he has again divided into a number of small guides, under the title of "The Traveller's Joy." Thus we have in one Oxford, Cheltenham, and Leamington, and in another Windsor, Woolwich, and the Halls of Kent, at small cost.

Miscellaneous.

LECTURE ON ART-CULTIVATION AT PRESTON.—Mr. J. A. Hammersley, the Principal of the Manchester School of Design, lectured last week, at the Preston Institution, on "Art, a department of education of equal importance to the designer, to the workman, and to those who use the products of industry." The large audience included a considerable number of the working classes. The Rev. E. D. Rendell occupied the chair. In course of his lecture, Mr. Hammersley urged that the love of beauty and of beautiful things was an instinct of our nature, and not a mere luxurious feeling to be indulged in only by the rich. Nature itself with its flowery and other profusion of beauties clearly proved the truth of this view. The savage who carves his spear and his war-instruments and paints his body, evinces a leaning towards things that are beautiful. The commonest hind who cultivates his small plot of land with flowers is declaring an inward and conscious sense of the beauty alluded to. Therefore the manufacturer, the designer of every class, and the workman, instead of working from the thought that he is merely catering to a luxurious feeling, should labour rather with the consciousness that he is labouring to cultivate and raise that which in the human mind is a natural instinct. To the designer—and house painters and architects were amongst the class of men whom he should call designers—a true sense of art is to this man indispensable: he should think for himself, and not be continually reproducing what has been done before. Take the ordinary house painter: a man thoroughly educated for his business would for 3s. 6d. make a cottage an area of excellence. Shop fronts, and signs, and all such things are influences. It is impossible to live opposite an ill-painted shop-front without being morally the worse for it. The lecturer urged the importance of some species of education in matters of art. This was the position he wished to assume:—First, that the love of beautiful things is instinctive, and belongs to us just as much as a desire to get food, and clothing, and shelter. Secondly, it seemed to him inevitable, then, that the designer should be educated, in order that the beauty he has to produce may be of the best order; and that the workman should be educated too, that he may be enabled to appreciate and properly carry out the conceptions of the designer. Thirdly, the public should be educated in this matter, that they might provoke on the part of the designer all the very best things that could be produced. The World's Great Exhibition in London discloses a lesson never to be forgotten—that the work of human hands, the manufactures of the world, are the things of all others that are beginning to claim the affection, and the esteem, and the regard of every body. And if we in England hope to progress and make our manufactures more firm and stable than they now are, we must take a hint from this Exhibition. What has made England pre-eminently the manufacturing country for the great masses of the world? The reason is clear enough. We have been led to produce quantity rather than quality, because this is a country full of mineral wealth. But it is not to be forgotten that we have a cousin over the water. America is just finding out that she is possessed of equal mineral wealth with ourselves; and it is probable that, in the future, that will be the country for the manufacture of the coarser kind of goods, and England for the more beautiful and costly. It now behoves us, therefore, to consider about improving our productions. And he was happy to say that we are improving.

FIGURES FOUND AT CAERLEON.—The two ivory figures found at Caerleon, which were noticed in our number of the 14th, have no evidence either in their costume or workmanship that they belong to the period of ancient British art: on the contrary, they are strongly marked with the characteristics of the 17th century. The male figure is seated, but only the arms and front legs of the chair remain: it is quite without ornament. The head has a plain crown of serrated form, and the hair is long

and curled. The dress consists of a short close cape with a small upright neckband below, which is the Order of the Fleece: from below this cape falls a long robe, and the legs are clothed in trunk hose, moderately full, with shoes, which have had painted and gilt buckles, on the feet. The female figure has a plain gown with a short waist, and a narrow robe on the back: it bears in the left hand a vessel resembling a jar held by a leathern handle, and having three apertures at the top. Both figures have been elaborately painted and gilt, the dresses being covered with a clumsy running pattern. The style of execution and the countenances have the Flemish cast, and strongly resemble, in both these and the costumes, some of the oak carvings, in the writer's possession, of the 17th century, of Flemish origin.

THE STATUE OF FREDERICK THE GREAT AT BERLIN.—On 31st May, the colossal bronze statue of Frederick the Great was formally unveiled. The statue is an equestrian one, 17 feet high, on a pedestal 26 feet high. The general form of the monument is pyramidal, divided, as it were, into two stories, having two bases. At the pinnacle is the statue of Frederick, which is by no means the only attractive part of the monument. Round the lower base, at its four corners, are four other equestrian statues, of the Prince of Prussia, the Duke of Brunswick, and Generals Siedlitz and Ziethen. Between the four corner statues, in animated haut relief, are other figures: on one of the broadsides, Winterteldt, Dieskau, Prince Eugene of Wurtemberg, and Temenizien; and on the opposite side, Leopold Max von Dessau, Wedell, Wartemberg von Golz, and Gessler. On the front basement are the figures of Generals Lewitz, Pritzwitz, von Haslen, Marshal Keith, and the Margrave of Brandenburg. The hinder slab is devoted to literary men and artists, and there we see Kant, Lessing, Count Carmer, Fink Schlabrendorf, and Graun. Every figure is said to be a striking likeness.

PRINTING ON METAL.—Mr. Thomas Skinner, the inventor of the new process of etching upon steel, ivory, &c., now so much in vogue for the decoration of cutlery, has made a new and scarcely less important discovery which bids fair to prove incalculably valuable to a leading branch of the Sheffield trade—the manufacture in silver, Britannia metal, and other materials of that description. Mr. Skinner has prepared for the Great Exhibition a specimen of the new art, which he describes as "a fac-simile of chasing and engraving on metal by means of printing;" and it is stated that "the extreme cheapness of this process renders it very suitable for general application to all metals. This is the only specimen in existence." The specimen in question is an electro-plated waiter, got up simply with the view of illustrating the new principle. The centre is a fac-simile of an engraved metallic plate, from which any required numbers of copies may be taken without again resorting to the graver, and the original plate may be finally made into a perfect article.—*Sheffield Times.*

MORE BURNINGS IN LONDON.—Another most extensive conflagration has taken place, this time in Southwark, where four immense hop-warehouses have been utterly destroyed, and a fifth so much burnt and injured as to be, it appears, altogether useless. The buildings were five large warehouses, standing near the foot of London-bridge, each floor of which was so extensive as to be let separately for the storing of an immense quantity of property. The length of the block was about 450 feet, by 80 or 90 feet in depth, and each contained six floors, besides extensive cellars. The loss is estimated at nearly 200,000*l.*

PICTURES OF ALL PAINTERS.—The general exhibition of pictures by the living painters of the schools of all countries, at Lichfield House, St. James's, to which we have before referred, is now open, and will repay a visit. The collection includes at present about 300 pictures, a fewer number than was at first expected, and gives a means of comparison, never before afforded.

GOVERNESSES' BENEVOLENT INSTITUTION.—COMPETITION.—The names of the successful competitors for laying out the land for the Governesses' Benevolent Institution were briefly mentioned in an advertisement last week. We add some particulars. The first prize was 25 guineas, and was awarded to Mr. W. F. Poulton. The second prize was 15 guineas, and was awarded to Mr. W. L. Granville. The third prize was 10 guineas, and was awarded to Mr. J. T. Wood. The Board had professional assistance in making the selection. There were forty plans sent in which were contributed by seventeen architects. The prize plan is laid out as a square to be called Harrowby-square, adapted, mainly, for detached and semi-detached villa residences. The proposed buildings are of the same character as the Governesses' Asylum which adjoins the land in question. One end of the square is appropriated as a terrace to be called Ashley-terrace, in the Elizabethan style. The centre is appropriated as plantation and pleasure grounds.

THE LONDON PEEL-MEMORIAL.—The City Committee on this memorial met on 23rd inst., to view, if not to decide on, "the 2-feet models" of the "10-feet statue" in bronze, which have been presented, in response to the invitation of the committee to thirteen selected British artists to compete for the design of the intended memorial. The question of site came also under consideration, those proposed being the western end of Cheapside; the middle of Mansion-house-street between King William-street and Princes-street, and close to the Duke of Wellington's equestrian statue; and also the eastern end of the Royal Exchange. The decision on both points has been postponed till next Monday, and we trust the committee will be well advised. An artist may make a very good statuette, and be totally incompetent to produce this statue for the city.

"LUNNUN LIGHTS."—I be a sort of a builder from Wiltshire, and be come up to see London in all its glory, and the Glass Palace, and the Queen, and Prince Albert, and hope to get a little experience by close observation and some hard work. I can't say your Trafalgar-square quite comes up to my mark: there's your lamps at the corners,—why those stone posts that *squat on* would make capital pedestals for those brave fellows, Collingwood, Harvey, and others; and you might put better lights, in better lamps, and in better places. If you want light from lamps, place them just above the danger of umbrellas, and *no higher*. Then look at your new-fronted palace. Mr. Architect never made these towers at main entrance to fry fish with bunches of glass lamps, looking for all the world more like a theatre than a palace gateway. My German friend was right when he said "You don't put your street lamps enough down to the ground:" light is light, and useful ornament is quite another thing. One word or so more. I saw somewhere in my travels a company of fine stone damsels, 20 feet high at least, handsome as you could imagine. They sat round such a square as Trafalgar: every one had loads of different things about them: and, if I rightly remember, I was told they represented the important cities of the country and their productions. They wouldn't look amiss in your square, especially when you get the lions to keep them company. By the bye, why don't they show a pattern of them lions up at Crystal Palace, so that a body might see what is called a British lion reposing after his toils, before one goes back to the clodhopping town of Devises?—AN ENGLISHMAN.

HINTS TO BUILDERS.—A correspondent of the *Sheffield Times* comments on the houses which are being erected in his locality. He says,—"What convenience do they offer? The rooms are small and badly arranged: few have gas apparatus: fewer have water-pipes to each lodging-room; and where there is a water-closet it is invariably small, and so placed as to be inconvenient and offensive. In the fancy houses the bedrooms are low—in some instances not more than 8 or 8½ feet in height, and without sufficient ventilation. Closets and store-rooms seem, in the opinion of builders

and architects, to be useless; and if a house should by any unforeseen accident contain a couple of closets, this is an inducement for additional rent. In no art or science is there so little improved invention as in that of house-building. Every builder is satisfied if he offer sitting-rooms five yards by four, while a bedroom of that mighty area is deemed a nonchuck. Some think that three bed-rooms are enough for a family, while others will stretch their genius to the admission of four, and an attic for the servant,—this attic being as ill calculated for a sleeping-room as a dog-kennel. Speak of a room seven yards by six, of a passage six feet wide, of a decent bed-room for a servant, and the builder or architect concludes you are gone mad, or wonders where you came from. I need not take you to the kitchens—they are always small and inconvenient, while an out-kitchen or scullery is a stretch of imagination rarely met with." These remarks apply beyond Sheffield.

SCULPTURED STONES IN THE NORTH.—Some time ago Mr. Chalmers, of Aldbar, obtained drawings of all the sculptured stone obelisks in Angus, and got them lithographed for the members of the Bannatyne Club. The work has excited attention. In Aberdeenshire there is a considerable number of these obelisks, which are much less elaborate than those in Angus. It is singular that no monument of this class has been found south of the Forth. The Spalding Club proposes to obtain drawings of all the stones in the north of Scotland. Circulars have been sent to the clergy of about 240 parishes in the north, asking for information as to the locality of any sculptured stones in their districts, but as yet answers have been obtained from only about 150. It is probable that where no return has been made there is no stone of the description alluded to.—*Edin. Courant*.

THE IRON TRADE.—In this trade complaints are made of a remarkable cessation of orders among the merchants and wholesale dealers, while the demands of home manufacturers are also said to show a considerable falling-off. This torpor is in some quarters referred to re-action ensuing upon the late stimulus of preparation for the Great Exhibition,—and its temporary continuance, it is said, will depend upon how long that object may, as at present, engross unlimited attention; but to others it appears of a more serious character, the result of a current opinion that the close of the quarter will usher in a declared reduction in prices, accompanied by an effort to effect a general lowering of wages, without which it is asserted that the competition of other producing districts cannot be met. A new and alarming feature presents itself in the recent stoppage of extensive houses in Liverpool, and one, though inconsiderable, in our own district, by which several Staffordshire firms will be sufferers. Men of capital have begun to withdraw from the contest, and their places are being supplied by those who have little to lose, and, under our present bankruptcy code, little to fear. Hence apprehensions are entertained that the misfortunes already declared are but the prelude to a severe crisis and a fearful impending series of disasters.—*Birmingham Gazette*.

CARDIFF ATHENÆUM, EISTEDDFOD.—Another Eisteddfod—with another catastrophe to begin with! Fortunately, the present casualty does not appear to have been a very fatal one. It consisted simply of the demolition, by a stiff gale, of the marquee in which 1,500 persons were to have been accommodated. The reading-room of the Athenæum, capable of seating 500, was substituted for the marquee in Cathay's Park. Various works of art were exhibited. Amongst the various prizes, one of 5l. and silver medal for the best piece of sculpture, or carving in wood or stone, were not awarded, although there were two competitors. A medal was awarded to Mr. Joseph Edwards, formerly of Merthyr Tydfil, and now of Robert-street, Hampstead-road, for plaster casts taken from sculpture, though the committee had offered no prize for casts. From the description of these, we conceive that they were models for sculpture rather than casts from it.

BATTY'S HIPPODROME.—Our country friends may pass an agreeable hour, and in the cool, at this now favoured resort, with its many wonders, its classic lady-charioteers, and bold equestrians. An apprenticeship under the "Professor of the Sticks" here, on the part of some of our more clever constructionists, might bring the hitherto utopian notion of "building castles in the air" within the bounds of possibility.

FALL OF A BUILDING.—On Saturday week, an old building, situated at 8, Lambeth-street, Great Abie-street, Whitechapel, fell to the ground, burying several persons in the ruins, whereby two lost their lives and others were seriously injured. It appears that several houses in Lambeth-street, built upwards of 100 years, had been condemned by the district surveyor, and accordingly means were adopted to take down No. 8, and the two adjoining houses. While the men were proceeding with the demolition a loud crashing noise was heard, and the next moment the whole building fell to the ground, carrying with it the several floors.

HEREFORD ANTIQUARIAN SOCIETY.—A first excursion for the season, by the members of this Society, took place on Monday week. The party visited the castle of Skenfrith, on the boundary between Herefordshire and Monmouthshire, and the ancient church of the village; and they then proceeded to the ruins of another stronghold of former days, that of White Castle, a manuscript history of which, by Mrs. Taddy, was read by Mr. R. Johnson, one of the Vice-presidents. From White Castle the tourists went along the base of the lofty Graig to Grosmont, the castle of which they also visited. The attention of the party was next directed to the deserted market-house of Grosmont, by the ancient money-changers' table, a large block of stone with a rim carved in the perpendicular style, and supported by a rude pedestal. From Grosmont the members returned by way of Pontrilas to Hereford.

IRON PLATES FOR PLATE GLASS.—A cast-iron plate for plate glass is being made by Messrs. Hawks, Crawshaw and Sons, which will have a planed surface 18 feet 4 inches long by 10 feet 10 inches wide, and will weigh twenty-five tons. This will be, we believe, the largest cast-iron plate ever made for a plate glass casting-table. Both plates will be planed perfectly smooth on the surface, in a large planing machine.

THE VANBRUGH CLUB, of architect-actors, gave a representation on the 25th, when the pieces selected were, "Love in a Maze," and "His First Champagne."

BOULOGNE.—The dome of the new cathedral has been struck by lightning, which passed into an adjoining house, and killed an infant in its cradle.

INTIMIDATING WORKMEN.—At Birmingham, last week, a glass-blower was convicted of using threatening language to intimidate a workman from continuing in his employment, and sentenced to two months' imprisonment in the House of Correction with hard labour. Other cases were adjourned till an appeal was heard against the decision.

TENDERS

For the Building of the Industrial Schools at Plasket, Essex. Mr. Andrew Wilson, architect.		
Sheffield	.....	£11,687
Holmes	.....	10,614
West	.....	9,890
Hall	.....	9,182
Emmott	.....	8,939
Curtis	.....	8,143
W. Hill (accepted)	.....	8,261

TO CORRESPONDENTS.

"T. O., Jun." (direct to the Hon. Secy. J. B. A., 14, Grosvenor-street), "J. S. S." (thanks), "W. E. B." (we have not received the book), "B. B." "T. W. E." (newspaper did not reach us), "Mr. S." "R. T. J." "W. N." "J. J." "H. M." (next week), "J. P. H." "E. W. L. C." "E. W. S." "W. C." "P. R." "P." (Five Years' Subscriber), "G. W." "Model Farms" (will be looked to).

Errata.—In our last number several literal inaccuracies were allowed to stand, through accident: the right sense, however, will be obvious to most of our readers.

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editors, and not to the Publisher.

The Builder.

No. CCCCXXXIX.

SATURDAY, JULY 5, 1851.

IN the year 1847, the justices of the peace for the county of Middlesex invited architects to submit designs, in competition, for a new county lunatic asylum, proposed to be built near Colney Hatch, between Finchley Common and Southgate. From those plans that were sent in the justices selected for the first premium a design by Mr. Dawkes, and for the second, a design by the conductor of this journal and Mr. Harris. In our fifth volume (p. 585) these plans were described, and we offered some general remarks, in continuation of a previous paper, relative to the arrangement of lunatic asylums generally. The design selected as the first has been carried out, and on Tuesday last the burial-ground of the asylum was consecrated by the Bishop of London, and the building was formally opened by the committee of visitors. The extent of the asylum is enormous,—30 feet longer than the Great Exhibition building, and it provides accommodation for about 1,200 patients. The whole quantity of the land obtained by the county is 119 acres, and is thus appropriated:—

	A.	R.	P.
Site of the buildings of the Asylum.	4	2	23½
Front airing courts, male wing	2	0	29
" " female wing	2	2	19
Remaining male and female airing courts, laundry and workshop yards	10	1	2
Kitchen garden	8	0	16½
Burial-ground	1	2	0
Land separated by the Great Northern Railway (about)	21	0	0
Ground for pasture and farm	68	2	25

There is one entrance to the asylum by a riding communicating with the Great Northern Railway,* but the principal entrance is on the north side, in a road which runs from Colney Hatch to Bet's Stile. Here there is a lodge; also stabling for the use of the magistrates and visitors. From the entrance there are three roads,—a main road in front, and two others diverging right and left: the former leads to the centre building and principal entrance, that to the right forms the approach to the patients' entrance in the female wing, and to the residences of the superintending physician (Dr. Davey), and the matron. That to the left forms a corresponding approach for patients to the male wing, and to the residences of the superintending physician (Dr. Hood), and the steward.

The view we give in our present number† shows the entrance front of the building, the railway on the east side, and the farming establishment, at some little distance behind the main building.‡ We append also a plan of the principal floor, with ample references to explain the purpose of the various parts, and proceed to give a methodical account of the establishment, premising that the building is

* The new terminus of the Great Northern line, at King's Cross, is making rapid progress.

† The binder must cut this out and fold before stitching.

‡ The farming establishment contains a cow-house for twenty-three cows, calf-pens, dairies, piggeries, stabling, horse-boxes, cattle and cart sheds, slaughter-house, cowman's residence, &c. Adjoining the station on the Great Northern Railway are ranges of buildings, comprising engineer's residence, gas works, smiths' shops, store-sheds, and a large shed having a turntable and rails for the railway, by which goods are at once brought to the asylum; and at the end of the shed is a weigh-bridge.

of brick, with stone quoins, strings, cornices, and window dressings.

The asylum is classified into three divisions. The female wing, and physician's and matron's residences, and infirmary; the male wing, with physician's and steward's residence, and infirmary; the buildings in the centre are offices for direction and management convenient for each wing.

From these offices, as well as from each entrance, are independent corridors of communication for each wing, throughout every part of the establishment; the males and females being entirely separated, so that patients (or their friends) can be taken to or from the wards privately, and can be drafted off to their respective workshops or other occupation.

The asylum is situated on a site sloping from north to south, which necessarily obliges a descent to the building from the principal entrance, which is to the north. This, although very disadvantageous to the general effect of the building, viewed from the north side, yet affords sanitary advantages to the asylum, in facilitating a system of drainage, enabling all the galleries, day-rooms, and airing courts to be placed south, south-east, and south-west, commanding extensive views of the surrounding country from each, and securing privacy and shelter and freedom from excitement.

The inclination of the ground has also enabled a communication to be made from the central offices to the extreme wings, without in the least intercepting the view from the airing courts above; the extreme wings being 15 feet lower than the entrance, and enabling the formation of an inclined plane of gradual descent, rendering unnecessary the introduction of a single step throughout the ground-floor, in the communication with these buildings on the lower level.

In the hall, opposite the principal entrance, is a tablet thus inscribed:—

"This foundation stone
was laid by
Field Marshall, His Royal Highness
PRINCE ALBERT,
Her Majesty's Consort,
On the 8th day of May, A.D. 1849,
And in the 12th year of the reign of
Her Most Gracious Majesty,
QUEEN VICTORIA.
May God bless this work of Charity.

Committee of Visitors.—Benjamin Rotch, esq., Chairman. Lord Robt. Grosvenor, M.P., James Bentley, esq., T. H. Bluck, esq., C. S. Butler, esq., E. H. Chapman, esq., C. H. Cottrell, esq., J. W. Freshfield, esq., Henry Pownall, esq., Hector Rose, esq., John Simpson, esq., Arthur Smith, esq., Edward Stock, esq., C. B. Stutfield, esq., F. P. Walesby, esq., John Garford, esq., T. B. Herring, esq., H. M. Kemshead, esq., Henry Warner, esq., John Wilks, esq., Josiah Wilson, esq.

Clerk to the Committee.—J. S. Skaife.

Architect.—S. W. Dawkes, esq.

Builder.—George Myers.

Clerk of the Works.—C. J. Shoppee."

In the rear of the stone is the chapel, 81 feet long, by 58 feet 6 inches wide, capable of containing 600 persons.

On the right and left of the chapel are corridors leading through the centre portion of the buildings to the offices in the rear. The rooms on the right are—Dispensary, clerks' offices, and attendants' rooms; those on the left are the waiting-room, the committee-room, an apartment 30 feet long and 20 feet wide, which has been gratuitously decorated with scagliola, in compartments, by Messrs. Orsi and Armani; and in the rear, are magistrates' dining-room, private-room, committee clerk's office. In the centre of these rooms is the chapel, approached from the wards on the ground and one-pair story, so that aged persons may attend Divine Service without ascending steps.

At the end of the chapel is the principal staircase (under the dome of the central tower), which affords access to the galleries of the chapel, and the orchestra of the exercising hall.

Extending east and west are the corridors, affording facilities of communication with the

different wards: the entire length of these corridors is about 1,350 feet.

At this point the central side corridors commence inclining, the central buildings in the rear being placed lower in succession, and these corridors by this incline being continued to the portion of the building on the lower level 15 feet below, afford a communication, without steps, from the upper to the lower story.

The patients' exercising hall is the next apartment, and is 112 feet long, and 58 feet 6 inches wide, having an orchestra at the north end, and the clock tower at the south.

To the right and left are school-rooms for male and female patients, with teachers' rooms adjoining, approached from the respective corridors.

The kitchen is in the centre of the building, and is approached from the male and female wing by independent corridors of communication to every ward—the male delivery being on one side, the female on the other. The cooking apparatus has been supplied by Mr. Steadman. On each side of the kitchen are openings for the delivery of food to the male and female portions of the establishment. Adjoining and communicating with the kitchen is another for soup, vegetables, &c.*

To the right of the kitchen is a servants' hall and rooms for domestics; and to the left are the pantry and fresh and cold meat larders. Continuing through the centre we come to the bakehouse, having two ovens, flour stores, kneading troughs, and other requisites; with independent deliveries for male and female wings.

In the rear of the bakehouse is the stewards' office and general store-room of the establishment, and below is a cellar for stores, which is also approached from the side corridor, the entrance for receiving stores being opposite. From the store-room are deliveries to the male and female wings.

Arriving at this point are corridors extending east and west, parallel with those in front of the wards, and at right angles with the central side corridors.

Leading from that corridor on the male wing is the brew-house, and a communication with the large beer cellar; and workshops for the following trades, viz., tinman, plumber, upholsterer, printer, tailor, shoemaker, turner, and carpenter. And from the corridor on the female wing are laundry and wash-house for officers' linen, and work-rooms for patients, so that the patients can come from and return to their various wards by independent approaches.

In the rear of the store-room is a yard for the purposes of the washing department, with wash-houses, laundries, drying-rooms, and rooms for the reception and delivery of linen surrounding the yard. These wash-houses are separated from the laundries by drying closets, so constructed that the clothes are put in on the wash-house side and removed on the laundry side without either class clashing. The shaft in the centre is to receive all the smoke-flues from the engine and drying-stoves connected with these buildings.

The engine-house is also situated in this part of the asylum, and contains a steam-engine of 15-horse power, and boilers; also boilers for the laundry and kitchen department. Adjoining the engine-house is the artesian well, from which the water is supplied to the reservoir in an octagonal building in front of the asylum; it is bored to a depth of 330 feet, and yields upwards of 120,000 gallons every twenty-four hours.

The patients' wards on the male wing are numbered from 1 to 14 inclusive; each of them contains accommodation for 30 patients, and comprises a gallery, dining-room, lavatory, bath-room, 2 attendants' rooms, store-room, scullery, and 2 water-closets in each ward. The galleries are 14 feet wide, and 15 feet high from floor to floor—they are lighted with gas and warmed with hot water. The water-closets are self-acting in wards and airing-courts.

The wards for female patients are 18 in

* The patent steam-escapes to the soup and vegetable coppers in the back kitchen are deserving of notice.

number, from 15 to 32 inclusive, and in all respects correspond to those on the male wing, except that most of them will contain 34 instead of 30 patients.

In connection with the wards and infirmaries are 21 spacious airing courts for patients.

Each gallery and dining space has three open fires, and, independently, all are warmed and ventilated by Mr. H. C. Price, of Westminster, with his Patent Flat Vessel Hot Water Apparatus. The towers surmounting the staircases at different parts of the building are ventilating towers with extracting shafts.

The extreme length of the building is 1,883 feet 8 inches, and it is said to be capable of accommodating from 1,200 to 1,300 patients,—a larger number, as it seems to us, than is generally desirable.

The galleries are boarded, vaulted with indented tiles, and are of great width and lightness. The corridors are paved with the metallic lava, and are also covered with it on the top. These corridors (seen in the view as blank arcades) are lighted by loop-holes filled with rough plate-glass; they will need additional ventilation we are disposed to think. Padded rooms, for refractory patients, are provided in some of the wards: the material used is vulcanised India-rubber.

The amount of the contract was 138,000*l.*, but the total expenditure, we are informed, will probably be nearly 200,000*l.*, various buildings having been erected which were not included in the first arrangement. The tenders as sent in were—

Jackson	£225,000
Jay	198,000
Myers	165,000

The last was ultimately reduced to the sum we have named.*

The asylum appears to us well-adapted for its purpose: the main objection to the plan seems to be the great distance from the kitchen and other offices at which some of the wards are placed.

SOME REMARKS ON THE CATHEDRAL AT BEAUVAIS.†

THE cathedral of Beauvais is of ancient origin, and some important remains of the primitive building, called Notre Dame de la Basse Œuvre, still exist at the west end of the present edifice. The striking feature of this cathedral, both in the exterior and in the interior, is its height: externally, it rises far above the houses and other buildings of the town, and internally, the astonishing height of the nave occasions more than the usual effect, which the vistas of all cathedrals produce on the mind of the beholder. The chief subject of interest to the architect is, however, to be found in the appearance which this building presents, of a near approach to the utmost limit of strength which the principle of its construction could afford. This is apparent on a cursory inspection, and still more so on a careful examination of the building. On looking at the arches of the choir, it appears that there were originally but three on each side, and that each of them has been subsequently divided into two; the outline of the original arches still remaining quite distinct. And although, in one or two instances, the space formed between the original arch and the two filling-in arches has been decorated by a circle, filled up with a quatrefoil, still this addition does not at all mask the original construction. The filling-in of each primary arch, forming it in two divisions, may also be observed in the

arches separating the aisles and chapels; but it is not so distinctly traceable as in the main body of the choir. This examination is the more instructive, because the precise period in the construction of the building at which this filling-in became necessary, and the reasons for it, are on record.

It would indeed almost appear, by comparing the original construction with that of the neighbouring cathedral of Amiens, that the limits of strength were here exceeded; for, while at Amiens the distance from centre to centre of the piers is 23 feet 10 inches, at Beauvais it is 29 feet, and while the columns at Amiens, including the side shafts, measure 7 feet 2½ inches, those at Beauvais measure only 6 feet 8 inches, or 6 feet 9 inches. Moreover, the whole height of the vaulting at Amiens, is 140 feet 8 inches, and that at Beauvais is 158 feet, so that the difference in dimensions of the bearing surfaces of the span of the arches, and of the height of the superstructure, would lead to the conclusion, so far as it may be formed by a comparison of these examples, that at Amiens the limits of strength were nearly attained, and at Beauvais they were exceeded: possibly also, the stone of which Beauvais Cathedral is built, being only a chalk stone, may have had something to do with the alteration in the construction; as, although of a hard description, it is not able to offer the same resistance to a crushing weight as a more crystalline limestone, or a harder sandstone. Looking, however, to the present condition of the edifice, it does not appear that the defects seen in the buckling of the piers have arisen from any want of strength in the stone. Whatever may have been the cause, it appears that some time subsequent to the erection of the arches of the choir and aisles, it became necessary to strengthen the building, by introducing in the centre of each original arch a pier, corresponding in form with those already constructed. In order, however, that the filling-in pier may occupy as little space as possible, it is flattened on its axis; while, in other respects, it corresponds in plan with the original piers. These consist, as at Amiens, of circular shafts, with smaller single shafts attached and clustered round in the line of the longitudinal and transverse axis.

The church of which these original pillars formed a part, was built at the same time as the Cathedrals at Amiens and Salisbury,—viz., between the years 1249 and 1267. The choir was finished in 1272, but the failure in the construction took place within a century after that date; for before the year 1324, the additional piers were introduced, and the whole of the upper part of the church, including the triforium, was reconstructed. Besides the filling-in piers in the choir, the arches between the aisles and the side chapels were subdivided, and the vaulting of the aisles, which does not seem to have been rebuilt, or, if rebuilt, was rebuilt on the original plan, was strengthened partially between the filling-in piers by cross arches, with open spandrels and mouldings of a date evidently posterior to the arches of the choir and vaulting of the aisles. These cross arches, however, were not applied throughout the building.

At the level of the capitals of the piers all around the apsis, iron joggles are to be seen, which were apparently used for the purpose of tying the piers to the side walls of the aisles; but as the construction of this part of the building does not seem to have been altered, the utility of these joggles is not evident, unless they may have been found requisite during the construction of the chapels of later date, which were added between the buttresses. There are iron joggles at the same level over some of the other piers, and at the level of the top of the capitals of the piers dividing the aisles and chapels, which were probably used for the purpose already mentioned.

At present there appears to be some tendency in the piers to buckle, for in four places strong struts are now placed between the piers of the choir and those dividing the side aisles and chapels; but the most striking defect at present visible in one of the piers between the aisles and side chapels on the north side of the church: this pier is evidently much bulged in, as though

it were crushed by the weight of the heavy buttress pier over it, which connects the two series of flying buttresses. Except these defective parts, the strapping together some of the ribs of the vaulting, and some of the mullions of the upper windows, there is nothing which indicates any weakness or want of stability in the building.

After the failure of the vaulting there was, however, another notable failure in the central lantern, which fell in the year 1573, after it had been built about five years, and occasioned the rebuilding of the piers at the intersection of the choir and transept, and also one of the piers on the north side in the style of that date. One of the piers on the south side, between the aisles and chapels, was also rebuilt about this period; as the flamboyant character of these piers is carried up to the level of the bottom of the clerestory, above which the style of the thirteenth century remains unaltered.

On the spot where the present cathedral stands a building was commenced in 991: this was burnt in 1180: it was subsequently restored, and again totally destroyed by fire in 1225. Miles de Nanteuil, then bishop, hastened to begin the actual fabric in 1225, five years after the commencement of the works at Amiens. Guillaume de Grezet, the fifty-eighth bishop, caused the choir to be constructed in 1247; but according to Woillez, the piers of the building thus commenced being placed at too great a distance from each other, the vaulting fell in; however, it was restored as before, and entirely finished in 1272, at which period, we may assume, the iron ties, of which the traces are still very visible, were inserted. This attempt also proved unsuccessful, for the vaulting again fell in on the 29th of November, 1284; when the central walls, it is said, were pushed out, and several of the columns injured by the fall of the vaulting. The vaulting which actually exists was commenced in 1324, and it was at that time that the additional piers were introduced in the centre of the span of the three first arches on each side of the church, and the other arrangements were made for the strengthening of the building; but the whole of the work necessary for the completion of the choir, as we now see it, was not carried out until the middle of the sixteenth century. The transept was commenced under Villiers de l'Isle Adam, the seventy-seventh bishop, in the year 1500, and the works were continued until, in the time of the eighty-fourth bishop, the vaulting of this part of the building was completed. It was intended to extend the building by the addition of a nave, corresponding with the colossal dimensions of the existing choir and transept; but during the latter years of its construction, funds were obtained with some difficulty, notwithstanding appeals to the royal bounty of Louis the Twelfth and Francis the First, after whose time the age for cathedral building had nearly passed away.

However, as a last and crowning effort, in 1560, two architects, wishing, it is said, to prove that the art they practised was capable of as mighty effects as the revived classic, constructed at the intersection of the choir and transept an octagonal spire, rising from a square base, with the upper part formed of wood. It has already been mentioned, that after standing only five years this spire fell, and caused much destruction, in the year 1573.

When this spire was complete, Beauvais cathedral could boast of being the loftiest building in Europe, and it equalled in height the great Pyramid of Egypt, being 445 feet high from the level of the ground to the summit. It seems probable that this magnificent spire might have remained in its integrity until our times, had not one of the four piers on which it rested been built hollow, to contain a staircase communicating with the spire; while the nave being then, as now, incomplete, did not afford sufficient abutment on the west side. The necessary repairs consequent on the fall of the tower were immediately commenced, and they were completed in 1575; but the spire was not rebuilt, and its place is occupied by a small bell turret. In 1604 all the works were definitively suspended, and

* It may be useful to note that the average cost per patient of the following asylums was (exclusive of land) as follows:—

Devon	£116
Surrey	173
Hanwell	162
Maldstone	183
Irish asylums (average)	183

† From a paper, by Mr. Edward T. Anson, jun. Fellow, read at the Ordinary Meeting of the Institute of Architects, June 16th.

Beauvais cathedral still remains a colossal fragment.

The exterior of the building, as before noticed, is remarkable for its immense elevation; but although the sky-line is much broken and lightened by numerous pinnacles, and by the openings between the flying buttresses, it still presents, in consequence of the massiveness of the external counterforts, and the numerous flying buttresses which spring from them, a general heaviness of effect, less elegant than that of our cathedrals, but, from its immense mass, more imposing. It greatly needs the centre spire; but even with the addition of that feature, the neighbouring cathedral of Amiens presents a singular heaviness of external appearance, and on the whole a much less pleasing effect than our own, or the German cathedrals.

Eastward of the transepts, the architectural style is of the twelfth and thirteenth centuries; nearly of the same character as at Amiens, but richer. The transepts are of the sixteenth century: the south transept is richly decorated in the flamboyant style; but, although a gorgeous specimen, it wants the vigour, breadth, and character of earlier work. Many Italianisms are to be detected in it, and on the whole it strongly indicates some of those peculiarities which accompanied the final corruption of the style.

The wooden doors at the entrance, which are thought by some to be the production of Primaticcio, are particularly beautiful. Their style is undisguised Renaissance, abounding in that exquisite taste for detail, that minute and delicate chiselling of the fibre of vegetable forms, and, at the same time, that fulness and pulpiness of appearance, which even to this day distinguish the French school of ornament. The north transept is the finest work in the flamboyant style with which I am acquainted: grand and simple in its general design, it has sufficient breadth of parts; and whilst it is but little affected by the bad features, it possesses all the characteristic beauties of the style in which it is executed. The rose window of this transept is very fine, and the rich gable above it forms a fitting termination to this front of the building; but the most striking feature is the porch, with its magnificent gable decorated with three facings of hanging trefoils, the open spaces and hanging points of which, relieved by the deep hollows and mouldings behind, and divided by very distant bands of foliage or other decoration, produce a combination of richness and great lightness of which I know no finer example.

Having thus noticed the chief features of the exterior, I may now offer a few more observations on the interior of the building. The internal dimensions are as follow:—The width of the choir is 48 feet,—with the chapels 186 feet: the length, from the end of the Chapel of the Virgin to the temporary west wall, is 236 feet; and had the building been finished as it was projected, the length would be 380 feet. The height at the highest point under the vaulting has been stated to be 158 feet.

The immensely lofty windows of the choir, and the general elevation of the whole structure have been already mentioned as the remarkable features of this building. Professor Whewell, in comparing Beauvais with Amiens has said, "Amiens, is a giant in repose, Beauvais a tall man on tiptoes;" but although this has been quoted as a just remark, it appears to me to treat with too near an approach to levity the subject of a building which is unquestionably one of the grandest that human art has ever created. This choir has always been adduced by the French as the finest which they possess, in their well known formula for the production of a perfect cathedral—the nave of Amiens, the choir of Beauvais, the portal of Rheims, the towers of Paris, and the spires of Chartres.

The nave of Saint Peter's at Rome is 147 feet high: the choir of this cathedral exceeds that dimension, and though the central avenue at St. Peter's, which measures 83 to 84 feet, is the wider of the two, yet the whole visible width, which conduces to the main effect, is

nearly the same in both instances; the side chapels which form such important features being properly included in the instance of Beauvais, but excluded in that of St. Peter's, where they are separated and disconnected from the nave and aisles. In width it surpasses that of any of our English buildings, and indeed of the mediæval continental buildings on this side of the Alps. Cologne cathedral is 41½ feet wide; Amiens Cathedral 42 feet; Spire Cathedral 45 feet. The central parts of the Cathedrals of Florence and Milan are 55 feet wide. These examples are among the widest continental vaulted buildings.

In England we have Westminster Abbey, which is 33 feet wide; Salisbury Cathedral 35 feet; King's College Chapel 40 feet; York Minster, which is not vaulted with stone, 46 feet. These dimensions of the main avenues I have borrowed from a small work by Mr. Garbett, who also gives a table, showing the proportion between the width and height of the above-quoted buildings and of several others: he observes, that although the general proportion of such buildings, in all countries, is a height equal to twice the width, yet the higher proportion is confined to buildings of the largest class; for the larger they are, the greater may the proportion be without appearing excessive. In England, the chief instances of a proportion higher than the double width are at Salisbury, Winchester, Canterbury, and Westminster; the last being our loftiest building, both absolutely and in its relation to the breadth, which is only one-third of the height.

In France the same ratio is found in the largest buildings, and is not exceeded either in Rheims, Chartres, Paris, Orleans, or Rouen Cathedral; but the neighbouring Saint Ouen and the colossal Amiens have the ratio of 34 to 1, which, especially in the latter, does not appear too great.

The transept windows at Beauvais are very finely enriched with painted glass: those in the lower gallery of the south side were executed by Nicolas Lepot in 1551. The painted glass in the north transept is attributed to Jean Lepot and Augrande le Prince: it contains the ten Sybils, finely composed, and the magnificent rose window, 36 feet in diameter, is decorated by the representation of a flaming sun in the midst of a starry heaven; but the effect of the painted glass in this window I did not consider altogether satisfactory. The vaulting of the roofs is entirely of stone, except in the parts at the intersection of the choir and transepts, where it is of wood. The buttress chapels on the north and south of the first division of the nave, westward of the transept, are fine specimens of flamboyant architecture, the roofs being richly groined.

The groining of the choir, although it was executed after the erection of the filling-in piers, still retains in its divisions an apparent indication of the original construction of the piers and arches; for the present compartments of the vaulting seem almost to have been formed of two divisions over the existing arches thrown into one. The principal rib runs from one original pier to the other on the opposite side; and the form of what would have been the compartments of the vaulting, is indicated by the transverse ribs running diagonally from one original pier to another. The original arch seems to be divided into two, the apex of each secondary arch being made to radiate to the point of intersection of what might appear to be the original arches. Dr. Whewell referring to this example calls the vaulting six-celled, and says that it resembles that of several of the German Cathedrals. On the large scale on which it is here carried out, it is wholly satisfactory in effect, but in smaller buildings I conceive it would not be so. The interior of this cathedral is comparatively very bare of ancient monuments: such indeed is the case generally with the cathedrals in France, since the era of the first revolution.

In the original plan, the choir, like that of Amiens, had three large arches on each side, and as in that building, and in Notre Dame at Chartres, the eastern termination consists of a semi-polygon of seven faces. This polygonal termination, so common in the French Cathedrals, produces the most happy effect inter-

nally, but it greatly militates against that external angularity and sharpness of form which are essential to produce an impression of solidity and grandeur. The unusual height of the clerestory windows (nearly 60 feet), conduces mainly to the airy effect of the choir; and when it is known that the mullions have only a depth of 2 feet, by a width not exceeding 6½ inches in the widest part, with a height of about 40 feet, the whole may be looked on as a marvel of constructive art. One remarkable feature in this choir, of which I know no other instance, is, that the original compartments, and consequently the present two sub-compartments on each side, eastward of the centre, are narrower than the two other original compartments. This peculiar arrangement was probably adopted to fortify the centre piers intended to support the central tower. It is also to be remarked, that the aisles are built unusually narrow; probably in order to assist in propping up the lofty centre compartment.

Some traces of painting are visible in the upper hollow moulding of the nave arches, which has evidently been coloured red; and the ribs of the vaulting for about 2 feet on each side of their intersection being painted, apparently show that the same mode of decoration was intended to be employed throughout. The timber roof over the nave of the choir, which is well framed, is in a very good state of preservation. So far as I could ascertain, the thickness of the stone vaulting at the crown does not exceed 6 or 8 inches. At the west end, on the north side, there are some cloisters of the date of the 16th century, which present very good specimens of vaulting, and remain in excellent preservation.

On comparing this edifice and that at Amiens with our English cathedrals of like date, we find that colossal dimensions, and boldness of design, are the attributes of the French cathedrals, while variety of feature, and multiplication of parts, are the characteristics of our English buildings. Internally, I think that the French buildings far surpass ours, but externally, notwithstanding the vast dimensions and the much greater altitude of Beauvais and Amiens, the want of variety in outline, the confusion of the line of buttresses at the east end, the absence of a centre feature, and the stumpy proportion of the west towers, which at Amiens do not rise above the roof, certainly cause them to yield the palm to our English buildings.

THE SEVEN PERIODS OF ENGLISH ARCHITECTURE.

WHEN I determined to venture to propose to the architectural world the adoption of a new classification of our national monuments, it was not upon slight grounds, or with a doubtful purpose, that I did so. I felt that many reasonable objections might be urged against such a proposition, and that however rational and convenient it might appear to be to one who had been in the habit of using and proving it for some years past, no such sudden conviction would be likely to reach those to whom it was presented for the first time;—that even if it were eventually accepted by only a section of those interested in the subject, it would not be until after it had passed through much patient inquiry and discussion.

These considerations appeared to me to lay me under the obligation of holding myself prepared to meet and answer all such objections and inquiries as might be made from time to time, as the opportunity might present itself, in the full conviction that some such classification as that which I propose, by whatever terms it should be characterised, and which, when once pointed out, appears to me "so obvious, so easy, and so natural," would inevitably force itself into general use.

It unfortunately happens, however, that no change of this kind can be made in the nomenclature of any art or science, which does not affect certain vested interests represented by those publishers who possess the stock and copyright, as it were, of the system about to be superseded: with these parties it is, commercially speaking, a matter of life and death;

and probably no opponents to the progress of knowledge upon any given subject have been found to be so persevering and uncompromising, and in all likelihood so successful, as those to whom I refer.

Now I have strong reasons to believe that it is one of this class who, under the signature of "F. S. A.," complains so loudly in your number of June 21 of the reference you made in a former number to my treatise on the Seven Periods of English Architecture, and the paper which I read on the same subject at the Institute of British Architects.* He deprecates all inquiry: he is for suppression, not discussion: he complains not that you expressed an opinion on the subject, but that you admitted a notice of it in your pages: he deprecates the publicity—"currency" he calls it—that you have given to it, and appears morbidly alive to the fear of my "upsetting the received division of styles," an attempt which he naturally conceives is the sole object of my endeavours; but in which he most stoutly asserts that "neither I nor any one else will ever succeed."

Nor is it difficult, from the general tenor of his arguments, his allusion to the proceedings of the Oxford Architectural Society, his reference to the glossary and other popular series as works of authority, and, above all, from certain characteristic peculiarities of grammar, to identify the writer of the letter in question: and although I should have preferred to contest the points he raises with one whose interest in the matter was purely that which belongs to the subject itself, I will not refuse to take up his challenge, and to discuss with him the proposition, which, as the representative of those who adhere to the "received divisions of styles," he has undertaken to prove. Inasmuch, however, as in the state in which he presents it to us it is neither very logical nor very intelligible, it will be necessary for me to assume and explain what he probably meant to say, before I can attempt to discuss it. In his own words it stands thus:—

"Mr. Sharpe's divisions were not successive periods, but were frequently contemporaneous;" and this proposition he undertakes, with your permission, "easily to prove by well-known examples and well authenticated dates."

Now how a "division" can be a "period" at all it is indeed somewhat difficult to understand; and how divisions can be "contemporaneous" it is still more puzzling to conceive; but the use of this word, "contemporaneous," appears to me to suggest the clue to his meaning, which I will venture thus to interpret: "The peculiarity by which Mr. Sharpe characterises his different periods did not appear successively, as he asserts, but frequently contemporaneously." I confess myself unable to conjecture what he means; and if he does mean this, I must, in the first place, join issue with him thus far. In no part of the "Seven Periods" do I assert that no feature, characteristic of the architecture of a particular period, is ever to be found in another: on the contrary, I have pointed out several instances where this really does occur; but I do maintain that these instances are rare, and are to be looked upon as anomalous, and as ordinary exceptions to a general rule. With this qualification I take up his proposition, and will proceed to consider the proofs by which he attempts to maintain it:—

1. *Saxon Period.*—Our commentator concludes his observations on this period, which have no reference to his proposition, by the following characteristic remark:—"The history of this period is, however, too obscure to be worth disputing." He nevertheless gives us an opinion which exhibits his supposed acquaintance with the state of the drainage of the land below Lincoln, at the time of the Conquest, but which has little to do with the matter in hand.

2. *Norman Period, A.D. 1066-1145.*—Altogether forgetting the proposition he has undertaken to prove, never, indeed, condescending to advance a single fact, argument, or example in support of it, "F. S. A." begins to

"dispute the history" of this period by a fresh assertion in the following terms:—"What possible ground can Mr. Sharpe find for making (sic) the use of this style terminate at this particular date, which (sic) excludes one-half of our finest and richest buildings?"

Making allowance for the peculiar construction of this singular sentence, I am not disposed to deny that the date A.D. 1145, which I have proposed as the limit of the Norman period, excludes a considerable number of buildings which "F. S. A." has hitherto been accustomed erroneously to call Norman: such, for example, as the Abbey Churches of Malmesbury, Fountains, Kirkstall, Shoreham, Kelso, and St. Cross; all those, in fact, in which the pointed arch, or any of the other features which I have named as characteristic of the Transitional Period have made their appearance; but if he means to assert that the above date excludes one-half of the buildings which are capable of being identified as Norman according to the description given of the works of that Period in "The Seven Periods," I join issue with him. Had he given a list of the numerous buildings to which he refers, "one-half of our finest," &c., the matter would soon have been brought to a speedy test; but he has omitted to do this, under the pretext that they would be too "tedious to enumerate;" he is bound, I think, to supply this omission.

He has, however, selected three examples upon which we may for the present suppose his assertion to rest. These are—1. Ilfley Church; 2, the West Doorways of Lincoln Cathedral; and, 3, the Transept and Nave of Peterborough Cathedral. To the first of these he attaches the date, A.D. 1160. The second, he says, were built by Bishop Alexander; and the last by Abbot Waterville, A.D. 1155-1177. 1. Of Ilfley Church, I would say that, whilst its details proclaim it to be a building erected at the very close of the Norman period, none of them are sufficiently advanced to justify our taking it out of this category, and classing it, except upon most unexceptionable documentary evidence, amongst transitional buildings. What then is the authority upon which "F. S. A." asserts it to have been "built about 1160?" We must have this. To attach a date to a building is not a trivial matter, or lightly to be undertaken. He who does this upon speculative or insufficient grounds commits a forgery; and no circumstance has probably tended so much to retard and to confound those engaged in the study of the history of architecture, as the extent to which this vicious practice has been indulged in of late. On this account, there is not a more dangerous book to place in the hands of a beginner, than the "Glossary of Architecture," which abounds in fictitious dates of this description, the greater part of which are manifestly erroneous, and much more calculated to mislead than to assist the student. The prominent manner, however, in which "F. S. A." has adduced this instance, forbids the supposition that he has done so on any other than sufficient grounds; but these it becomes absolutely necessary that he should produce: until he does so, I dispute his assertion that Ilfley Church was built A.D. 1160. 2. The rich western doorways of Lincoln Cathedral contain work of a most interesting and valuable character—the capitals of the shafts, and the arch-mouldings exhibit forms in which a considerable advance is perceptible. Altogether they are precisely works of that nature which, in the absence of all documentary evidence, I should be disposed to place, either at the very close of the Norman period, or at the very commencement of the Transitional period. Now these doorways have uniformly been attributed to Bishop Alexander, although upon no very strong evidence,* and as this bishop ruled from A.D. 1123-1147, the interval is precisely that which I should be inclined to fix upon, judging

from the internal evidence of the works themselves, as that within which they were actually constructed. What argument, therefore, F. S. A. proposes to derive from this instance prejudicial to my classification, I am at a loss to understand. He could hardly have fixed upon one that corroborates it more completely.

3. The "History of the Transepts and Nave of Peterborough Cathedral" is a very peculiar and interesting one: "F. S. A." is either acquainted with it, or he is not; if he is, he has been endeavouring to mislead your readers; if he is not, it is worth his attention. This is one of those cases of which several other instances exist, where, for the sake of uniformity, the original design of a building was persisted in, even after a new style of building had been introduced. The nave of Westminster Abbey, not completed until an entire century had elapsed since its commencement; and the nave of Beverley Minster, built in the fourteenth century in imitation or continuation of the design of the rest of the building of the thirteenth century, are similar examples. The history of the building, as most carefully given by Mr. Paley,* is as follows:—

The Abbey Church of Peterborough was burnt to the ground A.D. 1116,† and in the following year a new structure was commenced by Abbot John de S. is,‡ who died A.D. 1125. The choir of the church was finished by Abbot Martin de Bec,§ and entered by the monks A.D. 1143. William de Waterville succeeded Abbot Martin A.D. 1155, and built the transepts.¶ He was succeeded A.D. 1177 by Abbot Benedict, who built, according to both the chronicles of the abbey, the entire nave of the church from the tower to the west front:¶ he died A.D. 1193. So circumstantial an account as that afforded us by the three chronicles from which the above history is taken, is scarcely capable of being disputed; and we are, therefore, brought to conclude that the nave of Peterborough, which at first sight, and but for one or two remarkable indications, would be taken to exhibit as good Norman work as any building of the earlier half of the twelfth century, was actually constructed, not by Abbot Waterville, A.D. 1155-1175, as "F. S. A." supposes, but by his successor, Abbot Benedict, A.D. 1177-1193: that is to say, after the choir of Canterbury Cathedral, to which "F. S. A." refers as an example of confirmed transitional character.

In none of these *imitation* examples, as they may be called, however closely the earlier style may be followed, are we left without certain indications, sometimes not easy to detect, but infallible when they are found, of the real date and character of the work: nor are we left without them here. In the fourth compartment, on the north side of the nave, if the curious observer will examine the capitals of the triforium shafts, he will find that the ordinary Norman type—the cushion capital—which prevails elsewhere throughout, is suddenly abandoned; and a capital, the foliage and character of which render it impossible to have been designed earlier than 1180-1190, is substituted; the arch-mouldings it carries, and all the other details which surround it, remaining precisely similar to those of the rest of the building. This feature,—standing alone,

* *Ecclesiam tamen Lincolnensem casuali igne consumptam egregie reparando illiusdem structuræ vultu primo involvit.*—*Giraldus Cambrensis.*

† They would simply seem to prove that Bishop Alexander executed some important works, of which these doorways may be a part.

‡ *Remarks on the Architecture of Peterborough Cathedral.* By F. A. Paley. Peterborough.

§ *Tota ecclesia combusta est, et perdidit ignis in tritu novem diebus. In alio autem ipse abbas inchoavit novam ecclesiam, et jectavit fundamentum octavo idus Martii, anno ab Incarnatione Domini millesimo centesimo decimo octavo, et multum operatus est in ea, sed non completit.*—*Chronicon de Scapham.*

¶ *Anno MCXVII. Fundamentum novæ Ecclesiæ Burgi positum quarto Idus Martii.*—*Chron. de Johan. de Burgo.*

¶ *Anno MCXLIII. Conventus Burgi hoc anno intravit in novam ecclesiam.*—*Ibid.*

¶ *In suo etiam tempore ambra cruce ecclesiæ, et tres historis magistra turris erecta sunt.*—*Chron. de Scapham.*

¶ *Adificavit totam novam ecclesiam opere lapideo et ligneo a turri chori usque ad frontem, et pulpitum similiter edificavit.*—*Chron. de Scapham.*

¶ *Benedictus qui fecit construere totam novam ecclesiam Burgi ex lapide et ligno a turri usque ad frontem.*—*Johan. de Burgo.*

* We are not to be understood as admitting or denying this inference by publishing it.—Ed.

* The following are the authorities on the strength of which these doorways have been attributed to Bishop Alexander.—*Ecclesiam vero suam quæ combustionis deturbata fuerat, subtili artificio ac reformati ut pulchrior quam in ipsa novitate sæpè compareret, nec ullius redifici structura circa fines Angliæ cederet.*—*Hen. Huntingdon, lib. viii. p. 223.*

planted there to indicate, as it were, to posterity the real date of the work,—the profile of the bases throughout, which is that of the same period, and a few other noticeable peculiarities of detail, are abundantly sufficient to corroborate the documentary history of the building, and to justify Mr. Paley in concluding (p. 13) "that the Norman work of Benedict is assimilated, or imitative, i.e. built in conformity with the rest, in a style then becoming obsolete." Having thus conceded to F. S. A. that this work is twenty years later even than he conceives it to be, I still make him welcome, after the explanation I have given, to any additional strength this fact may lend to his argument, derived, as it is, from an example so anomalous in its character, as the nave of Peterborough Cathedral. His remarks on the other periods I will comment upon in a second communication; meanwhile I will request him, first, to supply me with the authority on which he asserts that A.D. 1160 is the date of the erection of Ilfley Church; and, secondly, to complete the list of "one-half of our finest and richest Norman buildings," which he asserts that I have excluded from the Norman Period.

EDMUND SHARPE.

PEEL TESTIMONIAL FOR THE CITY.

The committee appointed to select a sculptor from the number of sent-in models have decided in favour of Mr. Behnes; and have determined that the statue shall stand on the site opposite the Mansion-House and King William-street. Twenty-seven statues were submitted, the majority of them of very indifferent character, and they were privately exhibited for a time in Merchant Tailors' Hall, Threadneedle-street. The choice seemed to us to lie wholly between Mr. Baily and Mr. Behnes; and we must confess that so far as the statues themselves went, we must have voted for the former. Mr. Baily submitted three statues, one with a very aristical pedestal. Mr. Behnes had five models. Amongst the other competitors Mr. Noble sent three statues, Mr. Calder Marshall three, and Mr. Lough four.

The Merchant Tailors' Hall has been lighted by Mr. Leslie, and three very handsome chandeliers set up. The company have also put up a flat boarded ceiling of the ugliest aspect, without even a cornice to improve it. Have this wealthy corporation no architectural adviser?

BITS FROM THE GREAT EXHIBITION.

The Great Medals.—It is to be hoped that the British jurors will not allow their desire to deal liberally with their foreign coadjutors to lead them into injustice. An abandonment of the feeling of nationality is all very well, indeed very desirable, but then it should take place on all sides, or the liberal country will suffer in the eyes of Europe hereafter, the circumstances being unknown. It is nonsense to talk of delicacy as opposing allusion to this question, when it is well known out of doors that the various jurors of one foreign country have meetings to communicate results, and are working conjointly to one end. If, moreover, it should happen that some of the jurors of any one particular side should prefer to see their country discredited rather than a rival distinguished, the game of those who are striving for national credit will be greatly strengthened.

Rotary Screening Machine.—Amongst the agricultural implements, Mr. A. K. Smith exhibits a rotary screening machine, which some of our readers would find useful. The materials to be screened are thrown into a hopper, from which they pass into a cylinder from 3 feet 4 inches to 5 feet in length, and from 2 feet 2 inches to 2 feet 6 inches in diameter, and formed of from 80 to 200 rods of various thicknesses, from a quarter to half an inch. These rods pass through four strong rings of wrought iron, and are fastened by a screw at one end, so that each alternate rod can be taken out if required by unscrewing it with a key (sent with the machine), thereby making the width of the mesh double, added to the thickness of

the rod. By turning the handle, a rotary motion is given to the cylinder by aid of a mitre-wheel and pinion, thereby causing the material to be screened to revolve partially with the cylinder until it attains a certain point in the circumference, from whence it rolls by its own gravity down over the wires until it reach the bottom of the cylinder again. The continuous rising and falling of the material over the wires of the cylinder during its passage from the inlet to the outlet effectually and with astonishing rapidity separates the larger parts from the small. For screening coarse and fine gravel, for roads, walks, or building purposes, earths, and other composts for garden or lawn manures, for effectually separating the waste ashes, &c. it will be found useful.

Marine Glue.—In Class VI. there is a collection of pieces of timber, masts, &c. joined by Jeffery's marine glue which deserves examination. It is asserted that by means of this material upwards of 25,000 tons additional strength is dispersed over the hull of a first-rate, and 6,384 tons over the internal surfaces of the masts. A commission recently appointed by the Admiralty to collect evidence and report their opinion on the pecuniary value of the marine glue, for the past and future use of the invention in Her Majesty's Navy, with a view to assist their lordships in the settlement of a claim made by the proprietors for compensation, collected evidence to this effect, viz.—that out of the 130 vessels which have been glued in the Royal Navy, one caulking and paying with glue has been found equal to three times with pitch; besides other valuable evidence as to its cleanliness, security, and comfort to crews. At an examination some months since in Sheerness Yard of the masts and bowsprits of five line-of-battle ships, all made since 1841-42, of yellow pine timber without marine glue, sixteen out of twenty were found rotten and condemned, although the masts of three of the ships had never been in commission; while all the masts and yards made with marine glue in 1842-3, have been found, on their return from foreign service, inseparable even by the wedge, as testified to in official reports.

Static Bridge.—In Class 7, amongst a number of suggestions by Mr. Sankey, will be found drawings and a model of what he calls a *Static Bridge*. The inventor thus describes it:—"With a view to give increased strength to all bridges on the principle of the arch, whether of stone, brick, or other material, I propose to cut the voussoirs in such a manner as to give them a wedge-shape both in their vertical and horizontal planes, so that each voussoir shall become the integral or component part of two arches, viz.: the vertical or that which spans the road, river, &c. intended to be crossed, and a horizontal arch bounding one side of the roadway. Now if the voussoirs on both faces of the bridge be so cut, it follows that there may be two horizontal arches, each having the direction of its thrust opposed to the other. In fact, substituting portions of a cone, or portions of a cone and cylinder, for the common cylindrical arch; and if the spaces between these two horizontal arches are well keyed in by headers running continuously through the entire width of the bridge, or where hollow spandrels are deemed requisite, by means of cross walls, &c. any force, such as a mountain torrent, a very strong wind, or a heavy body striking against the side of the bridge, would be resisted by the convex arch on the other side, and the concave arch, against which such force must first impinge, would retain its position unaltered, provided the abutments be solidly and judiciously constructed. Were a bridge built on this principle, with abutments so formed as to counteract the thrust of these side arches, any lateral pressure that might be exerted against it would only tend to wedge the convex arch on the opposite side more closely together, or rather these arches, having been well keyed in the first instance, would undergo no change whatever, a very valuable condition for bridges thrown over rivers subject to floods or other sudden causes of side pressure, which so often carry away bridges built in the ordinary manner."

Mangles.—Baker's revolving mangle, in Class XXII. seems the smallest mangle yet produced before the public. The old mangle is as primitive and rude in construction, and has been as little improved upon, as any article we can mention, and we think, by giving publicity to this new arrangement, we shall confer a benefit on the public. "Has your mother sold her mangle?" is a popular expression the origin of which will puzzle some future editor of *Notes and Queries*. At all events, we should advise her to do so now, and buy the new edition.

NOTES IN THE PROVINCES.

Stortford.—The first stone of a new church was laid at Hockerill, Bishop Stortford, on 18th inst. It is to be built of Kentish rag stone, faced with Caen. The architect is Mr. Pritchett, of Bishop Stortford.

Norwich.—Extensive improvements have been in progress in the interior of the cathedral, for the last two months, whereby increased accommodation will be obtained and the building opened up more to view. The galleries across the transepts will be removed, and the latter opened into the choir. Carved benches in both transepts will provide nearly 500 sittings on a flooring above the pavement. Of these 349 will be additional to the number of seats now afforded. The transepts will be enclosed by stone screens between the arches.

Nottingham.—It is a singular fact, says a local paper, that bricks are scarcer, and some say dearer, in Nottingham, at the present time, than previous to the abolition of the excise duty; and few can be had for any price except of an inferior quality. This is strange, considering that the town is partially surrounded with a stratum of the finest clay suitable for brick-making in England.

Picknell (Melton Mowbray).—A correspondent of the *Nottingham Guardian* says of the church here, which is a very large one for such a place,—"We suppose it must have been many years ere it was visited by either architect or house mason, having fallen considerably into decay. The present principal landowner, Mr. Gill, has kindly consented to incur the expense of a new chancel. As far as the work is concerned, it is well executed by Messrs. Halladay, of Greatham, Rutland, but we are much surprised at the little taste shown in the style of a chancel to so large a church. We really cannot think an architect has been referred to, or even "Bloxam on Gothic Architecture" consulted. Little as we profess to know of church architecture, in our opinion, as far as regards design, the work is spoilt. Had a good one been chosen instead of this unsightly piece, it would have reflected great credit both upon the inhabitants and the builder."

Bedford.—The enlargement of St. Peter's is progressing. The wall on the south side has been removed, to admit of the extension of a new aisle. A curious discovery was made when the Norman porch was removed. The sides of the porch were found to be built up with portions of stone coffins. On removing a portion of the north wall a few years ago, many portions of stone coffins were found built in.

Hurstperpoint.—The foundation stone of St. John's College was laid on Wednesday in last week. The building is for the middle class school of the Society of St. Nicholas. It is H shaped, and large enough for every accommodation for 300 boys. The style will be the Early English of Edward the First's time. Between the two wings of the fore court is a space of 150 feet. The west wing on the ground-floor will be appropriated for a general school-room, class-rooms, museum, and two libraries. The east wing will contain two dormitories, each to accommodate 50 boys, besides lavatories, master's sitting-room, and offices. The inner court will occupy a space of 150 feet by 125 feet. In the west wing are to be class-rooms and teachers' rooms; and in the east wing lavatories and a suite of master's rooms. On the east side of the central gateway will be a suite of apartments for the chaplain; and on the west side a porter's lodge, waiting-rooms, and teachers' apartments. The

chapel is to be at the north end of the east wing, and the large dining-room at the north end of the west wing. Adjoining that will be the matron's apartments and kitchen offices. There will also be rooms for the provost; and it is intended to build a residence for the head master. The whole edifice is to be constructed of flint-work, cased on the inside with brick-work and cement, leaving a hollow between the brick and flint, to ensure dryness. All the dressings of the windows and doorways are to be of Caen stone. Mr. R. C. Carpenter is the architect; and Messrs. G. Cheesman and Sons, are the contractors for erection: Mr. Brummell the clerk of works. The contract was taken for about 12,000*l*.

Brighton.—There was a passage in the Pavilion Purchase Bill, says the *Sussex Express*, that the Pavilion Chapel should be pulled down; and it was provided that any deterioration in value which such pulling down might entail, should be allowed as compensation. The arbitrators award an allowance of 3,000*l*. to the Brighton Commissioners, out of the 53,000*l*. purchase money.

St. Peter's Port and St. Sampson, Guernsey.—The States have voted 50,000*l*. for the construction of two harbours, one at St. Peter's Port, the other at St. Sampson's.

Worcestershire Lunatic Asylum.—In the country, near Malvern, this extensive building is in course of erection, and almost all roofed in and slated. Nearly 4,000,000 bricks have been used in its formation. It has a frontage of 560 feet and a depth of 260, and is intended to accommodate 200 patients. The design, as we have no doubt before stated, was furnished by Mr. Medland, of Gloucester, architect; and the contract has been carried out by Mr. Thomas Baines, of Cheltenham, builder, for 23,500*l*. "It will be a tolerably profitable concern to him," says the *Worcester Herald*, "as he is expected to reap nearly 1,000*l*. advantage by the duty on bricks being taken off soon after his agreement was sealed." We suspect the *Herald* is mistaken in this, and it is to be hoped the builder's profit will not entirely depend on such a contingency. The foundations of the building were laid in concrete. The ceilings are to be fire-proof, on Fox and Barrett's patent. The cells and corridors are to be warmed with water by apparatus supplied by Messrs. Haden, of Trowbridge, under a special contract on their patent mode of combining the hot air and hot water systems. Mr. H. J. Ingram is clerk of the works. The building is expected to be ready for patients by 1st of January next.

Beaminster.—A new church or chapel of ease was consecrated here on Tuesday, in week before last. The design is in the Early English style, and furnished by Mr. C. Giles, of Taunton.—Mr. John Chick, contractor. The building is quite plain and unadorned. There is a nave and chancel, and two side aisles. The walls are of Beaminster stone, with dressings of Ham Hill stone. The length of the nave is 62 feet 6 inches, breadth 37 feet, length of chancel 23 feet 10 inches, breadth 16 feet. The roof is of open wood work, which, with the seats, is stained oak and varnished. There are 400 sittings (open slips) all free. The east window is of stained glass, by Wailes, and exhibits three subjects emblematic of the Holy Trinity.

Mozley.—The new church lately erected here was consecrated on Friday in last week. It is in the Early English style, with sittings for 635 persons—466 free. The cost exceeds 3,000*l*. of which 400*l*. are still unrealised. The architect was Mr. Horton, and the builder Mr. Heighway.

Bangor.—A new museum has been erected here with stained glass windows, plated glass, and other spirited decorations. The interior contains a varied collection of minerals, fossils, shells, birds, &c.—New baths, too, with no little pretension to notice, have been recently erected here for both sexes.

Birkenhead.—On Monday in week before last the new schools for girls and infants, in connexion with St. Mary's Church, were opened. These schools have been erected from the designs and under the superintendence of Mr. Walter Scott, architect, and form

an erection in the Elizabethan style: they are built of brick, with stone dressings, and have an open timber roof on stone corbels. The school-rooms will accommodate 150 girls and 150 infants, and, in addition, there are a teachers' and class-room, bonnet-rooms, &c. These schools owe their erection to the exertions of the Rev. A. Knox, assisted by liberal contributions of materials and money by several gentlemen.

Huddersfield.—The old market cross, which was removed about forty years since, is about to be restored to its old site in the market-place.

Scarborough.—Plans for a new market have been prepared by the town surveyor, Mr. Irvin, with the full approval of the council. The estimated cost of erection is 14,000*l*., proposed to be raised in 10*l*. shares, of which 1,100 have already been applied for. The area to be occupied by the new market is about 18,000 square feet. There is to be an ornamental fountain in the centre. Estimates have also been prepared for the erection of abattoirs with recent sanitary improvements.

Cockermouth.—In order to terminate the absurd controversy now existing in relation to the church, according to the *Carlisle Journal* propositions have been submitted by the churchwardens to the ratepayers, to the effect, chiefly, "that the churchwardens shall build a church, the foundations whereof shall be so limited as to disturb no graves, the cost not to exceed 4,000*l*., or such additional sum as the vestry shall fix upon; that a building committee be formed, consisting of the minister, the churchwardens, and four inhabitants, two of whom shall be taken from the majority and two from the minority of the last vestry, none of them professional men; and such four inhabitants shall choose an architect from the authors (except Clarke and Hay) of the designs sent in to the building committee, and in case of difference the choice to be left with the Bishop of Chester." A strange affair truly.

Edinburgh.—The improvements in East Princes-street Gardens, on the plan by Mr. Cousin, the city architect, are so far advanced that the Gardens will probably be thrown open to the citizens by the end of the present month. The entire design, however, will not be then completed. Shady walks on the southern slope have been provided as a sort of rural retreat in summer in the very midst of the city; and a bowling-green has also been laid out for more bracing weather. It is proposed to extend terraces along this side as well as on the north, now laid out with the Scott Monument, as a central object; correspondent to which, on the south terrace, in the plan, there is a fountain with colossal statues of Wallace and Bruce, for which 1,000*l*. were bequeathed twenty years ago. The pedestals for sculpture on the upper north terrace have been provided, but, as too usual in this country, the statues are not yet forthcoming.

Leith.—The *Edinburgh Courier* gives an account of the new works at Leith harbour, from which the following particulars are condensed. The new works consist of two portions, viz., firstly, a dock and wharfage; and, secondly a pier, and breakwater, with a low-water pier at the extremity, and an extension of the old pier on the east side of the harbour. The new dock is now so far advanced, that little remains to be done but the finishing of a part of the coping on the south side, and the fixing of one of the dock gates. It is 750 feet in length, by 300 feet broad. The depth at the dock sill is 32 feet. The width of the *débouchure*, is sixty feet, being from 25 to 30 feet wider than the gateway of the present docks. The second and more extensive portion of the works is not so near to completion. From the north-west corner of the new dock, and stretching outwards from the sea-wall, is a timber archway, supported by piles driven in the sand, and to bear a line of rails, to run from the station of the Edinburgh, Leith, and Granton Railway to the extremity of the new low-water pier, or nearly a mile in length. The timber arching, after extending outwards 1,000 feet, rests on the extremity of the old breakwater, at the extremity of which commences a new one, about two feet higher on

the crown head, and from this a line of massive masonry extends outwards for about 2,000 feet, surmounted by a continuation of the staging, to the northern extremity. A pier is thus formed similar to, and almost parallel with, the former and eastern pier, which has long been a favourite promenade. The extension of this pier also forms another feature in these works. To this lengthened promenade will be added 950 feet, running partly parallel with the west pier, and then gradually curving inwards, and terminating in a "dolphin-head." The entrance to the harbour will be about 250 feet wide, and the breadth of the channel near its mouth, about 400 feet. Mr. Barry, the contractor, has engaged to complete the whole works by the end of 1851.

Miscellaneous.—A monument to the late William Motherwell, a Scottish poet, has been erected by Mr. Fillans, for the Glasgow Necropolis.—One of the magistrates at Wordley Petty Sessions lately announced the determination of the Court to show no mercy to the "tommying" system adopted by some masters towards the operative nailers, and characterised it as "a system of downright robbery."—The new cattle market at Croydon will be opened for business on the 10th inst.—An addition to the churchyard at Ashstead was consecrated on 20th ult.

RAILWAY EMPLOYEES' SUPERANNUATION FUND AND DEATH AND ACCIDENT ASSURANCE.

In pursuance of instructions from the London and South-Western Railway Board, their secretary, Mr. Wyndham Harding, has reported on the question of a provision for the staff of the company against superannuation, death, and accident. After entering fully into the subject, the reporter suggests, as regards the salaried officers and clerks—

"1st. A special provision for the old servants who have been ten years in the service.

"2nd. The immediate formation of a 'Superannuation and Provident Fund' for the rest of the staff, and for those who may in future enter the service."

As regards the servants at weekly wages—

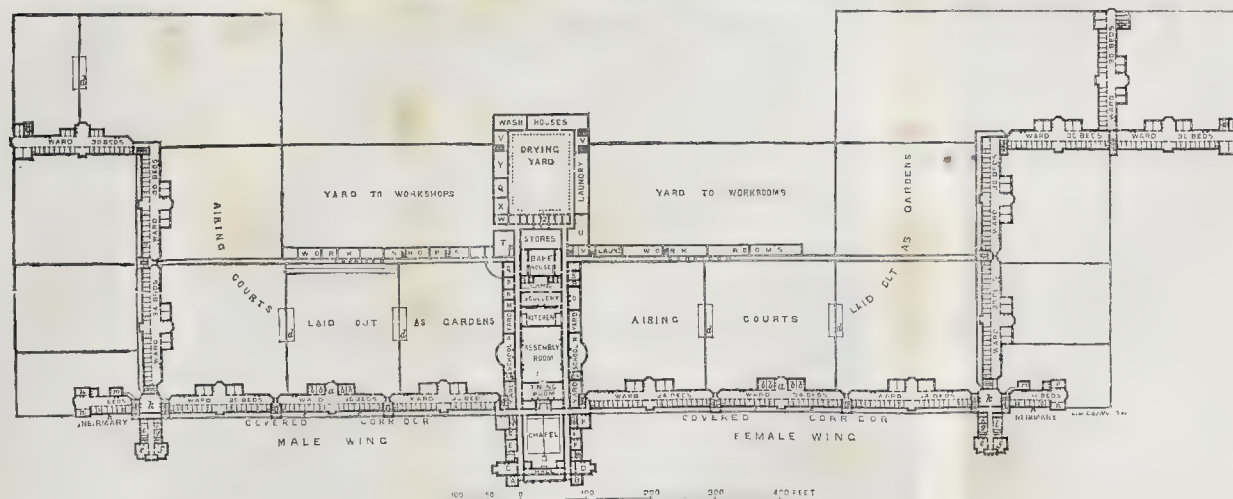
"3rd. A provision by insurance against loss of life or limb."

"4th. The encouragement of a superannuation and saving fund, to be formed by the voluntary contributions of the weekly servants."

Mr. Harding recommends the directors to share in or increase the payments connected with all of these funds; and as to the insurance against loss of life and limb, that the present staff be wholly insured at the company's expense. As the wages amount to 40,000*l*. per annum, and insurance against casualties to 307*l*., which bears therefore a very trifling proportion to the amount of wages, he remarks that—

"A body of railway directors would find such a system of insurance against casualties most useful in improving, at a very small cost, the character of their service, to an extent, indeed, which would, in his opinion, be equivalent to considerably higher wages; and also in relieving themselves from those claims, so difficult to resist or deal with satisfactorily, which may be preferred by the families of persons killed or maimed in their service."

MUSIC BY STEAM.—Hard work has hitherto been the lot of steam: now it is going to have a little holiday amusement. An ingenious little apparatus, it is said, has been exhibited at the foundry of Mr. Vingoe, at Alverton, constructed by two working engineers of St. Just, named Nicholas James and Thomas Bottrell. It consists of a series of bells, reaching a compass of two octaves, struck by covered hammers, poised on levers, and worked by a barrel similar to that of a hand-organ, this barrel being kept in motion by a small steam-engine. It plays the "Copenhagen Waltz," "National Anthem," "Tyroloese Waltz," "Swiss Boy," with changes on the bells and others, amounting to ten in all. It was intended for the Exhibition, but was too late for admission.



REFERENCES.

CENTRAL PORTION.

- A Waiting-room.
- B Superintendent's parlour.
- C Committee-room.
- D Superintendent's dining-room.
- E Clerk.
- F Housekeeper.
- G Porter.
- H Deputy-matron.
- I Storekeeper.
- K Head nurse.
- LL Teachers.
- M Pantry.
- N Larder.
- O Servants'-hall.
- P Dairy.
- Q Cooks.
- R Cooks' pantry.
- S Cook.
- T Brewhouse.
- U Officers' washhouse.
- VVV Drying rooms.
- W Engineer.
- X Engine.
- Y Laundry.
- Z Linen delivery.

WARDS.

- aa Dining space.
- bbb Dormitories containing each four beds.
- ccc Dormitories, attendants' rooms, bath-rooms, washing-rooms, sculleries, stores, water-closets.
- ddd Sun shades.

WINGS.

- ee Surgeons' dining-rooms.
- ff Matron's dining-rooms.
- gg Surgeries.
- ha Reception rooms and baths.
- ii Visitors' rooms.
- kk Attendants' dining-hall and library.

INFIRMARIES.

- mm Fever wards.
- nn Dormitories containing each four beds.
- ooo Stores.
- pp Attendants' rooms, baths, dormitories.

N.B. The buildings, shown by light lines, are on a lower level, so as not to intercept the view from the air courts.

MIDDLESEX COUNTY LUNATIC ASYLUM, COLNEY HATCH.

MR. DAUKES, ARCHTCT.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Monumental Fountain on the Esplanade of Nîmes.—The city of Nîmes is the place where the genius of Rome has left the finest monuments existing throughout the whole of France. Thus, it is plausible to assume, that such recollections may, at times, stimulate to similar art-exertions, and the new fountain lately inaugurated deserves to be cited beside these graceful works of antiquity. The plan is a joint work of the architect M. Quetted, and the sculptor M. Pradier, both known as distinguished artists. Still, it has taken four years to shape the five principal figures out of the fine marble of Carrara. The principal basin is octagonal, and made of gray marble, out of which rises the socle, which sustains the whole work. Around this socle are four monolith basins (*vasques*), each adorned with three lions' heads, out of which the water flows in curvated streams into the inferior (principal) basin. The top of the monument is formed by a colossal statue representing the city of Nîmes. Under this figure, at the four angles of the monument, are four statues of equal proportions, representing the Gard, the Rhone, and the fountains of the Eure, and Nîmes. The whole presents an exceedingly graceful and well-turned assembly of figures and ornamental sculpture, doubly serene under the sky of southern France. The principal basin has a diameter of 14 metres 35 centimetres. The height of the pedestal is 6.078 metres; the statue representing Nîmes is 3.075 metres high, and its weight amounts to 14,000 kilogrammes. The height of the whole monument is 10.052 metres. The basins are of granite of a yellowish-rose colour, from the quarries of Crussal, in the Ardèche; and the water alighting this vast fountain has been conducted hither by canals extending to the foot of Mont d'Haussez, near the place where rises the spring which the Romans have used for their baths, whose ruins are seen nearly intact up to this day.

Gigantic Bell for Notre Dame de Paris.—The present bell-work of the Paris cathedral consists of four pieces, comprising also the famous bourdon bell. Hitherto three were placed in the north steeple, the bourdon in the south steeple. At present, all have been placed in the south steeple, the bourdon hanging lowest. The carpentage of the north steeple is being removed, and a new one placed for receiving a new bell, which is to supersede the bourdon Emmanuel. The weight of this new bell will be 32,000 kilogrammes, viz. 6,000 kils. more than that of the bourdon. The French press extol the height to which campanularian art has been pushed of late there, by the exact proportions in which the alloy of metals is mixed, &c. The largest bell in France is now the Georges d'Amboise; but in Pekin there are seven weighing each 120,000 lb. (?) Still, their metal and form cannot be compared with modern instruments of the kind in Europe.

A Public Benefactor.—M. Bousquet, an employé of the Republic and the empire, has left 900,000 francs to the city of Certe, his birth-place, to be expended in the building and working of a school for the merchant navy of France. A set of spacious buildings have been erected near the Bassin de Certe, where seventy boys will receive the necessary instruction for the peace naval service.

The Common Council of Paris.—The activity of the *commission municipale* of the French capital is unceasingly occupied with matters relating to amelioration, enlargement, and laying out of new streets, footpaths, planting of street-trees (*allées*), of which we deem it only necessary to chronicle the more important. Amongst them is the plan of a new street, which shall extend from the Louvre to the Hôtel de Ville (the Guildhall of Paris). The original plan comprised only a prolongation of the Rue de Rivoli, and this has been hitherto carried out as far as the Rue de la Bibliothèque. The new street occupies about the middle of the space between the Quai and the Rue de St. Honoré, and abuts on the angle of the Place de l'Hôtel de Ville, to which it will bear a good proportion. The *décret* of the provisional govern-

ment allotted to this thoroughfare a width of 15 metres; but the Prefect de la Seine asks now for 22 metres, which by some is considered too much, as the system of *arcades* will be maintained, which absorb a good deal of the personal traffic. An exemption from taxes for the space of twenty years will be accorded to the houses on the main line of the street, under condition that the proprietors acquiesce in an uniform, monumental style of building. The law of expropriation will, however, be also extended subsequently to the space beyond the main line of street, for the sake of obtaining buildings healthy, well-aired, and spacious. The name of Rue de la République is to be given to this finest *alignement* of the French capital.

Systematisation of Streets, Paris.—A very active inquiry is carried on at Paris on the reforming and regularising the names of different streets, for the sake of putting the topography of the French capital into a sort of system. In older times, there and elsewhere, names were given to any new assemblage or row of houses, and their appellations have remained unchanged, when subsequently any contiguous blocks of buildings were added, either in a *direct* line or otherwise. Here, also, as in many other cases, the eventuality of history is to be rectified by the dictates of reason.

Gallery of Portraits of contemporaneous great Artists, Berlin.—When, at a late occasion, Rauch, Kaulbach and Begas, dined with the King of Prussia at Potsdam, Begas took the opportunity of showing to the party the portrait of the late Meyerbeer, executed by him for the above gallery by order of F. William IV. This rare, nay, it may be said, unique collection, is located in the palace of Charlottenburg, near Berlin.

Baden.—An ancient Mine of superior Zinc.—The mine of Wiesloch, lately re-discovered, is visited by numbers of persons from all parts of Europe, who inspect this most rich deposit of zinc. By the mere clearing of the old shafts about 50,000 cwt. of the richest ores have been obtained, which amount will probably be doubled before the smelting will have begun. The proprietor has constructed furnaces which will be capable of using 1,000 cwt. every week. The zinc metal is said to be of extremely fine grain, and very ductile. It is not brittle, and so soft that it can be scraped with a penknife.

Luck among Bricks.—At the demolition of some old houses in Lyons, one of the labourers found a piece of old metal, wedged in between two courses of masonry. Having gone with his discovery to some vendor of marine stores, the sum of two francs was given for it, as it seemed to be very good copper indeed. But on nearer inquiry, the antiquarian began to entertain some misgivings, and brought the piece of metal to a commissaire de police, who at once recognised it as an ingot of gold. Still, the present owner would not appropriate to himself the treasure, but named the journeyman bricklayer from whom he had bought it. Notices were issued as to the real owner of the gold bar; but as it bears the mark of the Assayer's Office of the Republic of 1790, there is no doubt that it will ultimately revert to its lucky finder. Its value is about 7,000 francs.

GLAZED AND UNGLAZED DRAIN-PIPES.

UNABLE to return to the gigantic sewer and the clumsy brick drain, there is an evident desire on the part of some, at least to introduce the *brick earth* for the manufacture of drainage pipes instead of glazed stoneware, and this is put forth in anonymous advertisements, under the specious pretence of appeal to ratepayers on the score of economy. We should not have noticed this, but that it found a place in your influential journal of the 31st of May, and has been succeeded by a letter of approval last week from another correspondent.

The former letter and advertisements show either an entire ignorance of the manufacture or a wilful misrepresentation, for instead of the glaze of stoneware increasing the price 50 per cent., it is so trifling as scarcely to be perceptible on each pipe: the cost of such pipes

arises from the greater value of the material, the care expended on the manufacture, and the great degree of fire, and consequent risk, to which they are subjected in order to produce a vitrified, and consequently imperishable body.

The letter signed "Baylis" in a recent number is expended to prove that glazing does not add to the durability of drainage pipes. It is not contended that it does: the advantage of a glazed surface is that it facilitates the flow of the sewage matter (no unimportant consideration); but the *durability* is determined by the vitrified nature of the body of the ware. A pipe which is vitrified and *impermeable*, and the glaze of which resists the action of acids (and such is the stoneware pipe), must be more suitable for purposes of drainage than a *porous* one, which becomes saturated with the matter which passes through it, and ultimately becomes absolutely rotten. The pipes which have been referred to as found in the old Roman settlements, and which we have examined in Rome and the south of France, have not been subjected to these tests: they have been used for water; and those which have been preserved are such as have been well burnt, of a dense body, and superior to the common ware of the present day. If common earthen pipes are once permitted to be used, there will be no guarantee for the safety of any drain: a single soft burnt pipe would rot, and render the whole useless, and is next to impossible to detect such among a large quantity. With the salt-glazed stone ware pipes there is a guarantee for their hardness in the fact that the glazing does not take effect upon an imperfectly burnt pipe, but requires a high degree of fire to render it vitreous and susceptible of the glaze. In fact, this glazing differs from all other kinds, in that it is not a coating on the material, but a vitrification of the surface itself by the chemical action of salt fusing the particles at such an intense heat as would reduce a common material to a shapeless mass. A porous pipe with a glaze would be equally objectionable with one unglazed, because the glaze in such case is of lead, and, subject to the action of acids or alkaline matters, would soon be eaten off, and the sewage would permeate and rot the body of the pipe.

Glazed stone ware pipes are now little if anything dearer than the dry pipes: their perfect utility is unquestioned by any; and it is surely undesirable to run the risk of using such as are inferior and present no advantages even on the score of economy.

We should not have troubled you with this communication, considering the superiority of these pipes established, but that we have been requested by several eminent surveyors and others interested in the progress of sanitary improvements—and as manufacturers who have somewhat contributed to the extensive introduction of these pipes,—to notice the advantages which they possess over the common earthen pipe, and the security which the material and mode of manufacture give for an imperishable article at little, if any, additional cost.

DOULTON AND CO.

CONSTRUCTION OF CHIMNEYS FOR CHEMICAL WORKS.

My attention has been called, lately, to the elongation of a chimney for chemical purposes. I find it would be dangerous to raise it. It is quite useless, as it is 80 feet too short for the height required by Act of Parliament.

Having considered particularly whether it may not be possible to make such a valuable chimney useful, I beg to make a suggestion, hoping that one of your correspondents may be good enough to correct me in my opinion, should I err. The alkali from a chemical chimney falls; and even were the shaft 500 feet, it would also fall. In damp weather it is very offensive, and impregnates the entire atmosphere.

I wish to know if it be possible to pass off the alkali in water, by constructing a retort sewer with running water, at the same time allowing room enough for smoke escape. Could this be done, it would be a very great improvement in building chimneys.

FRANCIS SULLIVAN.

CONTRACTORS—SUB-CONTRACTORS AND HIRING OF WORKMEN. BROMPTON COUNTY COURT.

COLLINS AND BAKER v. FOX AND HENDERSON.

These are two, out of, it was stated, nearly 200 actions pending between the workmen employed in the Glass Palace and the contractors. The cause has been adjourned three times. The first time it was heard, Mr. Cochrane, for Messrs. Fox and Henderson, denied their liability, saying that a person of the name of Robson had sub-contracted to do the painting, and had hired the plaintiffs as well as the rest of the painters. The plaintiffs said they were certainly hired by Robson, but they had every reason to believe they were hired by him for Fox and Henderson; that he never told them they were in his employ, nor had any of the painters reason for supposing he was anything else but their foreman: in fact, they were not paid by him, but by Messrs. Fox and Henderson.

His Honour (Mr. Amos) said, he had frequently adjudicated upon disputes of this nature, and he invariably found these sub-contractors a positive evil. How came it, if these men were not in Fox and Henderson's employ, they paid their wages?

Mr. Cochrane said, it was customary for contractors to do so, and settle with the sub-contractors afterwards.

His Honour.—Yes, contractors, I know, have good ground for not intrusting workmen's wages in the hands of these persons. It is very hard upon these poor men, and to get at the liability I will adjourn the case until next sitting, when you can subpoena Robson. Upon the next Court day Robson swore, that he alone was liable, and that he sub-contracted to do the paint-work by the ton (*sic*).

Mr. Cochrane said, he had a good defence upon the merits.

His Honour.—I really cannot think Mr. Fox knows of this dispute. Would it not be better to refer it to him?

Mr. Cochrane said, that it would be a bad precedent.

His Honour.—Well, to try the merits of the case, one of you had better summon Robson, and I will again adjourn the cause. Collins then took out a summons against Robson, which was heard on Thursday, when by some mistake on the part of Collins, he failed to appear until Friday, the day on which the plaintiff against Fox and Henderson was adjourned to. Robson was, however, present, and reiterated his statement as to liability. The learned judge appeared anxious to assist the men, and again pressed a far from complimentary opinion upon the defence and the character of sub-contractors in general.

Collins complained of the hardship of the defence, and, addressing Robson, said, "If you are a contractor, why did you not put four coats of paint on the building, according to contract, instead of two?" Mr. Robson did not seem to understand this query, and his Honour stopped a very awkward *exposé*, by telling the plaintiffs they now knew whom to sue, and they had better do so. The plaintiffs then took out two summonses against Mr. Robson.

TAYLOR v. WRIGHT.

The right of builders' foremen to charge workmen with felony when found in possession of their employers' property.

This was an action to recover damages for false imprisonment, under circumstances which created much interest to a crowded court of builders and operatives, and, as will be seen, is of much importance to contractors and builders in general. The plaintiff is a carpenter, residing at Knightsbridge, having a small workshop of his own, and the defendant is foreman to Messrs. Fox and Henderson. From the evidence, which was too voluminous to publish in *extenso*, it appeared that on the 13th May, the plaintiff was in the Glass Palace, when a French exhibitor instructed him to make four pedestals for a stand in the building, at the same time giving him a eight deal planks and some battens to construct them. This wood was removed from the building to the plaintiff's workshop. One of the men employed on the works informed Mr. Wright of the transaction, upon which he went to Taylor's house and asked what property he had got in his place belonging to Messrs. Fox and Henderson. The plaintiff then said he had not got the key and could not then let him see it. After some words the defendant gave the plaintiff in charge of a police constable for having property in his possession belonging to Messrs. Fox and Henderson. The constable, who knew the plaintiff to be a respectable man, was at first loth to take him into custody on such an indefinite charge, but, upon being pressed, took him to the Walton-street Station-house, at which place the inspector on duty refused to take the charge. The plaintiff was then taken to the Vine-street Station-house, in Piccadilly, where the inspector refused to take the charge as it then

stood; upon which, Mr. Wright charged the plaintiff with felony. Upon the matter being investigated before the magistrates, at Marlborough-street, the plaintiff could not tell the names of the foreigners who gave him the timber, as the order was given through an interpreter, and he merely booked the dimensions of the pedestals. Upon this, Mr. Taylor was remanded for some days to afford time for inquiries. Upon the re-examination, the plaintiff was discharged without any imputation upon his character. Mr. Herring, solicitor, said he had the honour of appearing for Messrs. Fox and Henderson, who had every reason for supporting their foreman, for what he had done in the matter. There could be no doubt he was perfectly justified by law, and he was instructed that there were good grounds for assuming that the timber abovementioned was not all the property taken away belonging to Messrs. Fox and Henderson. Mr. Herring then called upon Mr. Wright, who corroborated the above, and added that he had a witness who could prove that there was other property besides the deals taken away, and that the wood received was considerably more than was required to make the pedestals,—that the foreigners had no right to give away the wood,—and that the plaintiff must have known it.

The Judge said he had carefully studied the evidence, and could come to no other conclusion than that the defendant, in finding property of his employers in another person's possession, had but acted up to his duty. When he looked back to the sanguinary laws, when men were hung for petty larceny, he could not but be of opinion that the law allowed a reasonable presumption for arresting the defendant. Without imputing the slightest moral guilt upon the plaintiff, he must give a verdict for the defendant with costs.

Mr. Herring said his clients instructed him to forego costs.

INSTRUCTIVE PAPERHANGINGS.

TEMPERANCE.

THOUGH many improvements have, within these few years, been made in the designs, or subjects, of wall-papers, yet much remains to be done. Instead of the unmeaning combinations of strange forms and of groups and wreaths of flowers, which the goddess Flora must laugh at, why should not paper stainers choose for "pattens" historical episodes, or colonial scenery subjects? There are many passages in the life of our Great Alfred which might be made the subject of mural cartoons for the "million." There are, too, many views of places in our colonies which might be represented on the paper used for covering the walls of the houses of the humbler classes of society. "Walls have ears," says the proverb; they might, by the employment of such subjects, and with the aid of artists, be said to have tongues; and their *mutiloquence* (to coin a word) would be a thing to be admired in England. Similar subjects might be used for "transparent blinds," to a much greater extent than at present, for public institutions, hotels, and for those clubs for sober men, coffee-palaces.

May I profit by this occasion of writing to you to say something in connection with temperance, and a vast number of your readers? Notwithstanding the increase of temperance societies, and the improved habits (in regard to drinking) of the working classes of Great Britain, still fourteen millions of pounds are annually spent in gin alone! Now this is the precise sum which Mr. Asa Whitney requires for the construction of his Atlantic and Pacific Ocean Junction Railway. If the working men of England would abstain from gin drinking for seven years, they might become the proprietors of that or a similar railroad. Yes, sir, half a million of men connected with building and its subsidiary trades, by saving a penny a day for seven years, could form more than half this great work, and each contributor might have, at the end of that time, 50 acres of land. A penny-raised capital, great enough to complete so gigantic an undertaking, might at first seem a dream of the imagination of a Bedlamite; but so would have been deemed, at one time, our penny post, our parliamentary railway trains, penny steamboats, penny savings' banks, penny cyclopedias, and other penny matters. We live in a penny era; and rely on it, sir, that it is possible to carry out this penny suggestion.

OPITEK.

* The desirableness of making paperhangings instructive has often been urged in our pages.—Ed.

Books.

The Annual of Scientific Discovery, or Year-book of Facts in Science and Art. Edited by DAVID A. WELLS, A.M., and GEORGE BLISS, Jun. Gould and Lincoln, Boston; Chapman, Strand; and Delf, Paternoster-row.

We noticed favourably a previous volume of this miscellany, made after the model of the London "Year-book of Facts," and may speak equally well of this, simply remarking that the editors might without difficulty get a larger choice of English materials.

In a notice of Paine's reported inventions and discoveries, the peculiar construction of his electrodes is explained as follows:—

"The construction of these electrodes is peculiar. They are made of platinum, and differ from such as are commonly used in this respect. They present to each other a very large amount of surface and angles in close proximity. This is effected by having one electrode constructed like a honeycomb, and the other with short wires or pins which dip into the cells of the honeycomb."

Immediately following the article on this invention is the record of a recent paper by Mr. Daniel Paret, extracted from the proceedings of the Royal Society, from which it appears that our hint to electricians on this side of the Atlantic has not been altogether fruitless. From these proceedings it appears that the author of the paper in question "states that he now brings forward an experiment which proves, not that water is a compound, but really a simple element, the generator of oxygen and hydrogen, since, without being decomposed, a given volume of water may be entirely transformed at will either into oxygen or hydrogen. Thus he considers it is no longer a decomposition of pre-existing elements which is effected, but really a gaseous transformation into two 'sub-elements,' which are formed at the expense of the water by the transposition of its combined or coercive electricity, which places itself in excess in the water that becomes oxygen, at the expense of another volume of water, which becomes hydrogen. [This is, at the least, perfectly consistent still with our own explicit prediction, that the positive would produce oxygen and the negative hydrogen, as well as with Paine's alleged discovery.] However astonishing this may appear, it is 'an fait accompli et acquis à la science.'" One of the author's conclusions is, that electricity "is really the coercive agent of cohesion"—another result in perfect accordance with our expressed idea of the concentrative nature of electricity.

Miscellaneous.

METROPOLITAN COMMISSION OF SEWERS.

The meetings of this commission appear to be few now and far between. On Friday last Captain Dawson stated at a Court of Justices, that the engraving of the surface works on the Ordnance Survey maps of the metropolis had been completed, and that impressions from the plates might be obtained from any of the Ordnance agents at 2s. a sheet. It is proposed, he added, that the sewers and other subterranean works be engraved on duplicate electrotype plates, as the original would be shortly destroyed, from the frequent alterations, were they used for the purpose.

CREMORNE GARDENS.—A lesson as to the management of light was afforded at the large circus, which has been erected in these gardens for Franco's troupe of equestrians. In the first instance only one small round hole in the crown of the dome was left for light for the day exhibition; since then other openings in the side have been made for ventilation, but the amount of light to which the one hole gave admission should teach those who do not yet know it, that whether a building is light or dark depends on the way in which the light is brought in. The gardens at Cremorne are now among the prettiest of their kind, and the entertainment provided here is of excellent quality.

CHURCH TILES.—With respect to a paragraph recently quoted from *Felix Farley's Journal*, as to the cost of Minton's tiles, and which asked "why should plain black or red tiles be 1s. 4d. per foot, when any manufacturer could make them for 6d.?" Mr. Minton writes to us as follows:—"The price of plain tiles at the manufactory is not 1s. 4d. per foot; the highest price being 1s., and they are made at prices down to 6d. The additional cost of carriage, &c. depends upon distance and other causes. The writer of the statement evidently is not acquainted with the nature of the manufacture, or the enormous cost of machinery employed. I have embarked many thousands of pounds in bringing both the encaustic and plain tiles to their present state of perfection, and for a long period my profits were nil! It was rather to gratify my taste for ecclesiastical architecture than to add to my means that I devoted so much of my time to this branch. And as it is assumed by *Felix Farley* that my exorbitant prices have debarr'd poor churches the possession of these tiles, it will not be too much to say that in very many instances poor churches would not have been adorned with them at all, but for my disregard to profit. It has always been my wish and endeavour to reduce the price so that the introduction of the tiles, even into the most unpretending structures, might be as extensive as possible, and I am sanguine of being ultimately able to accomplish my object. It was only a few weeks ago that I expended 300l. in erecting a brick machine, which, however, was not found to produce the article with sufficient rapidity; and I have lately taken out a patent for a new machine, jointly with Mr. Nasmyth, by which means I hope at no distant day to effect a considerable reduction in price." Mr. Minton further says that the service of china purchased by the Queen to send to the Emperor of Austria was manufactured by him, and not by Copeland, as stated. It is the dessert service in parian and porcelain.

STATE OF BLACKFRIARS BRIDGE.—We are not surprised to learn that the subsidence of this bridge still continues, and that "the footways east and west have separated themselves from their respective sides, leaving an opening of about two inches wide for several yards in length." Indeed, it would be inconsistent in us to be so after the doubts we felt it our duty to cast upon assurances to the contrary, even by men of skill and note. The Bridge-house Committee, acting on professional advice, recommend the removal of the present road and footways, and of all superincumbent weight from the top of the defective pier, and from the spandrels of the adjoining arches, and the substitution of a timber bearing, to be covered with road and footways of the lightest kind compatible with the traffic, by which means "the further sinking of the pier might possibly be prevented," and, at all events, the bridge be rendered sufficiently safe and efficient to afford time to consider and determine on more prominent measures. We would earnestly advise the Corporation to look further into the matter before expending 1,300l. in this way.

ARCHITECTURAL SOCIETY OF ARCHDEACONRY OF NORTHAMPTON.—A committee-meeting was held on Monday, in week before last, when the Mayor of Coventry begged, by letter, to be allowed to pay all the expenses incurred by the Society at Coventry on a late occasion, and other business was transacted, in course of which a letter was read from the Dean of Ely relative to some memorial to the late Marquis of Northampton; and an account was given of some curious ancient pavements, lately viewed by a party of the members at Pipwell Abbey: plans of cottages just completed for Earl Spencer, at Teddington, were exhibited. In reference to Mr. Scott's employment in the repair of the tower of St. Sepulchre's Church, it was stated that there was a hope that the damage done by the lightning would not necessitate the removal of the spire. A committee on St. Peter's Church was formed, and it was resolved to enter at once into the contracts for the whole of the interior work, under the sanction of the architect.

DINNER AT THE MANSION-HOUSE IN CONNECTION WITH THE GREAT EXHIBITION.—On the 28th of June the Lord Mayor gave a splendid entertainment to the Royal Commissioners and others who have been intimately concerned in the Great Exhibition, and it passed off very brilliantly. Lord John Russell, in the course of a speech that he had occasion to make, with reference to the whole Exhibition passing away, said,—"But everything, I trust, will not vanish away. There will be, in the first place, the recollection of all those who were present at the Exhibition—of the wonderful ingenuity and skill displayed by the various nations of the world in the productions and manufacture of the works of fine art they have sent to the Exhibition. There will not vanish away the instruction which many have reaped from the daily studies of the objects there exhibited. There will not vanish away the recollection of that useful collection which will make some of the rarest and newest inventions of the present day become of common use in our time, and minister to the comfort and happiness of millions in future ages. There will not vanish away that feeling which the artisans and labourers who have come from a distance must have, that in providing that Exhibition, of which Prince Albert gave the notion and the suggestion to the country, their comfort, their welfare, and their enjoyment have been cared for, and they will go back more instructed, and I trust better men, for that which they have seen in the Exhibition. Other things, I trust, will not disappear when all the objects we see there are scattered over the different parts of the earth. There will not, I trust, disappear that feeling of friendship and brotherhood which has existed, when the nations of the earth have been, as it were, shaking hands with each other in the midst of that Exhibition. That feeling of friendly rivalry for objects calculated to promote the good of all—that feeling of friendship for all—that unwillingness to do anything that might promote disunion, and the wish that concord and peace should reign throughout the earth; these are things which I trust will not pass away with the passing sights of the Exhibition; and if that be so, those who in any degree co-operated in producing these effects will have a proud reflection to make, and I trust that the millions of the earth will gain benefit by the proceedings of the present year." Baron Dupin, in the course of an address, expressed the desire of the people of France to see the Lord Mayor of London in their metropolis.

BOAT FOR THE PRINCE OF WALES.—Noulton and Wyld, of Lambeth, have just completed a handsome boat, to be presented to H.R.H. the Prince of Wales by the body of Thames watermen. It is built in the old style of wherry; of mahogany planking, with maple timbers and bird's-eye maple thwarts, highly polished and copper-fastened. The rail is mahogany, with the Prince of Wales's crest carved in the centre. The Prince of Wales's crest is painted under each rowlock and on each side abaft the rail. The City arms is painted on the bridge under the sailing thwart, and the watermen's arms on the fashion board in the stern. The cushions and upholstery work were done by Mr. Blincko, also of Lambeth.

CONSPIRACY TO QUIT EMPLOYMENT, OR OVERRULE DISCHARGE OF WORKMEN.—At the County Court at Birmingham, on Friday week, a case was tried which involved the right of the masters of twenty-one glass-blowers to turn them off without notice, for threatening to leave in a body, at a fortnight's notice, unless the masters restored four of their companions to their employment, although discharged for assaulting another fellow workman. An action was brought by one of the men for a fortnight's wages to try the case, and it was shown to have been the custom of the masters to give such notice. The magistrate, however, said, that in his opinion this was a conspiracy, and an offence at common law; indeed, he did not know whether or not it did not amount to a misdemeanour. Such being the view he took, he should order a nonsuit.—*Birmingham Journal*.

NEGLECT OF WORK.—Thirty puddlers were charged at Wednesbury, on Tuesday in last week, with neglect of work. About one-half the number were fined each 1l., and the remainder 5s., all with costs. The men in defence asserted that the iron was so bad that it took them about three hours to puddle one heat, and that this was the reason why they left off work after working two or three heats, instead of making six heats, as required. Are the summer heats and the narrow limits of human endurance not to be also taken into consideration in such a case? The fact that such complaints regularly occur in the summer—every summer, and while the weather is at the hottest, itself proves that these limits have been reached and succumbed to, even in the face of fine and imprisonment. Surely there ought to be some consideration for loss of health and risk of life to workmen as well as for masters' profits. The men are said to have loudly protested against the decision of the bench, and declared they would go to Stafford gaol before they would pay a farthing. Mr. Barker replied that the bench had the power to order the amount to be deducted from their wages, which would accordingly be done.

RAILWAY JOTTINGS.—Messrs. Fairbairn, it is said, are constructing engines to run express trains between London and Birmingham in two hours and a half. The driving wheels are to be seven feet in diameter, and the tanks of the tenders are each to hold 2,000 gallons of water, so that, if necessary, the engine can run sixty or seventy miles without stopping for water.—The largest sum ever, till then, taken for one railway train, is said to have been on Saturday in week before last, when 600l. were paid by the passengers by the 10 a.m. train from Euston-square. This was at the Euston Station alone. By the 5 p.m. express train, the "take" was 380l.—A case has just been made public, in which the South-Eastern sought to charge 75l. for the carriage of thirteen packages of specie from London to Dover, the whole of the packages going under the seat of a coupé. The demand was resisted; the vessel was taken round to Southampton; and the packages were conveyed by the South-Western Railway for 1l. 16s. 6d., the party in charge of them having a coupé to himself and the specie.—About 200 men engaged on the works of the South Wales Railway tunnel, near Swansea, have struck work, in consequence, it is said, of dissatisfaction with a system of truck adopted by the contractors (Messrs. Frith and McGrath) by which the workmen were compelled to obtain goods from a shop kept by the contractors, for which goods they allege an exorbitant price was charged.

MAYALL'S DAGUERREOTYPES.—Mr. Mayall, the American daguerreotypist in the Strand, has distinguished himself from some of his contemporaries in the art by the production of pictures, as well as portraits. We have recently seen, for example, a lithograph, called "The Young Arithmetician at Fault," a sturdy lad scratching his poll over his slate, and evidently sorely puzzled by some unknown quantity. At first sight you would declare it was from a picture by Hunt,—one of Hunt's boys, as they used to be called, before he took to beating nature in the production of fruit; but the fact is, it is from a sitter, thrown for the instant into the proper position and expression. Another of his productions in this class is a Shareholder in four phases,—the same head, when the shares are first allotted, and things are looking well; when they are becoming doubtful, and at last are decidedly worthless. Some of his ordinary portraits are excellent specimens.

PHILLIPS'S FIRE ANNIHILATOR.—Frequent "demonstrations" are still being made upon buildings prepared literally "for burning," or at least for escape from destruction by Mr. Phillips's invention; but we really cannot report the mere repetition of such amateur displays; and we do think it strange that this invention has not even yet been brought to bear successfully on some actual fire among the many, ever and anon, presenting themselves within the limits of this metropolis.

quisite. It is manufactured on the only principle Portland cement can be, and contrary to the statements put forth by those who have hitherto had the monopoly. Manufactured by R. REAVES, Esq., at his Works, near the River Avon, and sent to all parts of the kingdom per boat or rail, at a reduced price to the trade.

The Builder.

No. CCCCLX.

SATURDAY, JULY 12, 1851.

LONDON City is, as a matter of course, an object of much interest to many of the strangers, foreign and provincial, who now fill the metropolis; and its lions are hunted with assiduity, if not skill. Some of our foreign friends, by the way, are sadly confused between London in general and the "City" in particular, and will doubtless give strange accounts to their countrymen when they get home,—some, indeed, are doing so already,—of the odd-looking places in which the Londoners live. One of the first things strangers ask is,

"The way
To Julius Caesar's ill-erected Tower:"

and from 1,600 to 1,800 persons a day are now passing through the Armouries and Jewel-house. The old beefeaters who keep watch and ward here, and take the visitors through in parties of sixteen or eighteen, have a busy time of it, and may almost be excused for saying nothing more than is written on each article; although why they do this, unless it be for the benefit of those who cannot read, is a mystery.

Two mornings ago, being on Tower Hill, we were sucked in by the force of attraction to pay our two sixpences,—one for the armour and the other for the jewels, and found a large crowd of people biding their time. The briefest mention of our purpose led the jovial looking warder whose turn it was to play the showman, kindly to "admit us of his crew," in order to save our time, and we passed round the allotted circle with the other gapers, much amused and interested, if not instructed to the extent which might be gained from such a fine collection as there is here. Seen as it is, however, it is a very good shilling's worth, as most of our readers (always excepting those who live close to it) know. We are not about to describe what is there to be seen: it is somewhat too late in the day for that. It remains nearly the same as it was left by the late Sir Samuel Meyrick, who arranged the armour some years ago, with the exception that a few specimens have been added, and that some of the pieces appear recently to have had a scrubbing, and are made better than new. It is very desirable that all opportunities should be taken to increase and make perfect the collection: funds cannot be wanting, and every important accession would pay for itself, like the hippopotamus at the Zoological Gardens, by the fresh visits it would induce. The principal part of the collection is in the Horse Armoury,* an apartment 150 feet long erected for the purpose in 1826: the perpetrator of the architecture of it, by the way, deserved to be beheaded much more than some of the unfortunates whose memories are associated with this blood-stained locality. Queen Elizabeth's armoury is in the White Tower, and is connected with the last named by a passage through the

14 feet-thick wall. In this there are some most interesting reminders of the "good old days," when, according to some grumblers at the present, this really was "merry England;" such as "the iron collar of torment," the "cravat," "thumb-screws," "bilboes," and other gentle persuaders to make men speak. Here, too, is the cell of the accomplished Raleigh, who pined imprisoned for thirteen years, and, as every one knows, was ultimately executed.

After examining the regalia, including what is gravely pointed out as Edward the Confessor's walking-stick, a staff of beaten gold surmounted by an orb and cross, and weighing about *ninety pounds!* we passed out, and those who composed the party went their way, thinking they had seen the Tower. Now, this is just what leads us to suggest to those who may go hereafter, that they should call upon their memory before leaving, and look a little farther. Every inch of the area within the Tower walls is tied to a story,—is an evidence in history. If its Roman connection be fabulous, here, at all events, was a Saxon stronghold, and here is a Norman castle. At sight of these architecturally much-abused walls what names and recollections rise! this palace, prison, and fortress, "the very germ of London," as Charles Knight calls it, is, in truth, the early history of England, written on stone, and interspersed, may we say, with many "cuts on wood." Visitors should not forget Traitors' Gate,—

"—that gate misnamed, through which before, Went Sidney, Russell, Raleigh, Cranmer, More;" or the little church of St. Peter *ad Vincula*, where lies Anne Boleyn, with many other noble sufferers; or the Beauchamp Tower, with its singularly interesting records of some who were imprisoned there, cut in the stone walls. This latter will be seen on the west side of the open space beside the keep, or what used to be called "the Green beside the Chapel within the Tower," and is now the officers' mess-room. To view this, permission must be obtained, but this will not be found difficult. Many of the inscriptions are full of interest, none more so to us than the simple word "JANE," which, if not written by the unfortunate Lady Jane Grey herself, probably was by her husband, Guilford. The present mess-master is apt and obliging in describing the most important of these "trivial fond records," but he is in error in pointing out the date to the inscription signed "Wilim Tyrryl," as "1241, the earliest inscription here." It is 1541. How sad is this Tyrryl's song, which is thus Englished,—
"Since fortune has chosen that my hope should go to the wind to complain, I wish the time were destroyed; my planet being ever sad and unpropitious." Another inscription is very noticeable,—judge:—"The most unhappy man is he that is not patient in adversities; for men are not killed with the adversities they have, but with the impatience they suffer." One prisoner was executed for maintaining that Henry the Eighth's marriage was good: at another period he would equally have lost his life for saying the marriage was bad.* We believe before long the Beauchamp Tower will be given up by the regiment and opened to the public.

* One man lost his head on Tower-hill for writing, with reference to King Richard, whose crest was a wild boar,—
"The cat, the rat, and Lovel our dog,
Rule all England under a hog."
Nine times those, truly.

In the "Liberate Rolls," preserved in the Tower, and quoted by Mr. Turner in his recent book on "Domestic Architecture in England," are several orders for works in the tower during the reign of Henry the Third. Thus in the twenty-second year of his reign (1237) the king says to the sheriffs,—
"We order you to repair the chambers of our Tower of London, and to complete the chimney of our queen's chamber; and also to make a spur of boards, good and becoming, between the chamber and chapel of the new turret of the same tower, nigh our hall, towards the Thames."

And then in the following year he tells the constable "to cause the walls of our queen's chamber, which is within our chamber, at the aforesaid Tower, to be whitewashed and pointed, and within those pointings to be painted with flowers; and cause the drain of our private chamber to be made in the fashion of a hollow column, as our well-beloved servant John of Ely shall more fully tell thee."

In 1239, after commanding his great chamber in the Tower to be "entirely whitewashed and newly painted, and all the windows of the same chamber to be made anew with new wood and bolts and hinges, and to be painted with our arms, and barred with new iron, where needful;" the king says,—
"Moreover, repair and mend all the glass windows in the chapel of St. John the Baptist within the said Tower, where necessary; and repair all the windows in the great chamber towards the Thames with new wood, with new bolts and hinges, and bar them well with iron; and in the corner of the same chamber make a great round turret towards the Thames so that the drain of the last chamber may descend into the Thames; and make a new cowl on the top of the kitchen of the great Tower." And in the next year he orders, what seems a considerable advance in the arrangement of houses, that they shall cause all the "leadon gutters of the great Tower, through which rain water should fall from the summit of the same Tower, to be carried down to the ground; so that the wall of the said Tower, which has been newly whitewashed, may be in nowise injured by the dropping of rain water, nor be easily weakened. And make on the same Tower on the south side, at the top, deep alures of good and strong timber, entirely and well covered with lead, through which people may look even unto the foot of the same Tower, and ascend, and better defend it, if need should be. And also whitewash the whole chapel of St. John the Evangelist in the same Tower. And make in the same chapel three glass windows."

At this time, as most of our readers will remember, the Tower was a royal dwelling-place. The last regal procession from the Tower took place in the reign of King Charles the Second.

The chapel in the White Tower, mentioned in these orders of Henry the Third, is the most complete specimen of Norman architecture in the metropolis. It is at present filled with documents, and inaccessible. Let us hope that, when the new Record Office is completed, it will be cleared out and restored to its original purpose.

The historic structures composing the Tower have been sadly treated, and the modern buildings recently put up are vulgar and pretentious. Gray calls the

—"Towers of Julius, London's lasting shame,
With many a foul and midnight murder fed!"

* Wrong notions are given by inscribing seals here, for the sake of chronology, with the names of kings and knights who never wore them.

Unless better care be taken, the future antiquary will consider them "London's lasting shame" for another and more recent reason.

The statue of the Duke of Wellington put up in the open area next the keep is anything but satisfactory: it is at the same time poor and pompous.

When strangers are in the City they should not fail to visit the Guildhall, too, which was begun in 1411, and preserves much of its ancient character. It was the scene of a brilliant gathering on the evening of the 9th, when the corporation entertained her Majesty, Prince Albert, and the leading persons connected with the Great Exhibition. With much to applaud, especially the introduction of many beautiful specimens of sculpture, the decorations were a little too theatrical, to our mind. The panels of the ceiling were coloured a deep blue, and a thousand garlands of artificial roses hung from the ceiling to the walls, and assisted to disguise the incongruity which is strikingly observable between these two portions of the building. The ancient crypt was very effectively fitted-up, we are told, for the Queen's supping-room; but we did not succeed in penetrating its recesses. Not the least striking parts of the spectacle were the thousands upon thousands of persons of all grades who filled the windows and lined the streets leading to the Hall,—quiet, orderly, and pleased. A careful examination of the social and political position of the individuals composing this crowd to welcome Queen Victoria, with that of those who filled the streets when Queen Mary or Queen Elizabeth left the Tower,—when opinions, drawn out by the "cravat" or "thumbscrew," were punished by the scaffold,—would show how greatly ameliorated is the condition of the people, and justify sanguine anticipations of future progress.

EXPRESSION IN ARCHITECTURE.*

FICTIONS may be necessary in law or elsewhere, but we need them not in architecture. In manners, affectation and pretence are a sign of low breeding; whatever is borrowed is vulgar; and it is so in art. As well hoist fictitious sails to a steam packet, or harness wooden horses to a railway carriage! Beauty lies buried in the remains of ancient nations, and we have to revive this beauty, not the plans in which it is found. This seems to be but imperfectly recognised. We are doubtless reforming, but the spirit of copyism is by no means quite cast out. Many churches of late and present erection for the reformed worship in different parts of the kingdom, are not Protestant churches, which need neither aisles nor transepts. Our new buildings are, too many of them, but reproductions of the old. I have been in modern Gothic churches in which the slightest trace of mental independence, or the least struggle for freedom, is looked for in vain—where all is borrowed thought, even to the hinges and scutcheon, and door-handle. An absolute stranger to our practices going into one of these churches could never guess for what kind of ritual it was intended:—processions and other ceremonies of the Roman church would be suggested by many arrangements in places of worship where the congregation held such practices in abhorrence. Such buildings fail to indicate their purpose, because they are not adapted to their purpose. They are intended for Protestant places of worship, but are not what a Protestant place of worship should be, viz., a simple auditorium, as Professor Cockerell, following the dictates of common sense, once remarked in his lectures.

* See p. 401, *ante*.

Now, arcaded buildings divided into nave and aisles can no more express the simple ideas of the Protestant ritual and worship than a Windsor chair can the purposes of a dining-table, and it would be quite as easy to make the former article pass for the latter. Why should the simple and beautiful forms of square and circle be rejected, and the complex and less pleasing cross be used? We can accommodate the greatest number within a given distance from the speaker in a circle, which, together with the octagon, or semi-octagon, or semi-circle joined to a short parallelogram, or the horse-shoe or semi-ellipsis, are, for the double purpose of hearing and seeing, unquestionably the best, while nothing can possibly be more unfit for these purposes than either the Greek or Latin cross, particularly when again divided by piers and arcades. Surely we may use that symbol of redemption without marring our plans with it. Sometimes, for economical reasons, galleries are required in these churches, but no general form could be more unfit for their reception. The introduction of galleries makes the matter worse: they have to be placed just where they should not,—where there is no height for them; and the occupants, while space is wasted in the height of the clerestory, are thrust so near the ceiling that they have scarce room to breathe. Further, there is no division in the arrangement of the congregation answering to this marked division into lofty nave and lowly aisles: the only distinction that could be made analogous to it would be of the rich and poor, fashionable and rustic, which would of course be an odious one.

To such as these many of the old dissenters' chapels, in no style at all, are consistency itself. The wide projecting galleries that generally characterise these erections, have been found fault with; and indeed many of them transgress, in point of proportion; but the worst of them are at least commodious and rational. The most common-sense plan of a Protestant place of worship, in my opinion, and beyond all comparison superior for that purpose to the church interiors of the day, is that adopted at the principal Wesleyan chapel, Liverpool, imitated, I doubt not, elsewhere,—in London most likely anticipated. This chapel is, so far as its general section goes, both horizontal and vertical, the perfection of an auditorium. It partakes of the general character of the theatre, being built in the form of the letter D, i. e. a semicircle joined to a short parallelogram: there is no gallery, but in lieu of one, the seats rise in gradation from the ground or arena (which is a similar figure to that of the main outline) in concentric semicircles, and the inclination is greater than in theatres generally. How far, in its minutiae of form, or other respects, acoustic qualities are provided for, I pretend not to say; but the general arrangement of fittings, which, by the way, is as applicable to the entire circle, the square, or octagon, is admirably adapted to the leading features of Protestant worship, and is capable of receiving every modification which minor considerations might dictate. Moreover, this plan of interior possesses to a greater extent the grand quality of unity: you see the whole at once, and the effect, particularly when animated by a full assembly, is striking; for however imposing the result of particular parts in the Gothic church, there is certainly some advantage in an arrangement that lays bare the whole place, and gives the entire at a glance.

It cannot be maintained that the nave and aisle division and section are inseparable from the Gothic ecclesiastical style. I know that buttresses arose in reference to a vaulted stone ceiling, and were designed to resist its thrust. But windows, doors, porches, western towers, lanterns, spires, pierced parapets, tracery, and other beautiful features and elements, had no such reference, and are independent of the theory. Multiplicity is a principle non-essential in Gothic architecture, which is not governed by one material, form, or mode of roofing, or petrified into one fixed general arrangement, but may be used with any plan and section, and is as applicable to the simple square, octagon, or oblong department of equal

height, as to the cruciform and arch-divided interior.

I have spoken approvingly of our dissenters' chapels generally as regards fitness; and indeed the palm of fitness may be awarded to them with justice; but in artistic qualities they are most of them greatly deficient, as in their style and embellishment they give no intimation of a religious use, nor express anything that we naturally associate with theology.

The Methodist, Independent, and other chapels in our large towns, are, from their size, quality of construction, and material, a credit to their founders; but they might be taken for exhibition or concert-rooms—for anything but religious houses. There are other buildings similarly erroneous,—that do not fulfil the conditions laid down as essential to a true work of art. Some have chosen the wrong order, and express the very opposite qualities. We have grave and solemn for gay and elegant, and *vice versa*; ornaments mischosen and misplaced—wreaths, garlands, festoons, where ideas of meekness and humility should have reigned; small, whimsical ornaments, exhibiting the wantonness of fancy have been employed in the interior of apartments on which a solemn character should have been inscribed, and where ideas of reverence should be inspired. Minuteness of detail and elaboration of ornament are opposed to all sublimity and grandeur in architecture; as they are in poetry and the other arts. As silence is sometimes more eloquent than words, so there are circumstances under which the absence of ornament, using the word in its restricted sense, is more expressive than the best selected decoration could be.

In giving expression to a building the architect must not only consider what are the uses to which it is to be applied, but he must consult the spirit of the age in reference to these uses, and inscribe upon it a character in harmony with the present or improved nature of the institution. The same institution may and often does assume a different aspect or character with the march of intellect and progress of society, and will require a different plan and a different character of expression in consequence,—an additional reason why the architect should free himself from association, and why he must not be guided by the character of an ancient building for a similar institution. A college, for example, built in the 19th century should have a different expression to one of the 13th, the nature and purpose of education, the very idea suggested by literature and learning being no longer the same. Learning and wisdom are not now shut up in cells, confined to the libraries and brains of monks, nor made to consist of unintelligible definitions and verbal subtleties; and science and literature no longer the associates of seclusion and gloom will in future beautify the spirit of active life, and become means of practical usefulness. Further, prior to the revival of classic literature, the Gothic architecture was a most appropriate style for libraries and seats of learning; but it may be questioned if at the present day the case is not somewhat different. The Antique style of architecture has now, I suspect, an equal or superior claim to the distinction, a principle asserted in the Radcliffe Library, at Oxford, the British Museum, the London University, and other buildings.

What I have remarked of the college applies in some measure to the palace, the church, the theatre, the music-hall, the mansion, and other buildings; royalty, religion, domestic habit, &c., being changed. A palace for Queen Victoria should be different to one of Henry the Eighth; and music is differently appreciated to what it was in the days of Handel, when the audience ascended to the assembly-room by a step-ladder. A further consideration should be the position of the building: not only the general composition, but the entire character should be influenced by respect to situation, i. e. whether it be on a plain, in a valley, on the side of a hill, or on its summit, or as it is seen from many or few points of view. The same building would become more important, and call for higher decoration, or greater dignity if removed to a more public place. Different situations call

for different characters and styles of decoration. A railway terminus, for instance, opening into the centre of a large town, as from its main artery, is a fit object, as regards its exterior features, for a liberal display of decoration.

When the genius of the hour and occasion has thus had part in the work, it is an exponent of the literature, science, or art, of the country and day; and we see in it enshrined, not only the idea of its use, but the spirit of the age that produced it.

Truly, working for a definite purpose is the only way to produce something that will survive to serve a future day. Its fitness becomes an object of imitation and emulation to after workers, though its purpose was but occasional, for all good is imperishable;—the metempsychosis is true in art: what is really valuable in any work of art will survive the destruction even of the work itself: the life, the soul that is in it, will live again in some other shape, and the extent of its influence may be inconceivable.

The architect should, among his other qualifications, have, like the poet, the painter, and musician, a tolerable insight into human nature,—some knowledge of the human heart, that he may know how to affect it. It is his not only to charm and please, but to instruct, and elevate, and refine, to transport the thoughts

"Beyond this visible diurnal sphere,"

and develop the ideal and higher principles of our nature. Man,

"Distinguished link in being's endless chain
Midway from nothing to the Deity,"

is a constantly progressing creature, and he may be said to be ever rising in the scale of being as his intelligence increases and his spiritual life becomes developed. To aid this is no mean office or end, but the fine arts are only valuable so far as this end is accomplished. The architect, to fit himself for his task, must carefully turn over every leaf, and diligently peruse the great volume of life, looking, Janus-like, both ways,—observing alike the future and the past, and labouring to understand the true spirit of his time. He must not hunt after gay conceits, by which to practise upon the imagination of the unwary, and dazzle us with a false fire. His work must be, not inflated, but duly animated with the sober life of the present day, embodied in all necessary features and ornaments. He must not be content with precept, however high its authority. He must seize upon the principles of art, and this he can only do by study, by falling back upon his own mental resources: books are valuable only so far as they shed light upon principle. A great mind will refuse to be led by any authority or precedent, and will sit in judgment upon the greatest writers and lawgivers of art, remembering that they were only men, and liable to err. Learning is desirable in architecture as in all the arts,—acquaintance with the works of Vitruvius, and all the great Italian, mediæval, and other writers of all time; but learning and knowledge are two different things; and the most intimate acquaintance with architectural writings will not make an architect: natural sagacity of mind, which is indispensable, a study of the secret by which nature pleases—a critical examination of the great executed works—an investigation of the principles of their proportions, combined with diversity of practice, must do this. With all due deference to Vitruvius, I would observe, that Nature's book is superior to his: the one may be overvalued, the other cannot. Architecture is the daughter of Philosophy and sister of Poetry, and not a creature of scholastic lore, though it may derive nourishment and receive illustration from archaeology and literature.

There is an ethereal chord—a golden link—between the human heart and the beauty of nature, "which becomes a new and higher beauty when expressed;" there is a magical power to delight and touch in the beautiful forms and colours, graceful motion, and harmony presented by nature, which must ever

command our attention; and the diversity and harmony of art are calculated to have a corresponding effect upon the mind, and they typify the varied glories of creation, and the moral perfections of the Creator. The influence of art, besides elevating our minds—mingling beauty with our thoughts—is to increase our happiness. Art is one of the lamps by which genius illumines our intellectual hemisphere, and it should be our highest enjoyment, as it is the purest earthly one. It is my province in this paper to speak only of material beauty, without tracing it further. I would, however, just observe that its ultimate aim is goodness. Beauty dwells on earth—the heaven-sent "ministry of truth and good," which are but beauty of a higher kind; and hence the most captivating sight on earth is where true virtue and beauty beam forth together from some human face divine. A taste for material beauty has, I believe, a refining influence upon the passions and affections,—operates to the engendering a relish for moral worth: a man whose mind is fully imbued with a genuine sense of beauty, and that has lived under its influence a true lover of the beautiful in nature and art, will be no willing votary of vice, and can have but little relish for a mean action. That a taste for, and perception of, beauty, are instrumental in refining the manners, none will question; but the manners are but the reflection or expression of the morals, and it must be through the medium of the moral sense that the manners are permanently affected. Certain it is that there is a sympathetic link between these analogous qualities of mind and matter. We naturally and intuitively associate them in our minds. We place the portrait of the author before his works, an ancient practice. We expect kindness and truth within, where we see order and beauty without. There is an affinity between all things that are really delightful or agreeable to the mind in a virtuous state: a charming rose, a lovely face, a generous thought, a noble deed, are different grades of an ascending scale. Truth is common to all: material beauty itself is truth, the expression of a higher beauty; and it chiefly consists in the correctness of that embodiment. "Nothing is beautiful," observes a French writer, "that is false." We love physical and moral beauty for the same reasons—their truthfulness: they are in harmony with the universe, "and under their influence we are attracted towards the Deity as the highest symbol of unchanging and imperishable beauty." SAMUEL HUGGINS.

HOUSES FOR THE INDUSTRIAL CLASSES.

To the Right Honourable the Earl of Shaftesbury, &c. &c. (Lord Ashley).

MY LORD,—As no man stands more conspicuous in the eyes of the public than yourself, in every movement which has for its object the ameliorating the condition of the industrial classes; and as you have, moreover, taken the initiative in bringing that subject before Parliament, with reference specially to the dwellings of these classes; I trust no apology will be necessary for my addressing the following observations, which, without entering into too minute details, will as far as possible be of a practical kind, to your lordship: conceiving as I do that the topic, even divested of benevolent considerations, is one of high importance; and that while all who perceive its import with reference to the national common weal must have their attention excited, and their influence enlisted in its behalf; it is, besides, the duty of those who possess practical information on the subject, to bring the same to bear, usefully if possible, towards its development.

Some two years and a half ago, I endeavoured, in the pages of *THE BUILDER*, to draw attention to the fact that the metropolis was extending inconveniently out of town, and was about ripe for an innovation on its present system of house-building; pointing at the same time to the anomaly of so large and densely-crowded a city continuing to offer a premium for fire-escapes, by its blind ad-

herence to combustible stairs,—for which I ventured to suggest some curative measures. Those remarks I did not publish without having strong convictions on the subject; even though at the time resident in a distant quarter of the kingdom: in that quarter I had occasion to construct model buildings—both permanent dwellings and temporary lodgings—for the working classes; and, indeed, it is a subject to which I have devoted considerable attention. The opinions I then held have since been strengthened; and I have no hesitation in averring, from a practical acquaintance with both English and Scotch houses, in erecting and in occupying them, that the latter description are urgently wanted for London; with but slight modifications, if any, to adapt them to London habits. In the following remarks, your lordship will please to understand me, generally, as not confining them to a particular grade of house, but rather to a principle, which in Scotland extends through many grades,—affording dwellings ranging from, say, seventy shillings to seventy pounds per annum.

As a proof of the advantageous working of a system which affords every grade of independent habitation, it may be mentioned that the sub-letting of unfurnished rooms is, in Scotland, a thing almost unknown. That the absence of such must be favourable to morality will hardly be questioned; for the man of dissolute habits, whose example would pollute the minds of many, is by it hidden within the walls of his own unhappy home; while his neighbour, whose happiness it is to rear his family with propriety, and keep a well-ordered house over their heads, rests comparatively unmolested by his unruly conduct. The uncertainty of the lodging-house life must render its victims more or less erratic and improvident: the fewer their little articles of property, the more convenient to remove; for remove soon and often of course they must,—so uncertain is the tenure of their very landlord himself: but the opposite will as naturally hold good in the case of small independent holdings, where nothing interposes between the occupants and the proprietor,—nothing save their own conduct and appearance, which it becomes (to say the least) their interest to guard and improve. And all this apart from the question of economy, which, between the saving of the head-renter's profit, the exemption from certain taxes, and other details, becomes of itself of obvious importance. That "every man's house is his castle" must be regarded as an assertion flagrantly incorrect so long as the lodging system continues, is but too evident. That home should be the stronghold of the hopes and affections of the subject, and a temple dedicated to peace and the loftier virtues, must be the desire of every good government. Until it is capable of being so, ministers of religion, and committees of education, sacred and secular, I fear, may rest on their oars,—so far as the unhoused are concerned.

Modern London is now vying with ancient Edinburgh in the height of its houses. Formerly it was customary for visitors to the north to have their surprise excited by the extraordinary altitude to which the flats of Edinburgh and Glasgow were piled; but those to the south may now well be struck with equal wonderment at the towers of our modern Babylon. In the new portions of Glasgow, such "tenements" (as the large buildings there, containing several houses, are called) as exceed three stories high over the shops, are now regarded with great disfavour, and many are erected having but two; and this in 60 feet and even 70 feet streets; but houses may now be seen in various new localities in London, no larger in area than formerly, exhibiting as many as four stories over those of the sunk and street levels, and often with attics besides. But the circumstances in the two cases, supposing equality of height, are by no means equal, for the Scotch buildings of the large class referred to contain a "house," or complete domicile, on each floor, finished with all the elegance, and provided with all the sanitary appliances, which modern habits require,—so that the occupants, when once in

doors, are relieved of all the fatigue, loss of time, and inconvenience of going up and down stairs in passing from room to room; while the aforesaid towers of Babel contain but two or three rooms on every floor. The causes which go to induce this increase in the height of London houses are such as cannot well be restrained: with an increasing population comes an increasing demand for accommodation, which inevitably raises the price of building ground; and the increased cost in ground, for houses of the same superficial area, or class, prompts the putting on many floors under the same roof as reason can be induced to sanction.

But we have only to imagine this principle pursued under an increased pressure of the like circumstances, to see that it is erroneous; that it is an evasion of the difficulty; that there are physical limits to the practical propriety of this upward growth, and that another and necessarily a lateral one, must step in to co-operate with and relieve it. When houses such as we have referred to, and of the superior class entitled to the designation of "mansions," happen to be so situated as to appear isolated, they wear a ponderous, forced, *parvenu* aspect, indicative of vulgar wealth and tasteless ostentation.

Enough has been said to show that this growing system needs looking to generally, inasmuch as the height of these houses is often out of proportion to the width of the streets in which they are built: what I have specially in view is, to show the urgent occasion which exists for dwellings of the various smaller classes being erected which shall meet the requirements—firstly, of those who at present of necessity, and not from choice, sublet parts of the houses they hold to others; and, secondly, of those who under similar feelings occupy such parts as sub-tenants. There are now three courses open to the choice of parties who occupy houses in this way; namely, 1. Holding the house as tenant, and being responsible for double the amount of rent and taxes which they can afford; being liable, besides, to obtain no sub-tenant, or to get one who may turn out bad and pay nothing. 2. Taking a part as sub-tenant, at such an amount as they can afford, and incurring the liability to get involved in the pecuniary difficulties of the householder. 3. Submitting to live in a locality inhabited by those having lodgers in every room, in order to occupy a house adapted, in its rent and taxes, to their means. And here is the best evidence of the unsuitableness of the present form of houses for the middling and humbler classes: the lowest grade, while they take the cheapest houses they can find, have still to take such as they cannot afford to keep to themselves, and have to take in lodgers of their own class accordingly; thus, those who could afford to keep such houses to themselves are driven to adopt the same course in self-defence; and so the evil extends upwards,—society takes a false character,—and shaken credit, with a train of other evils, is the consequence; all proceeding from the want of such houses as those which have been erected by way of model, in London, by the Metropolitan Society for Improving the Dwellings of the Labouring Classes; and, in Glasgow, by ex-Lord Provost Lumsden,—the former still too large for the humblest classes, but well adapted for artisans earning good wages; the latter coming nearer to the root of the evil.

It might be inferred from what has been stated, that a due provision of houses based upon these models, at rents which should obviate all sub-tenancy of married persons, would be all that was necessary to cure the evils of the system complained of, and restore the several classes of tenants to the classes of houses to which they properly belonged; but such would assuredly not be the case throughout; for the present cheapest class of houses are constructed with a view to their present occupants, not merely as to their style of finishing, but the sizes of their rooms; and are incompatible with the tastes of the class to whom they would revert; and are in general so mean as to disgrace any city having architectural pretensions: the same will apply to

other classes of habitations grading above these.

The window-tax, now doomed, is a burthen from which the poor man was intended to have been exempt,—houses with less than eight windows being made by the statute duty-free; but, from the lodging-house or sub-tenancy system prevailing, through the want of an adequate provision of small dwellings, and large, old fashioned houses being rented on purpose for sub-letting, by persons who make a trade of it, he has been paying window-tax at the same rate as if he were sole occupant of the mansion,—or nearly so; for in order at once to reduce the number and rate leviable, the holder has built up whatever openings he thought could be spared, thus rendering the house already unwholesome from the number of its inmates, additionally so by the closing of apertures which were originally considered necessary: the larger the tumble-down fabric in which the poor man lived, the higher the ratio in which he paid; for while eight windows paid but 2s. 3d. each, by the time the number rose to 25 they were up to 6s. 9d.: this, however, is happily a burthen now nearly off his shoulders, although he must still in some localities inhabit the great houses referred to.

In the schemes for erecting, in the metropolis, buildings approaching in character to those of Scotland, propounded by persons not possessing a practical knowledge of such as exist, there are usually some features which mar their simplicity, and are calculated to form barriers to their adoption and success: one of these is the proposed appointment of a resident superintendent, to whom the tenants are to become more or less amenable: such a functionary, dressed in his small authority, inferior to those beside whom he is placed as a check, holding in hand the keys of the main entrance, free to be grave, or dubious, or sulky, or impudent, as suits his humour, when opening the portal after the restricted hour, making favourites of those whose fee is the heaviest, may suffice to set a small, otherwise happy, community together by the ears,—having, like the "portier" or "concierge" of Paris, ample opportunity of playing off the small tyranny too common with small officials. In Scotland no such appendage is found necessary, and no such expense has to be spread over the several houses: bells with name-plates at the street-door communicate with the houses on the several floors; the door is opened by means of a chain and handle, like a bell-pull, suspended at each landing; and it shuts with a spring and latch: where there are two houses on the floor, the pull hangs between the two doors, and is common to both houses. Where a person, such as the officer referred to, does happen, under any peculiar circumstances, to have the command of the entrance, I know him to be regarded with dislike; and where his duties are simply of the scavenger kind, to keep the property clean, as he is no ornament, his residence should be apart from it.

We are met, in London and elsewhere, with the proud boast of improvement-projectors, that such and such hot-beds of disease and haunts of iniquity will be laid bare and demolished, and those who infest them driven forth: new well-springs of health will be opened, and new triumphs of art achieved. But is it a step forward, to drive the inhabitants of those teeming settlements into still closer contact? Is it the province of an enlightened legislature only to countenance the ornamental, without seeking to encourage that which happens to be simply useful in such matters? Is it not rather its duty to see that new and healthy abodes are first prepared, before it sanctions the overthrow of such as exist, as a wise parent seeks out a new home for his children before he removes them from the old? The subject, politically, has been too long overlooked: but for its extreme pressure, acting on the minds of benevolent individuals, it would have been now altogether new; no precedents, such as the ensamples which they have set up, forming ready and practical data to start from.

Architecturally, the introduction of the Scottish system of building into London, not

merely in districts occupied by the labouring population, but in such as are inhabited by the middling classes also, would be attended with important results: the present small, pinched-up houses would be replaced by buildings of a larger and more massive description; the increased importance of each separate story would call for the refinements of moulded architraves, door and window caps, and string-courses; and the crowning cornice and blocking-course could hardly be dispensed with, so that the old and still frequently practised mode of finishing the wall-head with a bit of York paving would be shamed out of the field, and a better taste generally fostered; while the combustible staircase which now, whenever a fire takes place, and draught is admitted, becomes a roaring furnace from the basement upward, would give place to one which would form the best and most natural means of retreat in such calamities,—superseeding those ingenious and multiform contrivances which perplex the imagination of people beneath the Tweed,—the fire escapes.

To relieve your lordship of the perusal of matter proper for ulterior consideration, and save the valuable space of this journal, I refrain for the present from entering into further detail; but, in closing these remarks, would submit to your lordship to consider as to the expediency of procuring an inquiry to be instituted, firstly, how far an innovation such as I have indicated would be desirable in this fast-spreading metropolis; and, secondly, supposing its proving so, whether a governmental furtherance of it, by the furnishing to parties interested the data requisite for their guidance, would be proper.

I have the honour to subscribe myself,
Your lordship's most obedient
humble servant,
JAMES WYLSON, Architect.
Tachbrook-street, Piccadillo.

THE SEVEN PERIODS OF CHURCH ARCHITECTURE.

I SHOULD not have entered into the controversy which has arisen in your pages between Mr. Sharpe and "F. S. A." had not the latter introduced my own name in a manner not consistent with accuracy. "F. S. A." says, "the same division and the same name for it [geometrical] was proposed by Mr. Freeman to the Oxford Architectural Society in 1842. That Society very properly declined to adopt it, on the ground that 'it is impossible to define such a style.'" A statement to the same effect, and so similar that it would seem to have proceeded from the same hand, occurred in the *Archæological Journal*, vol. v. p. 346: "The introduction of a new style, between the Early English and the Decorated, was proposed to the Oxford Architectural Society by Mr. E. A. Freeman in 1842: the same idea has since been taken up by Mr. Paley, and now by Mr. Poole: it is an attractive theory, and we are not surprised at its finding many votaries; but the objection which was made to it on its first proposal still holds good. It is not easy to define such a style," &c.

These statements are both of them entirely unintelligible to me. I certainly never proposed anything of the kind in 1842; and I am not aware that the society has ever either adopted, or "declined to adopt," in any formal manner, any of the suggestions on the same subject which I have made, though not quite in the form supposed by "F. S. A." in more recent years. I do find indeed in the introduction to the "Guide to the Architectural Antiquities in the Neighbourhood of Oxford" these words:—"Some persons have proposed to make another new style of this (the transition from the Early English to the Decorated), under the name of Geometrical Gothic. The same objection applies to this as in the former instance: it is impossible to define such a style." But this introduction bears date, "Oct. 10, 1842;" and as I had then never read any paper at all to the society, and had never taken part in any discussion on this subject, I could not have been one of the "some persons" who made this proposal which the society "declined to adopt,"—that

is, I suppose, in the introduction just quoted, as the society has never since committed itself to any decision either way, if indeed it committed itself then to an introduction bearing the initials of an individual member.

I have therefore no right to the praise (or the blame) of originating this "new style." Mr. Sharpe's division indeed exactly coincides with that which I have drawn out in the "History of Architecture," p. 352; which he does not appear to have seen, as he makes no reference to it. His two new names "Curvilinear" and "Rectilinear," I agree with "F. S. A." in very much disliking. But I claim no sort of originality: my scheme is only evolved at length from suggestions of Mr. Petrie; a writer who, if he had always taken the trouble to work out at length what he has been content to hint, would have left all the rest of us very little to say.

I believe Mr. Sharpe's divisions are perfectly accurate as theoretical definitions of styles, and in theoretical and historical discussions I should always adhere to them. But Geometrical and Flowing are so mingled together in individual instances, that, for describing particular buildings, we want a threefold nomenclature, and for this purpose I see no reason whatever for departing from that of Rickman, which is sanctioned by general use. I have enlarged on this subject in the chapter of my "History" from which I quoted above, and in a communication to the Oxford Society in 1849, which Mr. Parker (not I) thought worthy of printing in a separate form.

EDWARD A. FREEMAN.

In reply to Mr. Sharpe's not very courteous remarks upon my comments on his imaginary periods, I pass over his attempts at wit and personality as beside the purpose, and come at once to the facts in dispute, which amount to this,—whether the buildings erected during the period of thirty years, from 1145 to 1175 are of Norman or of Transitional character, and what authority I have for the assertion that Ilfley Church was built about 1160. Every well-informed reader is, of course, aware that the period in question is not one during which many new churches or abbeys were founded; so many had been founded in the preceding half-century, and were still incomplete, that the mere carrying on of the great works already commenced required all the energy of the age, and all the money that could be collected. It is, therefore, useless to cite particular examples, since almost every one of our large Norman buildings bears evidence to the same fact. The history of Peterborough perfectly coincides with what I have said, according to Mr. Sharpe's own showing. The nave, built between 1177 and 1193, has marks of transition, although the general forms were continued. The transepts, built between 1155 and 1177, are good Norman work, very nearly the same as the choir, and not transition. I am content to take Mr. Sharpe's own test of "principal buildings of the Transitional period," and show that they do not agree with his own definitions of that period, vague as these are. Malmesbury Abbey does not show any "lightness of proportion;" the only mark of transition is the pointed arch; and this alone is no mark at all: it is found in many buildings even in the eleventh century. I have already cited the Crusaders' Church at Jerusalem, and may add several churches at Poitiers and at Angers, whose history is recorded, where the arches of the nave are pointed just as much as at Malmesbury.

St. Sepulchre's, Northampton, is recorded to have been built by Simon, the second earl of Northampton, on his return from the first crusade, in imitation of the Templars' Church at Jerusalem: it was finished before 1127, and therefore does not agree with Mr. Sharpe's Transitional period. Its character is early Norman in all respects except the pointed arches, which amount to nothing, as they are found in his model. Fountain's Abbey, Kirkstall, and Buildwas have none of what "lightness of construction" which Mr. Sharpe very properly considers as a necessary mark of transitional character.

The same remarks apply to so many others

that it is needless to go on. By what rules or definitions these are to be arranged in the same class with the nave of Wells, or even with Ripon, I am at a loss to understand.

I come now to the authority for the date of Ilfley Church: it is Dugdale, in his "Warwickshire," the edition of 1656, pp. 157 and 414; where he records that this church was given by Juliana de S. Remigio to the the Priory of Kenilworth "about the time of Henry the Second." In the "Monasticon" we find that this church is not mentioned in the enumeration of the possessions of the Priory at the commencement of the reign of that king, in his charter of confirmation. It is first mentioned in the charter of Henry de Clinton, in confirmation of the grants of his family, to which it appears that this lady belonged. By Dugdale's "Baronage," p. 528, we find that this Henry de Clinton was the first of that name in the family, his father, and his grandfather, the founder of the Priory in the time of Henry I., being both named Geoffrey. He succeeded to the family property in the 14th of John. His charter of confirmation must therefore be after that date, and he then for the first time confirms the grant of the lady Juliana. I need not add that the time when a parish church was given to a monastery is usually the only record we have of the date of its erection, and we always find it to have been built or rebuilt either shortly before or shortly after that donation. This church is therefore clearly of the time of Henry the Second, and is of the usual character of the buildings of his time, which I cannot call Transitional until near the end of his reign, during which the change of style began. The question between Mr. Sharpe and myself is, whether such buildings as Ilfley Church belong to the same style or period as Wells Cathedral and Ripon Minster, or not. According to his definition they do; according to mine, they do not. Let those who know these buildings, or have access to good engravings of them, judge between us.

F. S. A.

It seems an assertion which may fairly be made, and readily granted, that each year adds in a continually increasing proportion to the knowledge already obtained of the history and progress of our past national architecture: the labours undergone in this province have a less desultory character, and are conducted under something like systematic principles. This, perhaps, is chiefly owing to the fact that the inquiry into the rise and development of our national styles of architecture has been taken up and diligently followed out by professional architects, instead of its being left, as, till of late, to a greater degree it was, to non-professional students; and it is plain that, however far the latter may have advanced in compilation of facts and in deductions drawn from them, yet the constant intimacy of the professional man with every minute characteristic of buildings, with mouldings, and with the principles of their construction, gives him a great advantage, when once he comes really to trace out and arrange past styles of architecture. It was impossible to attain to a real systematised classification of them, so long as the matter was left, in great measure, in the hands of those whose lives were not professionally devoted to the work.

Towards the attainment of this object, in a most difficult portion of the subject, from the mere difficulty of hitting upon full and adequate definitions, Mr. Sharpe's recent architectural works have very greatly contributed. And it is obvious how much from his great knowledge of the constructive principles of our national buildings the labours of amateurs must be assisted and gain in value.

But the especial point on which I venture to speak briefly now,—the attempt, namely, to classify and arrange these past styles, and assign to them their periods and a fixed nomenclature,—is one which, from the very nature of the case, lies open to much criticism, and has called forth much argument, heightened, I cannot help thinking, by somewhat of misunderstanding. I am alluding to a notice by "F. S. A.," in THE BUILDER of June 21, of Mr. Sharpe's "Seven Periods of Gothic

Architecture," all the statements of which appear to me not only not to militate against Mr. Sharpe's classification, but in a great measure to favour and carry out the observations made by him.

It seems almost superfluous to speak of the difficulties which must be necessarily incurred by any one who seeks to give names to a classification of innumerable buildings raised during many ages under a constant progress and development of national style. Such progress must be continual, and often almost imperceptible, going on simultaneously in every part of the land, advancing from circumstances more rapidly in one part than in another, so that constantly buildings of an earlier character were raised contemporaneously with those of later, as the old style yielded more or less slowly to the new influences which were beginning to prevail. This course must at once furnish numberless transitional instances, which cannot in strict accuracy be assigned to any fully-developed style, but which do bear incontestable testimony to the existence of these styles (or periods, if we may so term them), and are no impediment to marking them off by certain broad lines, which may or may not include or shut out certain examples which bear marks of somewhat different character.

Such must surely be the course of all national architecture, unless it be wholly at a stand still, and exhibit a Chinese incapability of development; and in this country it was eminently so, inasmuch that perhaps scarcely any ten or twenty years can be pointed out during which precisely the same style prevailed without any modification or alteration. And it is this that causes all the difficulty when we come to arrange these examples, in order to mark them off into periods, and (if so be) assign dates to them, and give them each a definite name.

And in this point Mr. Sharpe's labours are most valuable. He has, after a careful examination of all their characteristics, arranged our national architectural works into certain periods, giving the date of their commencement and close, and proposing for them certain names, which, in one or two instances, differ from those generally received. But the very doing of this implies that these periods so marked are not absolutely and entirely accurate, that is, that they cannot be so marked out as that they shall include at once the first origin and final development of every example falling under each period. Such definition and classification are unattainable and absolutely impossible, except under the supposition that each succeeding style went out, as it were, one evening, and that the following style commenced the next morning. There must always be instances sometimes a little preceding the general advance, sometimes a little falling behind it; but how does this hinder the general marking out of such periods as really correct and true?

And in saying thus much, it seems to me that the objection of "F. S. A." to Mr. Sharpe's "Seven Periods" is answered; or, to speak more strictly, that "F. S. A." furnishes the answer to it himself. By proving, as he does, most clearly and undeniably, that for every one of these periods there are always examples found a little ahead or behind the general run of instances, he shows at once the impossibility of so marking them out as to take in all, and exclude every instance belonging or not belonging to them.

But again I venture to assert that "F. S. A." and Mr. Sharpe do really mean the same thing, and that the word "period" used by the latter is misunderstood by "F. S. A." If the word be used in such sort as to mean that it absolutely defines a particular time, so as to leave no supplementary or connecting links with times preceding or to come, then manifestly such demarcation into periods must be wholly wrong, and cannot be supported by historical evidence; and in this sense it would seem that "F. S. A." understands the word; but if it mean only that certain broad lines are laid down which do practically mark out each several style in all its integral characteristics (putting aside as impracticable the attempt to do anything more than this), then is

the expression perfectly correct, and the arrangement clear and systematic; and it is in this sense only I should suppose that the word "period" has been employed by Mr. Sharpe. It may be, indeed, that another word may be found not liable to this misconstruction, and if so, it would be much better to discard "period" in favour of it; but the whole tenor of Mr. Sharpe's observations stands entirely in the way of any supposition that his "periods" are meant to be anything like an exhaustive division.

In fact, such divisions can only be made for practical purposes; and for these, the divisions already marked out are in reality pretty much the same. The nomenclature of Rickman and the Ecclesiological Society on the one hand, and of Mr. Freeman and Mr. Sharpe on the other, differs chiefly in name, and not for the most part in principle. And, most desirable as it is that one fixed nomenclature should be agreed upon and adopted by all, still it would greatly advance our knowledge were all ready to confess that the reconciliation now needed is one—not on a matter of principle, but—of convenience of names. And, so far as can be gathered from his remarks, the classification (however different may be the names he gives them) adopted by "F. S. A." must be practically much the same as that marked out by Mr. Sharpe. Certainly, the name "Curvilinear," employed by Mr. Sharpe to denote what is commonly called "Flowing," seems not strictly correct and logical: if this word is used, the Geometrical must also fall under it; and this in its turn must be accused, although in less degree, of trenching upon the province of Curvilinear. But these, which are in novise matters of principle, we are willing and content to put aside till, as we look forward, a fixed nomenclature can be generally agreed upon: meanwhile nothing can so much advance our progress as to perceive that, although often different names may be employed, yet that on matters of system and principle we are agreed.

But it seems to me that "F. S. A." lays too absolute a stress upon the importance of dates: their value, of course, cannot be denied; but for purposes of classifying we must look to other things, not to dates or to mouldings only, but the general characteristics, which at once show that in spirit and design a building belongs to one style or period rather than another. The kind of moulding employed is the surest evidence of the date of a building; but it is by no means so sure an index of its style: it may well be that the design of one period may, to a certain extent, be clothed in the language of another: it may be that the great restorer of Winchester may have been himself not over-conscientious with mouldings. These must necessarily have been left to professional hands, and to their more intimate knowledge must their treatment have been entrusted.

It is not necessary to advert to the different facts noticed by "F. S. A.," because I suppose that they would all be almost universally acknowledged. On these statements there can be no question: one remarkable instance, indeed, is given, namely, the Saxon towers raised after the Norman conquest, in the low town at Lincoln, which furnishes the best evidence of the independent existence of the Saxon style, from its continuance, for a time, alongside of that introduced by the conquerors. In this, perhaps, they are more valuable as Transitional specimens than any others, as showing the development, in this country, of a style founded on the same kind of principles with one introduced from a foreign country, although in many points varying from it; but with this, as with all the other periods, "F. S. A." shows that they overlap one another, at once leading us to the conclusion that for practical purposes we must be content with classifications by periods which do not include all instances of examples of the same character. And Mr. Sharpe's divisions, with the Transitional periods which in each of them are implied, appear sufficient for this purpose, although we might recommend the rejection of the words "curvilinear" or "period." At all events, the discovery of

Transition examples does but strengthen the grounds of this classification, as showing the inevitable course of a real and true development; whereas, by adhering to a more strict classification of date as setting the bounds of a particular style, each new Transitional example that is found can only be a cause of fresh disappointment if it occur beyond the boundaries assigned.

GEORGE W. COX (Trin. Coll.),
Late Secretary of the Oxford Architectural Society.

PROCEEDINGS AT IPSWICH.

THE meeting of the British Association, and the laying of the foundation-stone of the new building for the ancient foundation of the Grammar School of Ipswich, now to be extended, together with the presence of Prince Albert at both, have made Ipswich within the last fortnight a great centre of attraction. The Association met on the 2nd inst., when the Astronomer Royal, Mr. G. B. Airy, took the chair as president for the session, and delivered the usual review of progress since last meeting.

In respect to the new proof of the earth's rotation, he said that "It is certain that M. Foucault's theory is correct; but it is also certain that careful adjustments, or measures of defect of adjustment, are necessary to justify the deduction of any valid inference. For want of these, the experiment has sometimes failed." The Council of the Association, he then went on to say, "have long regretted the very great delay which has occurred in the publication of the geodetic results of our great national survey; and they were prepared some time since to represent strongly to the Government the expediency of taking immediate steps for completing the few calculations which yet remained to be made, and for publishing the whole in a form which should be available for discussions of the figure of the earth. On communicating with the Royal Society, they learned that that body had made an urgent recommendation to the same tenor, and that in consequence Government had consented to place on the Estimates a sum of money expressly for the purpose of completing and publishing the scientific portions of the survey. I have received official information that this work is now in active progress; and I cannot but remark on it as a striking instance of how much may be sometimes effected for the purposes of science by simply completing what is nearly complete.

At the last meeting of the Association, a committee was appointed expressly to urge on the Government, what had long excited the attention of the Association, the defective state of the survey as regards Scotland. I am happy in stating that there is strong reason to hope that a large sum will in future be appropriated to the Scottish survey."

Amongst the subjects of greatest interest and importance under discussion in the Sections, were Col. Reid's theory of circular storms, and a communication from Mr. Mercer, made by Dr. Lyon Playfair, "On a new Method of Contracting the Fibres of Calico, and of obtaining on the Calico thus prepared Colours of much brilliancy;" a subject likely not only to give an additional stimulus to manufactures in general, but to the art of design, and the schools for its development in particular. The agent used is simply a cold solution of caustic soda, which, moreover, from its contractile influence, has the curious effect of converting a loose coarse-woven texture into a close and fine one, more worthy of clear and beautiful colours and good designs. Another subject of interest was the "Proposed Railway Communication from the Atlantic to the Pacific in the Territories of British North America," on Mr. Asa Whitney's plan of directing the line of emigration and location along a belt of some sixty miles, running right across the continent. The gradients are not only said to be more favourable, especially at the Rocky Mountain Pass, but the distance much shorter, and the terminus at Halifax or elsewhere northwards much more convenient for European traffic: so much so indeed that an United States writer, the *New York*

Tribune, extols it as not only preferable to Mr. Whitney's route, but as likely to raise British America from a mere colonial dependency to the assumption of a controlling rank in the world. "To her other nations would be tributary; and in vain would the United States attempt to be her rival, for we could never dispute with her the possession of the Asiatic commerce, or the power which that confers."

The Museum was formally visited by his Royal Highness Prince Albert, who thence proceeded to the site of the new building for the Grammar School adjoining the new Arboretum, where he laid the chief stone.

The buildings, which are designed by Mr. Fleury, architect, are in the Tudor style of architecture, in compliment to the memory of Cardinal Wolsey, a townsman, and of his intention to endow the town with such an institution as it is now proposed to carry out. They embrace three sides of a quadrangle, the principal front being 170 feet in length. There will be sleeping-rooms for seventy boys, and the school will have accommodation for the education of about 200. Our readers will recollect a correspondence in our pages relative to the design.

TEACHINGS OF THE EXHIBITION.

It is, indeed, something to have entered that huge hive of the industry of all nations, and to have carefully examined its stores of intellect contributed by all quarters of the globe; to have seen the ingenuity that has been applied to productions of every kind more or less distinguished by their peculiar merits, and valued either for their elegance, their grandeur, or their utility, and to have noticed the diversity of thought and intelligence with which the genius of every country has displayed itself. Among its multiplicity of objects, every faculty of the mind is appealed to, as every faculty has therein been exercised; every taste is presented with the best specimen of whatever is its favourite subject for study; every form that it was possible to devise in order to gratify the desire of the fastidious or supply the wants of the wealthy, meets us; and every species of art and mechanism, simple or elaborate, is here brought to its highest degree of development. The student who is yet unknown,—the man who has long exercised the fine skill of his hands,—the mechanic and the artisan; each, amid the wonders enshrined in this palace, can add to his knowledge and to his experience. Such a living encyclopædia as this is a means of instruction, a lever of education, that was long wanting to the solitary and unassisted student, who, being ignorant of what former ages and countries had done, could not tell what it was in the power of mind to do. The fragmentary and scattered forms in which knowledge was conveyed to him served rather to bewilder than enlighten. The present sons of industry have not, however, to bewail this deficiency nor to labour under this disadvantage; a glorious edifice being now open to them condensing all the discoveries of science, and all the conquests of the mind.

It is in this Exhibition that all see fresh motives to industry, and further inducements to excellence. The opportunities it offers for study to visitors in general, considering how much knowledge, artistic and mechanical, natural and artificial, must come by sight, are not to be slighted; but the professional carver, sculptor, and draughtsman appreciate the opportunity it offers to them for directing their talents. To all engaged in the arts it is a standard for correcting and advising such as have bent their minds in a wrong channel, or seen with imperfect eyes; who have made a bad use of their powers, and not employed them in the direction to which they were naturally inclined. Let all such profit themselves by comparing what they have done with what they might have done. This is one of the great teachings of the Exhibition.

It is, we think, indisputable, that all may at least inform their minds by the contemplation of such accumulations of beauty and magnificence. Even they who do not seem to have

any interest for such things will go away impressed with ideas new and uncommon; with feelings likely, perhaps, to refine their natures, more than those of a different character, to which they are every day familiar; and wherever there exists the capacity to receive the influences of this place and its contents, noble ideas will assuredly be admitted into the mind of the recipient. And whilst, in an industrial and manufacturing point of view, the effect of this Exhibition will be beneficial; it, at the same time, is calculated to work moral results which are of great importance from their bearing upon, and being conducive to eminence. Whoever enters this spacious and splendid pile with notions of vanity or arrogance will certainly receive a check and a cure;—he will feel his littleness by the superiority that surrounds him every where, to which he will be forced to make comparison. This is a useful teaching indeed. Whoever, also, hopes for those triumphs of hard-working and patient labour at which he gazes, will be induced to work himself with greater earnestness than heretofore, to qualify himself for the abilities necessary for their attainment. Whoever thinks he is great in criticism, and can make or mar a reputation, will experience the difficulty there is for the best trained judgment deciding between the conflicting and distracting pretensions of such a vast variety of objects. Here is another great teaching; and with it an argument, if one were needed, in favour of this museum of all nations, and for repeating attempts of this kind, even on a smaller scale; for thousands who have not the inclination to form their judgments and modulate their feelings to works of art and ingenious fabrications through books and the theories of men who comment and criticise upon them, would yet put themselves to some personal trouble and inconvenience for seeing and judging for themselves such a pile with such attractions. And it cannot be denied but that they are under the best tuition. Beautiful works proclaim their own merit and force conviction. They have the force of examples seen by the eyes over theories read unwillingly by the mind. They show the substance of true taste, and what it is; your critics and books can only tell it.—FREDERICK LUSH.

THE NEW HOUSE OF COMMONS.

On Monday Sir D. Norreys moved the following resolution:—"That the architect of the New Palace at Westminster be requested to lay before the House forthwith a report in detail on the manner in which he would recommend that the interior decorations of the New House of Commons, and of the halls and rooms connected with it, should be completed; and that he be directed to prepare his plans with due attention to the style of decoration usually adopted at the period to which the general architectural character of the New Palace is referable." He said the House of Commons had expressed a wish that the new building should be finished in the plainest style possible. But to build a palace in the style of architecture of a particular period, and then, after having proceeded with the decorations of the building in a manner suitable to that style and period, suddenly to stop, was perfectly absurd. It would seem that it was the wish of some that while the new Houses of Parliament in their style of architecture should bear the characteristics of the thirteenth, fourteenth, and fifteenth centuries, yet the interior decorations of the building should represent a legislative assembly of the nineteenth century. If that were the feeling of the House, nothing was more absurd or more wasteful than the expense incurred for the elaborate work bestowed upon that building.

The Chancellor of the Exchequer deprecated any further interference with respect to the new House of Commons.

Mr. Hume said that what the House wanted was a report from the commissioners stating what had been already done. He had no objection to Mr. Barry making a report of what it was he intended to do, and when the House should possess that report he would then call upon the commissioners to keep him to it.

No one could at present say when the new house would be finished. There never was a building which had been proceeded with in such an extraordinary manner as that in which this building had been. He ventured to say that after the whole money should have been expended the building itself would not be fit for any one object for which it was originally designed. Look around in every direction, and see the state of the building. Go to the hall, which was expected to be finished two years ago, and look at it. And then, look at the assembly-room. He was anxious to have a report of what remained to be done, and what would be the expense of doing it.

Sir D. L. Evans could not agree with the motion, because it would be giving a sanction to some of the absurdities of which the hon. baronet had spoken. He doubted whether there should be a statement from the architect at all. Commissioners having been appointed, it was impossible the House could recognise any other party. He hoped the hon. member for Lancaster (Mr. Greene) would be able to make some statement as to the present position in which this matter stood. What with the building up and pulling down, there would be no end of expense. It would be better to vote an adequate sum for the completion of the building at once, and to fix a time—say two or three years—within which it must be finished.

Mr. Greene said that certain alterations had been made in conformity with the recommendations of the committee appointed last year, and these alterations had been effected in a satisfactory manner. Members would have an opportunity of forming an opinion relative to the new House, and the parts of the building immediately connected with it, before the close of the present session, for it was intended to have some morning sittings in the new chamber. If the result of the trial should be satisfactory, the commissioners would be able to direct the removal of the present House of Commons and the temporary buildings connected with it, the House of Lords, and Westminster Hall, which were not only unsightly, but dangerous to the whole pile.

The motion was negatived.

DISTRIBUTION OF PRIZES IN ARCHITECTURE, UNIVERSITY COLLEGE.

SIR JAMES GRAHAM presided on Saturday, the 5th inst., at University College on the occasion of awarding the premiums to the successful students who had attended the several classes in arts at the examinations held at the close of the academic session of 1850-51, and which took place in June last.

Professor Donaldson, before he proceeded to announce the successful competitors in architecture, said he considered it an act of justice to allude to a circumstance which had been highly honourable to his classes. In following out his usual system of visiting some of the buildings of the metropolis, he had, during the session, accompanied his classes to the British Museum, St. Paul's, Westminster Abbey, and the building of the Great Exhibition, Hyde Park, explaining the several remarkable points of design and construction in the three last buildings, and the Egyptian and Greek antiquities in the first. He had required the classes to draw up reports of the visits to St. Paul's and Westminster Abbey, and promised to give to the best a testimony of approval from himself. He had been surprised by the copiousness, accuracy, and intelligence of several which had in consequence been sent in, and he had awarded a book to Mr. Legg for his report on St. Paul's, and to Mr. Brodribb for his on Westminster Abbey. And he had been so much satisfied by reports drawn up by Mr. Hayward on both these buildings, that, although second in merit, he had felt himself bound to give him a third premium in addition to the two he had originally promised for the first.

The prizes were then awarded as follow:—

First Year's Class.—Prizes and First Certificate of Honour for Fine Art and Construction to Mr. Alexander R. Dobson, of Newcastle. Certificates of Honour in Fine Art.—2nd, Alfred L. Smith, of London; 3rd, Thomas R.

Smith, of Brompton; 4th, Herbert Winstanley, of London. Certificates of Honour in Construction.—2nd, Alfred L. Smith; 3rd, Chas. Hayward, of London.

Second Year's Class.—Prizes and First Certificates of Honour for Fine Art and Construction, H. S. Legg, of Queen-square, London. Certificates of Honour in Fine Art.—2nd, Francis Gompertz, of Pimlico; 3rd, William Henry Nash, of Royston, Cambridge-shire; 4th, Uriah B. Brodribb, of Westminster, Wilts. Certificates of Honour in Construction.—2nd, Uriah B. Brodribb; 3rd, Francis Gompertz; 4th, H. J. Mawley, of London.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Egypt: Excavations.—M. Mariette has undertaken extensive excavations near the pyramid of Saccara. It is the *Serapion* which M. Mariette wishes to elucidate. Strabo speaks of it, and of a row of 150 sphinxes, which were half buried in sand, even in his time. It seems, however, that hitherto only relics of the Roman period had been found, as the sculptures are of very brittle stone: amongst others, an imitation of the architectonic lion on the staircase of the Capitol has been found, a bust of Plato, boys riding on peacocks, &c. On the walls of dried bricks some basso-reliefs were found, which have been sent to Paris. This Roman work, however, rests on a most substantial foundation of Egyptian structure, made of solid rock. M. Mariette seeks after the tombs of the Apis, but some antiquaries doubt whether the Serapion stands in any relation with those animal divinities of ancient Egypt. We may state here an opinion lately brought forth by Röh, in his "System of the Egyptian Religion"—that the pyramids are monuments of an important religious (social) catastrophe, which took place at the time of their erection.

Berlin: The Great Cartoons.—The Belgian Academy of Arts have despatched an especial messenger to Peter Cornelius, with the request that he exhibit his cartoons for the Campo Santo, Berlin, at the forthcoming art-show of all nations at Brussels. The Academy especially urged the great influence these designs would exercise on the art-culture of the large number of spectators expected on that occasion. The master, however, hesitates trusting the works of ten years' labour to the chances of such a transfer. These cartoons fill already the spaces of two large saloons, and will yet require the whole life-exertion of the sublime artist. The German press states on this occasion, that it was these cartoons which induced Cornelius to forego the liberal offer of the British Government relating to the decoration of the New Houses of Parliament for the sake of devoting himself to the service of the land of his birth.

THE ARCHITECTURAL EXHIBITION.

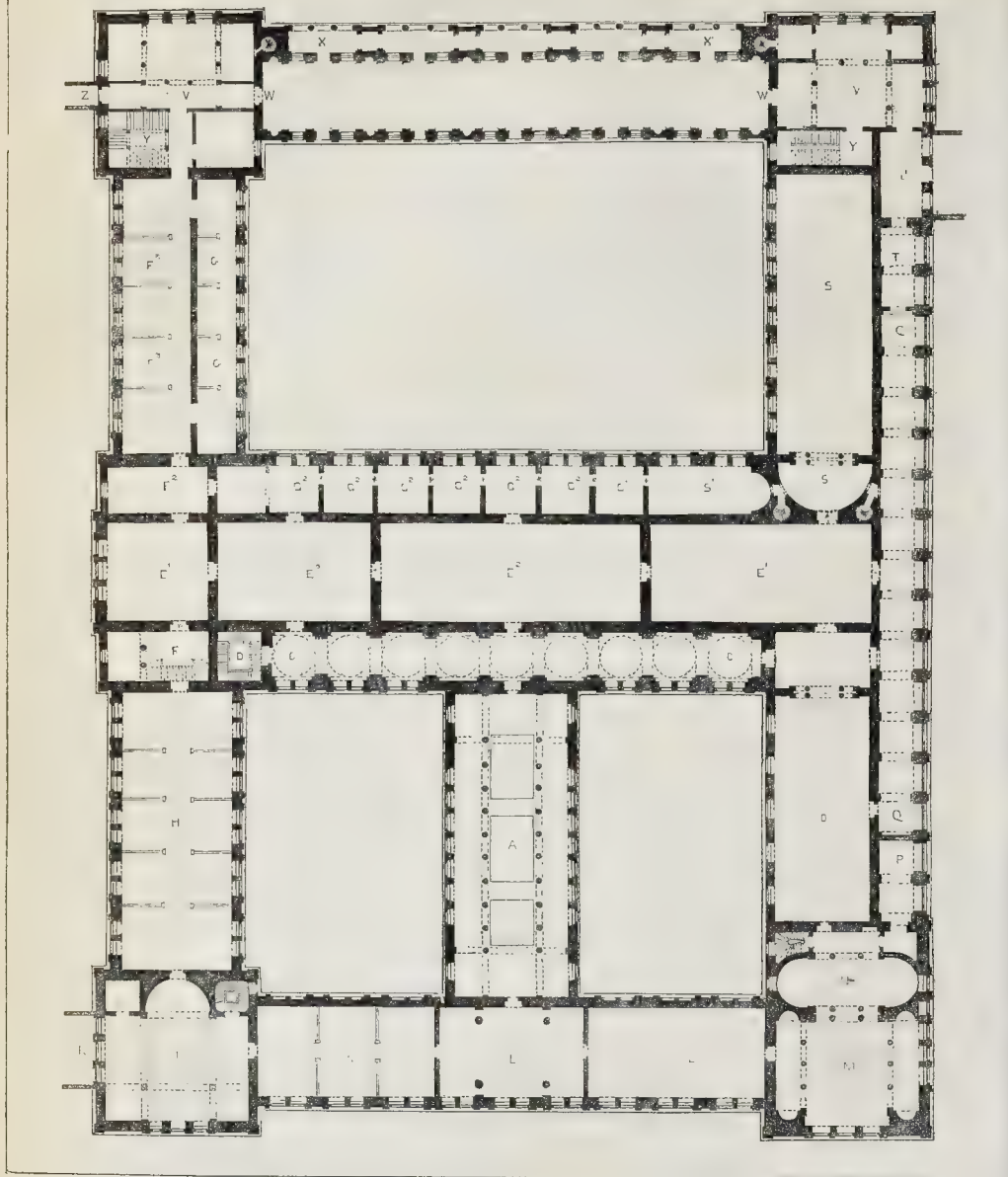
A PUBLIC meeting of subscribers was held July 4, at Lyons'-inn Hall, Mr. E. Nash in the chair, when the committee brought up a report, showing the reasons why they had not succeeded in obtaining a place of exhibition. Even if they had succeeded at a reasonable cost, they feared the exhibition would have been swamped by the excitement of the time. About 804 have been promised.

"Under all the above circumstances the committee would earnestly recommend that the donations promised for this year should be carried on, and stand for 1851-52, and they doubt not but that on the next occasion there will be no difficulty in obtaining a proper place, and at the best time—and no doubt the lapse of this year will tend to add greatly to the interest and extent of that exhibition—irrespective of the ample time there will be for preparation."

Resolutions were passed soliciting donors to allow their subscriptions to be applied for an exhibition next year, as suggested in the report, and recommending the donors to become annual subscribers. Mr. Little, Mr. W. F. Laxton, Mr. H. T. Braithwaite, Mr. H. T. Stevens, and others, took part in the proceedings.

IMPERIAL MUSEUM OF FINE ARTS, ST. PETERSBURG.

PLAN OF FIRST FLOOR.

IMPERIAL MUSEUM OF FINE ARTS,
ST. PETERSBURG.

THE following translated portion of the report by M. Von Klenze may be of use for the better understanding of our illustrations of this structure.*

"As the yards are larger than the contiguous streets, I preferred lighting the ground-floor of the building through the former, and to place on the street-front niches instead of windows, in which stand statues representing great artists of every branch.

Above the windows of the first floor, which are divided by hermes of grey polished granite in two parts, there are ornaments in basso-

relievo, which represent alternately symbols of the different art-branches and genius of glory. There also are placed on granite consoles statues of great artists.

On both sides rise pavilions, with which begin the side façades. The lower socle of the building is of reddish Finland granite, resembling sienite, and the whole façade of the yellowish stone of Habsal, in Curland, or of a similar colour.

The caryatides and hermes between the windows are made of grey polished granite, and of a quite similar colour are all the statues, reliefs, and ornaments, being first made of copper by galvanoplastic process, and then covered in a similar way with a solution of zinc, which imparts to them a warm, serious

tint, well harmonizing with the tone of the granite works.

The railings of the balcony and the roof, as well as the sashes of the windows and the doors, are made of green bronze or bronzed in that colour."

Our interior view, engraved from Mons. Klenze's work, represents the Hall for Medals and Coins. In the plan it will be observed, only three columns are shown; while in the view there are four.

We give a plan of the first floor:—

- A. principal staircase, which serves as entrance as well to the main ante-room
- B,—as well as to the gallery C.
- D. Intermediate room (*Zwischen Zimmer*).
- K. Saloon for the pictures of the Russian school.

* See page 314, ante.

IMPERIAL MUSEUM OF FINE ARTS, ST. PETERSBURG.

MEDAL ROOM.

MONSIEUR LE J. VON KLENZE, ARCHITECT.



I. Saloon for copying, which has its own staircase of service, which is reached through one of the yards. The same staircase leads to the second floor, where there are several smaller cabinets for the copying of pictures of smaller dimension.

T. Cabinet for keeping painting utensils, &c.

H. Great gallery, where the smaller pictures of the Netherland school are suspended on screens 9 feet high.

F. Saloon destined for pictures of Rembrandt.

F 2. Cabinet for pictures of Wouvermann.

F 4. Gallery of the French school.

G 1 and G 2. Screen; cabinets for Netherland paintings.

E 2. Saloon for pictures of Rubens and Van Dyke.

E 3, and G 3. Saloon and cabinets for Italian school.

E 1. Saloon for Spanish school.

L, M, N, O, and P. Cabinets of coins and medals.

SS 1 and S 2. Galleries for the collection of Cameos and Intaglios.

Q Q. Loggie of Raffaele.

I I. Service-staircases in the wing not yet completed.

T T. Festival gallery, to be adorned with armour, vases, and other art-show of the fifteenth and sixteenth centuries. Its destination is to serve on great court festivals as a communication between the Winter Palace and the Theatre of the Eremitage, which is arrived at by the connecting gallery X X.

ARCHITECTURAL COMPETITIONS.

WHAT should we think of the would-be respectable individual who, envying the apparent prosperity of the swell-mob, should, in a fit of moral insanity, fling common honesty to the winds and resort to picking pockets?

Much the same, I opine, as of him who, in his admiration of the "professional etiquette" despising class, in architecture, should himself determine no longer to have regard for justice; thus deliberately "pinning his bad faith to

other men's sleeves." Those members of the profession, however, who are actuated by the laudable desire to reform the evils of architectural competitions have not only to contend with this species of argument, but with that which urges an objection to the very principle of competition, under any conditions.

Now, with the former class of objectors, remonstrance is useless; but, in respect of the latter, I would submit the fact that amongst those engaged in the present movement, set on foot by the Architectural Association, there are several individuals who are entirely averse to the competing system,* but to whom such appears

* This was proved, in some measure, by the support given to Mr. Hall's motion at the public meeting on the 6th inst. See THE BUILDER, No. 436. The motion was lost, it is true, but there were those who would have been glad to have seen it carried, besides the mover and seconder.

to be a necessity of the times; and they conceive that the surest and most expeditious mode of attaining to that state in which it shall be dispensed with is not, as some would urge, to render the system as bad as possible, but to place it on the most just and honourable basis. As long as the evils appear to be in the misapplication of the principle, and not in the principle itself, men will never cease to hope for the imaginary good derivable from a more improved application; but when it shall be made to appear that, even under the wisest and most equitable arrangement, there still remains a considerable amount of evil in the very system itself, thence will date its downfall and the substitution of more enlightened views, tending to the development of that sole antidote to the lamentable evils resulting from competitive trickeries—co-operation. A certain class of philanthropists exists, desiring the abrogation of capital punishments; but surely, if one amongst that class refused to lend his aid to a more decent and orderly mode of conducting such punishments, he would lay himself open to the charge of extreme folly and inconsistency. Whilst objecting myself, for instance, to the principle of competition, I have given my humble assistance, and will continue to give it, to the attempt to ameliorate some of the avoidable evils of the system.

And to those gentlemen who object to follow the same reasonable course, I should just like to put this question—Will any of you set on foot an Anti-Competition League?

If you will, I promise you half a score of adherents to begin with.

FRANK OLIVER.

WERE "C. C. C." to expose those men "of high repute(?) who will hesitate at nothing to secure new connections, and declare that they despise professional etiquette," he would benefit the profession at large, and bring far more credit on himself than by "following their example, and persuading his friends to do likewise."

I hope there will be found sufficient honour and probity of character amongst the supporters of the movement to shame such men into propriety and gentlemanly conduct, for such I read to be the meaning of "professional etiquette."

It would be useless here to enter into detail as to the particular points to be touched upon in the code. They must undoubtedly be well and carefully prepared, and explain to committees clearly and distinctly what architects, for the sake of justice and honesty require, as well as point out how the end may be best attained. Past experience is the ground to work upon, and, as was aptly remarked at the meeting, the opinion of fifty good men will have great weight with respectable committees. When they hold back, the black sheep may be easily counted. If unfortunately the means adopted fail, either from want of unanimity amongst architects themselves, or from want of discernment between right and wrong, justice and injustice on the part of committees, then indeed will there be cause for despondency, for every argument which can tell against the present attempt fails with double force against any attempt totally to suppress the system.

The writer of this is firmly of opinion, that though amendment will be slow and long delayed, and on account of the factious opposition of the despisers of professional etiquette, and perhaps a few of the would-be architects, men of no knowledge, theoretical or practical, in the end far from perfect, yet that notwithstanding, the attempt is well worthy of support, as it cannot fail to be productive of beneficial results.

Cases are not now infrequent of tolerably well and fairly managed competitions. The mismanagement is oftener the consequence of ignorance than the result of bad feeling. Let architects only point out the right path, and lay before committees a clear and distinct course, or choice of courses, for their adoption, and I venture to assert few committees will turn a deaf ear.

J. H. H.

NOTES IN THE PROVINCES.

Brighton.—The contract for the erection of two chapels in the new cemetery at Brighton is taken by Mr. John Fabian, builder, Brighton. The works will be commenced forthwith.

Gravesend.—A church is being erected amongst the numerous villas springing up at Rosherville, Northfleet. The edifice adjoins the Dover-road. The architects are Messrs. H. and E. Rose. The erection is in the Early English style, and consists of a nave, north and south aisles, chancel, vestry, and tower at west end, with lofty spires. The roof is of timber, supported by clustered pillars of Caen stone. The walls are of Kentish ragstone, with freestone quoins and dressings.

Usk.—Tenders for gas-works for this town were opened on Monday week. The Neath Abbey Company's tender for the iron-work was accepted, and that of Mr. Joshua Daniels, of Crickhowell, for the erection of the buildings. Mr. Williams, Aberdare; Mr. Williams, Brynmawr; Messrs. Rogers and Home, Bristol; Mr. Milway, Messrs. Harris and Abbotts, Bristol, &c., also sent in tenders.

Macclesfield.—The building committee of the Macclesfield Mechanics' Institution have been enlarging the building, to form the School of Design for the town.

Moxley, Bolton.—The church and churchyard of All Saints, Moxley, were consecrated on Friday in last week. The church, which adjoins the road to Wednesbury, is in the Early English style, and capable of accommodating 635 persons, 466 free. The cost of the building, &c., will exceed 3,000*l.*, of which 400*l.* still remain as a debt on the edifice. The architect was Mr. Horton, and the builder Mr. Heighway.

Liverpool.—The metal roof of the new military church, in course of erection at the new barracks, fell on Friday in last week, owing to neglect of the workmen in not having properly adjusted some of the bolts. The loss is estimated at 100*l.*—The extensive premises lately occupied by the gas company in Dale-street, together with six shops in Dale-street, and about the same number in Hatton-garden and Cheapside, were offered for sale by auction end of last week by Mr. Winstanley. The property has a frontage to Dale-street of 164 feet, to Hatton-garden of 295 feet, to Cheapside of 111 feet, extends at the back from Hatton-garden to Cheapside, in an irregular line, 306 feet, contains an area of 6,617 superficial square yards, and is freehold. The shops produce, it was stated, an annual rental of 430*l.* An offer was made for the entire lot (buildings included) of 2*l.* per square yard, or total 13,234*l.* No second bid was made; and Mr. Winstanley said that the offer was so much below the real value of the property that he should at once withdraw the sale.

Manchester.—"The subscriptions to the Manchester Free Library and Museum," says the *Manchester Spectator*, "now reach over 9,000*l.* Large as is the sum, however, it falls short of the requirements of the committee by something like 2,000*l.* The operative classes—largely interested in the scheme—were thought capable, by union of effort, to raise 1,000*l.* of the 11,000*l.* needed. About one-third of their contribution has been received from them; and as the large majority of the lists have not yet been returned, we hope that, by the opening, their entire money contribution will show that their zeal and abilities in this cause have not been overrated. One further effort by all classes of the community will achieve the desired effect."

Stockport.—We are glad to see that improvements and arrangement based on the project of a public park for Stockport are being carried out, such as the widening of roads at the intended entrance, covering ditches near it, &c.

Doncaster.—The town council have resolved to offer a premium of 100*l.* for the best plan for supplying the town with water. They have also decided on calling in the aid of a civil engineer (Mr. James Alexander, of Doncaster), in awarding the prize, and as a consulting engineer generally as to the projected works. The local *Gazette* reminds the council that "the work now to be done is not one of a

temporary character: it will be a memorial hereafter of their wisdom or their folly, and, therefore, in selecting a plan, it must be borne in mind that 'the cheapest may not prove to be the best,' and although the outlay should eventually be greater than was anticipated, real utility must not be jeopardized by any false idea of economy."

PASSAGE OF WATER THROUGH PIPES.

Will your correspondent, who gives a rule at page 400, favour me with a little more information on the subject? He says:—"Multiply the area of the pipe by the square root of the head of water, and that product by 1117.25 for the theoretical quantity," &c. Now this seems to me rather ambiguous. In the first place, is it the area in inches he means, whatever the diameter of the pipe may be? Secondly, does he mean the square root of the superficial area in feet or of the cubical contents? And would not the rate of flow be less or more rapid in proportion to the amount of superficial area covered by a given quantity of water? STUDENT.

Multiply the area of pipe in inches. Take the square root of the vertical height or head of water in feet above the point of its discharge. The friction in small pipes is proportionally greater than in larger ones; but this is not generally regarded in practice. The quantities of water discharged in a given time, from different sized pipes, the head of water being the same, are to each other nearly as the area of the outlets. H.

RAILWAY JOTTINGS.

THE increase in the receipts for the week before last upon the London and North-Western over those of the corresponding period of last year, was no less than 13,034*l.*—viz. 11,626*l.* in the passengers, parcels, &c., and 1,408*l.* in the merchandise and cattle. The receipts last week were 58,355*l.*: in the previous year they were 45,321*l.* The Great Western shows an increase of 3,570*l.*; the South-Eastern, 4,520*l.*; the South-Western, 2,800*l.*; and the London, Brighton, and South Coast, 1,100*l.*—all in the same week. The increase in the Great Northern traffic over the receipts for the corresponding week of 1850, was 8,907*l.* Last year the receipts for the week upon 143 miles of railway were 3,313*l.*; this year the week's traffic has been 12,220*l.* The gross amount of railway traffic in the United Kingdom, from 1st Jan. to 14th June inclusive, published weekly, amounted to 5,946,100*l.*; corresponding period of 1850, 5,291,949*l.*; corresponding period of 1849, 4,664,012*l.*; and 1848, 4,136,837*l.* It is expected that the reports of the meetings will be good. There is an expectation that the South-Western will pay 50s. per cent. for this half-year; the Great Northern, 1½ per cent.; the Great Western, 2½; and the London and North-Western, 2½. A correspondent of *Herepath's* expresses an opinion that the Lancashire and Yorkshire will pay 30s. for the half-year, leaving a balance of 21,147*l.*—Under the head of "Reduction and Re-adjustment of Railway Fares," the *Bradford Observer* says, "Between Derby and Leeds, Derby and Birmingham, Derby and Leicester, and Nottingham and Leicester, an experimental reduction of rates took place on 1st instant. What, however, pleases us most is the issuing of third-class day tickets; a privilege hitherto withheld from precisely that class of persons most needing it. The millionaire or landed proprietor, travelling in the cushioned compartments of a 'first-class,' is allowed a reduction if he wishes to return the same day. The substantial tradesman who goes 'second,' also gets something back again in purchasing a 'return.' But the artisan, the labourer, the poor clerk, the half-starved sempstress, the distressed widow, and the thousand other objects of pity and charity, who are compelled to take their seats in the 'third,' are refused the slightest consideration. Why should discounts and deductions be for the rich only? Why should

* "H." means neither one nor the other, but the head of water.

not the poor man's pocket be treated as mercifully as the rich man's purse? We think the issue of third-class day tickets a very graceful and praiseworthy act on the part of the Midland. It is true, no doubt, that persons who could afford to travel first or second class often go by the third, but humanity forbids that this should involve in an indiscriminate deed of injustice the entire multitude of poor creatures who must of necessity "take the lowest place," and, indeed, can hardly scrape together the means for that."—Great doubt, says the *Morning Herald*, has been expressed in reference to the stated performances of Mr. Cramp-ton's six-feet driving-wheel engines at work upon the South-Eastern Railway. Many practical engineers even deny the possibility of obtaining 73 miles an hour with an engine having only six-feet driving-wheels. With us, the speed of the engine, with a train of eight carriages, weighing 44 tons, does not admit of question, because, on Wednesday week, we timed the speed over every quarter of a mile of the distance between Reigate and Ton-bridge, viz., twenty miles, with a train of eight carriages, and from what we saw of the work-ing of the engine, we have no doubt whatever that, with six, or say four carriages, she would reach a speed of eighty miles per hour.—A serious locomotive explosion took place at Liverpool, on Thursday in last week. The engine was a goods locomotive, and the fire-man was killed, and the engineer seriously in-jured. Such accidents but rarely occur; but it so happened, not long since, that two or three followed close on each other: we trust this will be a warning in time.—On Friday week a brick bridge, crossing the Bucking-hamshire Railway, over a cutting 60 to 70 feet deep, at Bittle Hill, near to Buckingham, fell on the line, shortly after the passing of the down luggage train. We learn that a number of inspectors go over the line early every day, and that on the inspector reaching this bridge on the morning in question he saw its dan-gerous state: bricks were falling from the arches, and the parapet was oscillating in a way which showed that it must fall. For an hour or two this dropping and swaying con-tinued. The engineer, Mr. J. Dockray, at last determined to have a charge of gun-powder put into it, to blow it down; but the whole came down with a tremendous crash.—A local paper describes the ruins as apparently "little better than rubble brick-work," and adds—"We are not aware that this bridge had given any previous intimation of its unsound state to those whose duty it was to inspect it, but we understand that some ladies who were upon it when the up-luggage train passed on the previous evening, felt it shake under them. It is estimated that it will cost 700*l.* or 800*l.* to repair the bridge. The question naturally arises: if this bridge, giving no previous in-timation of its unsoundness, and constructed at the same time that numerous other bridges (both under and over the line) were built, has thus suddenly fallen, what is the guarantee that others may not fall in a similar manner? If there be any special reason why this bridge should fall rather than any of the others, that reason ought at once to be made public. The only way thoroughly to satisfy them of the safety of the line, is for the directors to obtain the services of two or three competent en-gineers, known to the public, but entirely un-connected with the London and North-Western Company, to make a survey of every bridge, both under and over the line, and that without delay."—The railway station now being erected at Holyhead is progressing with despatch. The Royal Hotel, close to the station, has been taken possession of. It is intended for refreshment-rooms.

ST. GEORGE'S HOSPITAL.—The smart ap-pearance of St. George's Hospital, Hyde-park-corner, has led a correspondent to ask how the external colouring was done. On inquiry we find the material used is a patent wash, manufactured by Messrs. Johns and Co. Should it prove permanent, as the colour of it is even and good, it will supply what has long been a desideratum.

IRISH ARCHITECTURAL AND ENGINEERING INTELLIGENCE.

A new flax manufactory is being erected at Kildinan. The mill consists of a double building, two stories in front, and one in the rear: it is built of stone. The lower portion is used as a seedling-room, and the upper as a store-room for seed and prepared flax. The rear building is appropriated to vats for steeping, six of which are in full operation, and three more of larger size in progress of con-struction. There are several sheds and out-offices for drying the fibre after steeping. Be-sides the sheds already erected, there are a number of others in progress. The machinery has been erected by Messrs. M'Adam, of Bel-fast. The vats in operation are capable of steeping from 14 cwt. to 16 cwt. of straw each, or about five tons in the whole. The intended vats will steep about eight tons. Mr. Dargan erected the building.

A new county court house is contemplated to be erected at Ennis.

The board of guardians of Balrothery Union, intend making alterations and additions to the present workhouse; the works to be executed in conformity with the drawings furnished by the Poor Law Commissioners' architect.

The Midland Great Western Railway will be opened to Galway for public traffic on the 1st August. The Earl of Clarendon has expressed his willingness to attend, and the directors contemplate inviting her Majesty and Prince Albert. The works are progressing rapidly towards completion: the stations, which are all being erected by Messrs. Cockburn and Son, builders, of Dublin, are in a forward state.

A new Roman Catholic chapel is to be erected at Limerick: the site which it is to occupy is the corner of Charlotte's-quay and Bank-place: the necessary funds are being raised by subscription.

The corporation of Cork have determined upon the erection of a new mansion-house, upon which the sum of 5,000*l.* is to be ex-pended. Sir Augustus Warren's ground on Sullivan's-quay has been selected for the purpose. A new bridge is also to be erected at a cost of 2,000*l.*

The Midland Great Western Railway Com-pany are erecting a large station at Athlone. The total length is 180 feet. The ground floor contains, in the centre, a booking office 30 feet by 22 feet, off which are stone steps 6 feet 6 inches wide, by which platform is ap-proached. At either side of booking office are entrance porches 9 feet by 7 feet. In con-nection therewith is a parcel office 18 feet 9 inches by 15 feet, communicating with plat-form by a staircase; and lamp room 18 feet 6 inches by 10 feet 9 inches. A parlour 15 feet by 13 feet 6 inches; and kitchen 15 feet by 12 feet, with stove, &c. having separate entrance thereto, are provided. The remainder of this story is appropriated to the accommo-dation of the station master. On the first floor, which is level with platform, is a first and second class waiting-room over booking-office; a bar 15 feet by 8 feet 6 inches; a third class waiting-room over kitchen under-neath; females' private room, with water-closet adjoining, and two bed-rooms for station master; also urinals for passengers. The plan also provides, on this story, a ladies' room, same size as parcel office, and ante-room with water-closet. In the centre is a shed of corrugated galvanised iron, resting on metal columns. The total cost of the building, which is being erected in broken jointed rubble masonry, with limestone dressing, by Messrs. Cockburn and Son, of Dublin, will be nearly 3,000*l.* Mr. Mulvany is the architect.

The district lunatic asylum for Limerick city cost 246*l.*; for Limerick county, 788*l.*; Clare, 594*l.*; Kerry, 502*l.*

The directors of the Dublin and Belfast Junction Railway have at length, after a deliberation of four months, decided upon the contractor for the viaduct over the river Boyne. The tender of Mr. Evans, late con-tractor for the Conway viaduct on the Chester and Holyhead Railway, has been accepted. The decision has given great dissatisfaction to Irish firms, whose proposals were equally dis-

regarded, as in the case of the Dodder viaduct, lately disposed of by the Dublin and Kings-town Railway Company to an English con-tractor.

BUILDERS' CHARGES FOR DRAWINGS.

REES v. CLARKE.

At the Bloomsbury County Court, on the 28th ultimo, an action was brought by the plaintiff, a builder, to recover from the de-fendant, a gentleman of fortune, the sum of 5*l.* 5*s.* for work and labour done.

Plaintiff stated that, in the month of February, 1850, he was employed by the defendant to design a new plan of ornamental garden-wall and gate to enclose his residence, "Agin-court Villa," Glouces-ter-road, Regent's-park. He commenced doing so, and after two days, completed a coloured drawing of his invention, which, on showing to defendant and Mrs. Clarke, was approved of; but on taking it to Mr. Pennethorne, the office of Woods' Surveyor, it was objected to, and, of course, in consequence, could not be erected. He then drew another plan, on which, all parties agreeing in, he contracted with the defendant to build the wall and do some ex-terior repairs to the villa and outhouses for 89*l.* 5*s.*, which, on his sending in his bill, was paid. He sub-sequently did some repairs inside the premises, for which he sent in another bill, and the aggregate amount he was paid by Mr. Clarke for his work, was 111*l.* 3*s.*

By Mr. Philpotts.—In neither of the bills he sent in had he mentioned the amount he now sought to obtain, and which was for making the survey, in the first instance, and drawing the plan which was not carried out. On the return of Mr. and Mrs. Clarke from Paris in November last, the lady found fault with the work that had been done, but not that the water came into the house. He was sent for by de-fendant one night shortly after, between nine and ten o'clock, and told that a chandelier, which had been taken from a book, in the drawing-room ceiling, by his workmen, had been by them so badly refixed, that it had fallen down nearly upon the head of Mrs. Clarke, and been smashed almost to atoms. Mrs. Clarke did say she would make him pay for it. It was after that he, for the first time, sent in his bill for the 5*l.* 5*s.* now claimed.

Mr. Philpotts submitted to the judge that the plaintiff was not entitled to recover, nor was it till after being told he should pay for the chandelier that he thought of doing so. Besides, there was no law to enable him to do so, and to make such a charge was not recognised by the trade, as he had witnesses to prove.

Mr. Taylor, a builder of forty years' practice, and another gentleman, were called, who said that they had been concerned in making surveys and drawing out estimates on above a hundred different occasions, and, whether approved of or not, never made any charge for so doing, and never heard of such a thing (till the present occasion) having been done.

His Honour (Mr. Heath) certainly considered the making the charge for the first plan an after-thought of the plaintiff, when told that he would be expected to pay for the chandelier; and no doubt, if such a sum had been due, it would have been charged before; added to which, he saw no item in the bills for the plans really adopted. His decision was, therefore, for the defendant, whom he should order to be paid all his costs, including his attorney's fee and the two surveyors', by the plaintiff, forthwith.

Mr. Philpotts, on the part of defendant, said that they should now proceed against the plaintiff for the value of the chandelier.

MR. SHEEPSHANKS'S COLLECTION OF PICTURES.—The very interesting collection of modern paintings made by Mr. Sheepshanks, at Rutland Gate, Knightsbridge, is well known to most amateurs. It is rich in works by Mulready, Leslie, Cope, Collins, Redgrave, and Edwin Landseer, and has some specimens by Webster, Uwins, and Cooke: here, too, is Frith's clever picture from "The Good-natured Man." On the 9th Mr. H. Cole, with the permission of the owner, issued invitations to a number of foreigners and others now in London, and gave many an opportunity of seeing these works which otherwise they would not have had.

HACKNEY.—New Catholic poor schools for boys and girls are about to be erected at Hackney, from the designs of Messrs. John Young and Son. The competition for the above was lately advertised in our pages.

RUSSIAN HOUSES.

Among the various materials used in the construction of these houses wood has the decided preference, and if your correspondent of last week, who wishes to be informed as to the manner in which the Russians construct their dwellings, will consult Dr. Lyell's curious "Essay on the Origin and Progress of Architecture in Russia," he will probably arrive at some interesting information on the subject.

It is stated by Storch that about thirty-five years ago it was not unusual for people of good fortune to build a wooden dwelling for their own particular use adjoining to their mansions, thus comprising the difference between state and convenience. There is a very general impression existing among the Russian nobility that houses of wood are more healthy than those constructed of brick or stone; it is certain that they are warmer, which is a consideration of much importance in such a climate as Russia: they are likewise of comparatively small cost; are speedily erected; and, from the simplicity of their construction, admit of being readily altered and transported from one place to another.

A dwelling or cottage of the common sort generally resembles a square, consisting of a ground floor only, with steep projecting roof covered with thatch or shingles, with the gable end towards the street. Wood, as the principal material used in the erection, is employed with much prodigality, calculated to amaze a stranger aware of the comparative economy with which timber is used in most other countries. The trunk of the tree being barked is divided into requisite lengths, which are laid one upon another, morticed together at the various angles, and the interstices filled with moss and clay: this method of construction is as much a matter of choice as necessity, the apertures left for light being occasionally of glass or oiled linen: no flues are made, the peasantry having a great aversion to chimneys.

One-fourth of the interior is occupied by an oven, which not only serves to warm the house and to cook victuals, but the top serves as a sleeping-place: if the family are too numerous to find sleeping accommodation, a number of boards are joined together so as to form a shelf, and then fixed on a level with the top of the oven, offering further convenience.

On advancing towards the south of European Russia, timber becomes comparatively scarce, and its wholesale use in building is impracticable: the walls of cottages are then built with mud faced with boards, and frequently the sides are of wicker work plastered over. In the Ukraine, the village habitations stand detached within walled inclosures, and the walls being whitewashed, the villages have, on the whole, an appearance which reminds an Englishman more strongly of his own country than anything which he has seen, or will see, in the Russian empire. G. J. R.

WHAT OUR AMERICAN BRETHREN OUGHT TO HAVE BEEN DOING.

THE American papers are rather "stale, flat, and unprofitable" at present: in fact, they are filled with information from our own side the water about the all-absorbing object of the world's interest—the International Exhibition.

Dr. Smith, an American, and one of the international jurors, has been sending a series of articles to one paper on "The Palace of Glass." He seems to regret that America is not adequately represented; but it was scarcely reasonable to expect "the new world," divided by three thousand miles of ocean from "the old," to be able even to afford the immense expense beyond that of the other great competitors. The Doctor, however, thinks that Connecticut might have sent a pin machine, a box of clocks, a few wooden nutmegs; and Rhode Island something else; but they have too many of them been caught napping.

There should have been lots of carpets from Lowell; many more of those fine shawls from Lawrence. These are the articles that British manufacturers should have seen—for seeing is believing. Mr. Ames's sword-blades from Cabotville; a lathe turning gun-stocks all

alone; another making shoe-last out of sticks of wood; a machine cutting and heading nails; a tack machine from Warcham; another for turning oars and handspikes; Mr. Bignell's coach lace weaving loom, from Clintonville; and above all, Mr. Blanchard's apparatus for turning marble busts, would each have been centres of attraction, had they been put in motion here.

Our fire engines, he thinks, are quite inferior to those in Boston, New York, Philadelphia, and the cities of the West. But it is a singular fact, he adds, "that I have not heard the cry of fire for more than a year."

His fellow-countrymen, it would appear, then, have more need of first-rate fire engines than we have: yet we should like to see a little less necessity even for such as we have.

In speaking of hollow-bricks as "a new thing under the sun," he adds,—"If the Medford and other brickmakers would put the date of the year in the bottom of their moulds, each brick, to the remotest epoch of history in the New World, would be an unerring chronicle of incalculable importance to future antiquarians. It will be, at some inconceivably remote period of time, infinitely curious to ascertain by the figures on a common brick, which are more indestructible than ordinary stone, and which will be strewn over the ground everywhere and buried beneath the soil, the phases through which the country has passed, from its infancy, to decrepitude; age;"—spoken like an antiquarian *con amore*, or one rather who anticipates the pleasure in some new state of existence himself. Masons' marks on stones and dates on bricks are indeed capable of affording interesting light on obscure subjects of antiquarian research.

A writer, in another paper (taking a lesson from this side the Atlantic too), expatiates on the fine field there was in America for the laying out of parks such as our own, which, singularly enough, appear, more than almost anything else, to excite amongst Americans "a sort of bewildered astonishment at the vastness and wealth of a city," which "can afford such an illimitable space for the pleasure of air and exercise to its inhabitants." In point, an anecdote is told to the effect, that—

"In crossing the Atlantic, a young New Yorker, who was rabidly patriotic, and who boasted daily of the superiority of our beloved commercial metropolis over every city on the globe, was our most amusing companion. I chanced to meet him one afternoon a few days after we landed, in one of the great parks in London, in the midst of all the sylvan beauty and human enjoyment I have attempted to describe to you. He threw up his arms as he recognized me, and exclaimed—'Good heavens! what a scene, and I took some Londoners to the steps of the City Hall last summer, to show them the Park of New York!' I consoled him with the advice to be less conceited thereafter in his cockneyism, and to show foreigners the Hudson and Niagara, instead of the City Hall and Bowling Green.

But the question may well be asked, is New York really not rich enough, or is there absolutely not land enough in America, to give our citizens public parks of more than ten acres?

The New Yorkers are not wholly deaf to appeals like these. The mayor has called the attention of the city authorities to the subject of providing a new and spacious park. The Committee on Lands and Places have reported in favour of the measure, and have recommended for the site the lands known as Jones's Woods, lying between 66th and 75th streets, and extending from the 3rd avenue to the East River. It is proposed that 50,000 acres, with an interest of not less than 5 per cent. be annually paid by taxation until the whole purchase-money is discharged.

Our cities and towns, especially the semi-rural ones, which must always depend, for a principal part of their attractiveness, on their sylvan appearance and open spaces, cannot be too liberal in appropriating forthwith tracts of land for parks and other public uses—not little, contracted, ten-acre lots, but lots in which the acres are counted by hundreds. If this had been done fifty years ago, how we should now bless our progenitors for their forethought! It is not yet too late, in many cases, to make amends for past omissions."

The plan for this great park is, to lay off about half a mile square, between the Third Avenue and the East River, and 75th and 54th Streets. The cost of the land, with the necessary preparation for pleasure-grounds, is esti-

mated at from 250,000 dollars to 500,000 dollars.

The Washington correspondent of the *Journal of Commerce* states, that on the 5th of June "the President held another, and probably a final conference, with the architects and the Cabinet, on the subject of the capitol enlargement. The result is, that a design, made by Mr. Young, of Boston, will probably be the President's choice; but nothing is yet finally decided." It is hoped, if not intended, that the President will be able to lay the cornerstone of the enlarged capitol on the 4th of July next.

We learn from the *Philadelphia North American*, that a Mr. Robinson, a United States man, is about to erect in Sweden and Norway a number of lines of magnetic telegraph. He has been granted a privilege for the enterprise, which is to endure for fifty years; and a company, including several heavy capitalists in New York and Stockholm, has been formed under his auspices.

INDIAN HANDICRAFTS.

AN English engineer in India describes his experiences amongst the native workmen in an amusing article in *Chambers's Journal*, from which the following is condensed.

I had the anvils raised upon wooden blocks, so as to necessitate an erect posture while at work. The poor fellows submitted with the best grace they could, but seemed greatly embarrassed. The queer shaky way in which they stood, and the undecided flexure of the knee and hip-joints, were so indicative of a tendency to flap down on the slightest possible pretence, that it was really impossible to look at them without laughing. The work went on very slowly; but I hoped that all would soon go well: alas! I had under-estimated the tenacity of a race-established precedent; and, so, one afternoon, I found my blacksmiths perched on blocks of wood of the same height as their anvils, and hammering away with all the vigour which the stability of their tottering pedestals admitted of! It was hopeless contending with such a demonstration as this; so, to the great joy of the *lokairs* (blacksmiths), I allowed the anvils to be placed once more on terra firma. Time, which the Englishman values as money, has a very secondary place in the estimation of the Oriental. The *radj*, or bricklayer, is, I think, about the best illustration of this. He works with a trowel about the size of an ordinary tablespoon, and a small hammer weighing about six ounces. Armed with these, and squatting before his work, he, in a loud voice, summons his *rundees* (women, two of whom always wait upon each *radj*), and orders them to bring *entee* and *massala* (bricks and mortar). The *rundees* in due season make their appearance—one with a brick in each hand, and the other with a small wooden trencher, about the size of a bread basket, filled with the *massala*. I am much within the mark when I say, that a single English bricklayer and hodman could in one day do the work of a dozen *radjs*, *rundees*, and all; and do it much better too. One would imagine from this that building was a very expensive process in India; but the contrary is the case. An English bricklayer and hodman will cost from eight to ten shillings a day, while the Indian *radj* and his two attendant *rundees* will not cost more than from threepence to fourpence per day.

The writer next attempts to introduce the barrow for earthwork in place of the little *covrie* baskets, holding about a spadeful each. After a great deal of see-sawing, one poor fellow managed to deliver his freight. Thinking that a little practice, unembarrassed by my presence, would familiarise them with the barrow, I left them for a time, and on return I beheld the wheel-barrow borne along by four men, very much in the style in which dead men are carried off the stage—that is, two at the head, and two at the feet—palanquin style, in short. A set of lighter ones, little larger than those with which boys are accustomed to amuse themselves in England, was made, and success for a time was complete; but one day, happening to come upon them unexpectedly, there were half-a-dozen of the men walking

along with the greatest possible gravity, each carrying his wheel-barrow on his head—legs in front, and wheels behind! Even after I had threatened to dismiss the first man I found carrying his wheelbarrow on his head, I met a serious-looking old man tottering along with his barrow laid across his arms like a baby in long clothes!

The first snort of the iron horse seems to have produced a complete panic, and the movement of a steam-engine was hailed like a new Avatar. I was at much pains, he says, in endeavouring to explain the principles of its action to the most intelligent of the workmen; but I found they had long ago provided themselves with what, to their thinking, was a complete theory of the whole matter. The doctrine was, that the boiler contained an English *dhoot* (spirit); that we made a fire beneath the boiler, and roasted the said *dhoot* until he called out *dahugei* (mercy) through the safety-valve; and then only, and not before, would he go to work: the water was merely given to quench his thirst!

The time is not far distant when the rich produce of Central India will be poured into Europe with a profusion and regularity never yet dreamed of. The steam-engine is destined to do more for India than all her other teachers have yet effected. This iron apostle of civilisation does not declaim; it does not dispute nor vituperate; but it works, and always succeeds.

Books.

Familiar Letters on Chemistry in its relations to Physiology, Dietetics, Agriculture, Commerce, and Political Economy. By JUSTUS VON LIEBIG. Third edition, revised and much enlarged. Taylor, Walton, and Maberly, Paternoster-row. 1851.

JUSTUS VON LIEBIG may be called the father of organic chemistry as a science. This vast and most important branch, or main arm, of chemistry, is gradually issuing out of a sickening chaos of quasi-elements in which it has been involved, and is now becoming one of the most attractive, in place of one of the most repulsive of studies. We have ever regarded Liebig's theory of the process of respiration as a beautiful type of what animal or vital chemistry will soon be in all its details; but it is surprising what modifications even that apparently complete and satisfactory view of so dominant a function is already undergoing, and is likely still further to undergo. The oxygen of respiration already begins to manifest its eternal and paramount companionship with hydrogen even in the respiratory process, and we may venture, professionally, to anticipate, for one thing, that modified ideas of the importance of size and ventilation in sleeping apartments will be one result that will be fully established. Even already a recent writer in chemistry (Professor Griffiths, if we mistake not) has broached the very same subject from another point of view. A perception of the fact that the diaphragm or midriff is so placed, and so acts in consequence, that while it expands the lungs, it collapses the liver, and, *vice versa*, expands the liver while it collapses the lungs, induced us, many years since, along with other facts and principles, to conclude that the liver is as closely, as constantly, and as rationally, if not (at least in the sleeping state) as dominantly engaged in the actual respiratory process as the lungs, and that as the oxygenation of the blood and body constitutes the grand rectory function, if we might so term it, of the lungs, so the hydrogenation of the blood and body would be found to be the grand rectory function of the liver, and both to be ruled in their developments by respiration. Now, although this great authority has not yet clearly declared such a doctrine, he is advancing, experimentally and cautiously, though unwittingly, to the verge of it,—recognising the engagement of the liver in hydrogenating processes, and all but evolving the very doctrine just hinted at.* But we must turn to what is,

in the meantime, more practical in the theory of respiration, and in doing so we shall therefore quote some remarks by the author on ventilation:—

"In a closed space, eight feet high, nine long, and eight wide, a man could not breathe for twenty-four hours without uneasiness. At the end of that time the air would have the composition of expired air; and if the patient remained longer in the same air, a morbid state, and, finally, death would ensue. Lavoisier and Seguin found that the carbonic acid of expired air, when again inspired, may be raised to 10 per cent., but not beyond that quantity, even when respiration was continued, which it could only be for a very short time. This proportion of carbonic acid may be regarded as the limit at which life is endangered in man.

Cases of this kind, in which death has been caused by the respiration of many persons in a confined space, too small for the abode of so many, are not rare. Every one has heard of the shocking results of the confinement of a number of prisoners in the Black Hole at Calcutta for one night, in the course of which most of them died. One of the most recent and lamentable accidents of this kind happened last year in an emigrant ship, in which, during a storm off the English coast, the emigrants were crowded into the cabin. In less than six hours more than sixty persons perished.

In a space in which many persons breathe, and in which the air is but imperfectly renewed through accidental chinks in doors and windows, the elongation of the flame of a candle, and its burning dimly, distinctly show the altered state of the air.

Even the very idea of respiring air which has sojourned for a time in the lungs of another, although of a healthy person, causes discomfort. It is certain that 1 per cent. of carbonic acid in the air produces a sensible uneasiness; and the advantage of a judiciously arranged renewal of the air, or ventilation, for all apartments, in which people remain together, is quite obvious.

For every adult there should be supplied to such an apartment at least 5 cubic metres, or 216 cubic feet (English) per hour, of pure air: in general about one-half more is reckoned upon. In the air of the Chamber of Deputies, at Paris, the hall of which has the cubical extent of 5,000 cubic metres, Leblanc found that when 600 persons were present, and with

stroyed and burnt as fuel by the oxygen taken in by the lungs, this idea will be seen to be curiously qualified, for instance, in the following remarks:—

"The oxygen absorbed in respiration combines with the hydrogen of the sugar (believed and recently announced by a French writer to be formed in the liver) to form water, and when the hydrogen has been replaced by its equivalent of oxygen, the sugar at once passes back into carbonic acid. On this view no true combustion of carbon occurs in the living body; but the carbonic acid is formed by a process of substitution, in this case—one of decay, or slow oxidation, from a body rich in hydrogen, the hydrogen of which is oxidised and removed, and replaced by one or more equivalents of oxygen.

A knowledge of the phenomena of fermentation allows us to penetrate into the processes by which, in the animal body, the highly oxidised sugar is converted into fat, a body containing so little oxygen.

The opinion that this transformation is determined by a ferment in the liver, which behaves towards sugar, in the production of fat, as saliva does towards starch, or as the lining membrane of the stomach does in digestion, and that hence the liver is the seat of this process, is not destitute of probability, but requires to be more accurately demonstrated.

When a fresh calf's liver is cut in pieces, covered with water, and exposed to a temperature of from 98° 6 deg. to 104° deg. F., a remarkable fermentation begins after four or five hours. The liver becomes covered with a number of gas-bubbles, chiefly formed of hydrogen. Each bubble, as it rises, may be kindled at the surface. In an open vessel, during the first hours of this fermentation, no putrid smell is observed. It is hence obvious, that the liver contains a substance which, in a certain state of decomposition, becomes a ferment powerful enough to decompose water, the oxygen of which is taken up by the elements of the ferment.

It is rather a remarkable circumstance that a thesis admittedly based on our idea of the liver being the hydrogenator, and titled "The Liver the Hydrogenator of Animals," was laid before Dr. Gregory at Edinburgh about the very time that Liebig was giving this work its finishing touches at Gießen before placing it in Dr. Gregory's hands as editor of the present issue, and that in the thesis in question the idea (not ours) was suggested "that the bile is the creator of the oil globules found in the chyle, and that these oil globules in some way preside over the formative power in the building up of the tissues (the very antithesis of oxygen's destructive tendency), viz. that the bile is the creator of fat through the power of its hydrogen acting on the chyme." From this note the drift of new and opening researches on a subject of importance equal, at least, to that of the connexion of oxygen with the lungs, may readily be seen.

a ventilation of 11,000 cubic metres per hour, the air flowing out contained, notwithstanding, 1 part of carbonic acid by weight in 400, which is 2½ or 3 times more than is contained in pure air.

In close places, in ships, many sick rooms, and bed rooms, deficient ventilation might advantageously be compensated for by the use of hydrate of lime. The action of slaked lime depends on its great power of absorbing carbonic acid. In a room in which carbonic acid gas is present, the gas is very rapidly removed by slaked lime spread on a board. One cubic foot (Hessian, = 0·551, C. F. English) of it, which, when moist, weighs 18 or 20 lbs., and contains two-thirds of its weight of dry lime, absorbs, in order to be converted into carbonate of lime, more than 1,100 litres (70 Hessian, or 38·8 English cubic feet) of the gas. In the small closed space formerly described, if the carbonic acid formed were removed by means of a few pounds of slaked lime from the beginning, and its injurious effects thus avoided, a man would be able to live three or four times as long as without the lime.

Since such a space cannot be hermetically closed, the absorbed carbonic acid would be immediately replaced by an equal volume of fresh air entering through the chinks.

The only inconvenience from the use of lime is, that as the lime combines with the acid, the water of the hydrated lime is set free, and partly evaporates, so that the confined man or animal soon becomes an air saturated with aqueous vapour. This inconvenience is well known to those who inhabit a newly built house. It appears during the first months, very strikingly in the winter months, in the form of an excess of moisture, which condenses in drops on the windows and cold walls. This is observed in houses which have been for years exposed to the action of dry air; and always for the first time when such houses are first inhabited. It does not proceed from ordinary moisture in the walls, but from the dry hydrate of lime in the mortar, which only gives out the twenty-four per cent. of water (which are chemically combined in it) as moisture, when the lime obtains a supply of carbonic acid to combine with it and displace the water. This supply is abundantly furnished by the lungs of those who inhabit the house."

Our building and contracting brothers who keep horses for use, as well as our more professional and amateur readers who keep them for exercise, as well as other animals for amusement or use, may be interested in the following remarks by such an authority as Liebig. He is speaking of the influence of salt in making animals sleek, lively and healthful:—

"In the beasts of both lots, the skin to the feel was fine and sound, but the hair in those which had got salt was smooth and shining, that of the others was dull and erect. On prolonging this experiment, these signs became still more prominent. In the animals of the second lot, after they had had no salt for a year, the hair was matted, and the skin here and there devoid of hair. Those of the first lot, on the contrary, retained the look of stalk-kept beasts; their liveliness and frequent indications of the tendency to leap, contrasted strikingly with the heavy gait and cold temperament observed in those of the second lot. . . . Their blood remained pure, and well fitted for all the purposes of nutrition. In the salt they had a powerful means of resistance to external causes of disturbance to health, which, in the actual circumstances, was indispensable to them. The body of the others was, in regard to disease, like a fire-place, heaped with the most inflammable fuel, which only requires a spark in order to burst into flame and to be consumed."

In the following remarks on spirits there is a spirit of charitable feeling and truthfulness as to motives and consequences which we like:—

"The use of spirits is not the cause but an effect of poverty. It is an exception from the rule when a well-fed man becomes a spirit-drinker. On the other hand, when the labourer earns by his work less than is re-

* Although Liebig's idea of the respiratory apparatus and its function is that it is like a furnace in which the carbonic basis of the frame is eternally liable to be de-

quired to provide the amount of food which is indispensable in order to restore fully his working power, an unyielding, inexorable law or necessity compels him to have recourse to spirits. He must work, but in consequence of insufficient food, a certain portion of his working power is daily wanting. Spirits, by their action on the nerves, enable him to make up the deficient power at the expense of his body,—to consume to food that quantity which ought naturally to have been employed a day later. He draws, so to speak, a bill on his health, which must be always renewed, because, for want of means, he cannot take it up: he consumed his capital instead of his interest; and the result is the inevitable bankruptcy of his body."

This work, in its more professional views and details, teems with the power of genius and original research, and no work on chemistry ever written is probably so capable of exciting an abiding interest in it as a practical science in which we are all vitally interested.

Hoffstadt's Development of the True Principles of Christian or Pointed Architecture. Translated and Edited by JOHN PHILIP. London: Richardson and Son. 1851.

THE first part contains some nicely drawn illustrations, but contains no elucidation of the "principles;" we must, therefore, wait. The prospectus says, in curious English:—

"We possess a great number of precious examples that offer a most varied choice of the principal mediæval monuments; but when it is the subject to execute a design in this style, it is too often the case that the result is but an ensemble of divers models and details which were the most convenient to the individual for the purpose of his plan. It will, therefore, be easily understood that, after this manner of proceeding, it were impossible to produce a single construction that could compete with the productions of the Middle Ages, much more less likely when one is confined merely to a superficial appearance, without any concern as to the fundamental principles which give to this style of architecture its true character."

Miscellanea.

GELATINE CASTS.—By the use of gelatine, elastic moulds are formed capable of reproducing, with accuracy, and in a single piece, the most elaborately-sculptured objects, of exquisite finish and delicacy. Casts from these are now common in the streets. The credit of the application of this substance to the purpose is due, it is stated, to Mons. H. Vincent. The process of casting consists in dissolving a certain quantity of gelatine in hot water until it is reduced to the state of liquid paste, when it is run over the object intended to be reproduced. As it cools, the gelatine assumes a consistency offering a considerable degree of resistance, and highly elastic, which latter quality enables it to be easily detached from the work on which it has been fitted. In the hollow formed by the gelatine, a choice kind of plaster, prepared for the purpose, is next run; and when the plaster has acquired the requisite degree of hardness, the gelatine mould is detached in the same manner as from the original: from this apparently fragile mould as many as six copies may be taken, all reproducing the original with unerring fidelity. It appears that numerous difficulties had to be overcome before such a result could be obtained. The chief of these consisted in preventing the two plastic substances, each impregnated with a certain quantity of water, from becoming wedded together, or retaining on their surfaces traces of the deposits of plaster or gelatine, as was constantly the case in the first experiments. By this process casts are produced with much greater rapidity than by the old mode.

PROPRIETY IN THE MUSEO BORRONICO.—A writer in the *Athenæum* says,—"We find the iron gates which formerly closed the entrance to the galleries on the ground-floor no longer shut; and the once officious and exacting custode who held the keys to exhumed

treasures of this classic land now wanders dumb and melancholy along the silent chambers. So far, there is an improvement. Those who are familiar with its treasures will remember the room of the Venuses, where the new Neapolitan Government, in its intense regard for public morals, had gathered together in darkness all the representatives 'of her who worketh war in tender hearts.' There they stood, shut out from the world like the ladies of the East: with this exception, however, that you could get admission to the marble harem for eightpence, if one of the ruder sex,—whilst Lady Mary Wortley Montagu herself could not have succeeded in getting anything more than a key-hole view of this Olympian paradise. Well, the matter now is set at rest for both sexes: the room is nailed up, and neither love nor money can gain a glimpse of these vice-inspiring marbles. 'What is the meaning of this?' said I to the custode.—'Eh! chi sa?—The Minister of Public Instruction!'—that is, the Jesuits! Really this is too absurd.—Naples is idle,—kept in a high state of morality by locking up Parian ladies who were brought into this world long before Paris began to dress her female population in Adelaide boots and pink bonnets! Still greater is the absurdity when one remembers the state of society in Naples. No city in the world has more romantic histories (for 'romantic' read 'shameless') in its fashionable world, whilst the crimes of the priesthood are as familiar to good Catholics as salt fish. But hypocrisy insists on making its onslaught on the fine arts,—and indulgence to the flesh is to be purchased at the expense of the marble."

INTRAMURAL INTERMENTS.—From inquiries lately instituted by Mr. George, churchwarden of *St. Ann's, Westminster*, on the subject, it appears that the number of interments in the vaults of the parish church during the last 160 years has been 1,920, of which there remain now only 490 coffins, and it is supposed that the remaining 1,430 have been abstracted for the value of the lead of which the coffins were composed. In the open burial ground, three-quarters of an acre in extent, there have been 13,788 interments during the last 20 years, and 110,240 during the last 160 years. The government calculation of interments to the acre is 110, but it appears that there have been in this ground upwards of 1,000 to the acre. When will the Board of Health carry out the new law against burying the dead amongst the living?—*Daily News*. [We can state that the arrangements for the purchase of the existing cemeteries are going on, and that the delay does not rest with the Board of Health.]

THE ARCHÆOLOGICAL INSTITUTE.—The annual meeting of this society will be held at Bristol. The following is the official programme of proceedings.—Tuesday, July 29.—Reception-room at the Council House.—Introductory meeting at twelve, at the Guildhall, by permission of the mayor.—Resignation of the president's chair by the Lord Talbot de Malahide to John Scandrett Harford, Esq., president elect.—The regalia and muniments of the corporation will be displayed in the Council Chamber.—Visits to the Cathedral, churches, and objects of interest in or near Bristol.—The Museum of the Institute will be opened at the Bishop's College, Park-street.—Meeting and Conversations in the evening at the Institution, Park-street, at eight. Wednesday, July 30.—Meetings of sections at ten.—The historical section will assemble in the theatre of the Bristol Institution, Park-street.—The architectural section in the Chapter House of the Cathedral, by permission of the dean and chapter.—At two o'clock a visit is proposed to St. Mary Redcliffe Church, when the striking features of that structure, and the progress of its restoration will be pointed out by Mr. Godwin.—Meeting of the section of antiquities in the evening, at the Bristol Institution, Park-street. Thursday, July 31.—Sectional meetings at ten.—Annual celebration of the Canyones Society, at St. Mary Redcliffe Church, at two.—The members of that society will join the members and visitors at the public dinner of the Institute at the Victoria Rooms, Clifton,

at six; Mr. J. S. Harford, the president of both societies in the chair. Friday, August 1.—Excursion to Wells.—Professor Willis will discourse on the architectural history of the Cathedral. Saturday, August 2.—Sectional meetings at ten. Monday, August 4.—Excursions. Tuesday, August 5.—Meeting at ten for reading communications to the several sections.—Concluding general meeting at the Guildhall at twelve. The secretaries are Messrs. Charles Tucker, George Vulliamy, and Albert Way.

BRISTOL ATHENÆUM COMPETITION.—The plans sent in for the Bristol Athenæum, in reply to the advertisements, were referred by the committee to Professor Donaldson. The following portion of his report will show the result:—"I am of opinion that out of the twenty-one projects submitted in competition, the following designs, as numbered by the committee, possess considerable merit,—Nos. 1, 5A, 6, 7, 10, 12, 13, 14, 19; but I recommend, as best adapted to the requirements of the institution, and consequently as best entitled to the premiums,—No. 6, by Messrs. Foster and Wood, of Bristol, for twenty guineas; No. 10, by Messrs. Lloyd and Co., of Bristol, for ten guineas; No. 1, by Messrs. Gabriel and Hirst, of Bristol, for five guineas. I beg to offer my congratulations to the directors upon the success of the competition, which affords them the opportunity of adopting a design for their building which will be so creditable to the institution."

THE FERRO-VITREOUS ORDER OF CONSTRUCTION.—MAP-CUPOLAS.—ROOF-CONSERVATORIES.—The Exchange at Antwerp is to be surmounted by a cupola of glass and iron, so arranged as to represent a map of the globe. The lines of longitude and latitude will be formed by the bars, between which the glass will be fixed, bearing the map in colours. We sometimes feel surprised, says a contemporary, "that with the present reduced price of glass and iron no attempts are being made among us to convert the roofs of our houses into conservatories. In many situations in towns such an accommodation, more especially in wet weather and winter time, would be found to be 'a real blessing' to children and a great comfort to parents. Safe from danger, dry, and warm—a stove being easily laid into the chimney sufficient to air the apartment—children who have now nowhere to recreate themselves during such seasons but perhaps a low kitchen or dark back-parlour, or, what is worse still, a miserable damp and dark yard, would be enabled to take exercise amidst flowers and shrubs in an elevated and healthy atmosphere which would be of incalculable benefit to their health. Where parapet walls already exist, with a walking space between it and the roof, it is only necessary that these walls should be capped with sashes to the height of about four feet, and a glass roof be carried over to rest upon the existing tiled or slated roof, and the conservatory, so far as its outward arrangements are concerned, would be formed at once; tiers of shelves would then only have to be raised resting upon the old roof, and the garden would at once be ready for the reception of plants. Were the owners or occupiers of several adjoining houses to fall in with the plan, a beautiful glazed promenade might be obtained for the families in inclement weather, which, we humbly conceive, would be felt as a great acquisition to a residence in a thronged part of the town. All houses in future to be erected in the more densely populated parts of towns, more especially large houses, ought, in our humble opinion, to be roofed with glass. No addition, we believe, would be by these means made to the expense of roofing, whilst a great amount of benefit, in a sanitary and domestic point of view, would be conferred upon the families occupying them by the adoption of such a plan."

OPENING OF THE FISHMONGERS' ALMS-HOUSES AT WANDSWORTH.—St. Peter's Hospital, being completed, was formally opened on Tuesday in last week, and taken possession of by the hospitaliers. We gave a view of it some time ago. The almshouses are forty-two in number, forming three sides of a square. The architect was Mr. Richard Suter.

VENDORS BIDDING AT AUCTIONS IN SCOTLAND.—The law condemns all interference by any person on behalf of the vendor of goods at an auction, even though it be limited to a fair defensive precaution against an undervalue being accepted. Thus, in the case of *Anderson v. Stewart*, Dec. 16, 1814, F.C. vol. 18, page 108, a bankrupt having employed a third party to bid privately at a public sale of his sequestrated estate, the Court decided that such bidding was illegal, though it was done without the knowledge of the trustee, by whom the goods were sold for the benefit of the creditors; and in the case of *Cree v. Durie*, F.C. vol. 16, page 66, where two Danish ships were exposed to sale by auction at Leith, it was held illegal for the owner to buy them in, and a previous offerer who was the only bidder on the occasion, was found entitled to 150*l.* in the name of damages for being so deprived of the purchase. If "white bonnets," as they are termed, have been formerly employed to puff at sales here—and that they have been so is matter of general complaint—we trust the above, showing the illegality of such a practice, will lead to its being departed from in future. The very essence of a public sale is that none but real bidders shall be heard: to employ a puffer is an ensnaring and cheating of the public, and the auctioneer or any other person who does so makes himself liable to a severe penalty.—*Inverness Advertiser*.

MANUFACTURE OF STEEL.—H. M. Osmancy, of Chester, has obtained a patent for improvements in the manufacture of steel. The process of deoxidation is conducted by submitting the ores to different temperatures in a reverberatory furnace, with hopper, &c., at three successive heatings: as the first charge is removed from the point at which it is introduced, another charge occupies its place, which is followed by a third, and so on. In this manner the furnace is kept fully charged during the whole time of operation. The cakes, plates, or bars produced, after puddling, are cut up, and converted, and may be charged at once with the requisite degree of carbonisation for steel, of any temper, "by adding at once, in the shape of charcoal, in the crucible, or melting operation." The patentee does not claim the exclusive use of the furnace described, except when employed as above mentioned; but claims, as the improvement in the manufacture of steel,—ores, and other oxides of iron, deoxidised at successive temperatures, as described.

THE "OLD CITY GAS LIGHT COMPANY."—The "Great Central Gas Consumers' Company," the "great central" example of independent self-supply by "gas consumers," has sunk from its great central position into a mere addendum to the "Old City Gas Light Company," having no sooner overcome all the strenuous endeavours of the said company to blackguard it, to obstruct, and to strangle it, than it has fallen into the open arms of this its bitterest enemy,—unable to stand alone, we presume, after so much exhaustion. Our opinion of such amalgamations has been often enough expressed. *Negotiations such as these have never yet had the public good as their real object or result*, however obvious it may be. (It would) supply that public at a cheaper rate than while in competition as two distinct establishments. The real object is a fancied interest in sacrificing the public's ultimate hopes by preventing the further reduction of prices consequent upon a continuance of competition with each other.

PROPOSED SCHOOL OF ART FOR ARTIST-WORKMEN.—The writer of a recent article in our columns, on this subject, has put forth a proposal for establishing such a school. He says,—"The workman of the present day is wholly unteachable to appreciate and carry out the idea of the artist. The object now proposed, with a view to remedying this short-coming is, to commence a model establishment, to be called A School of Art for Artist-Workmen, having for its purpose, the instruction and guidance of the mind of the workman through his hand. The mode of accomplishing this is proposed to be by the daily attendance of the artist-workman at con-

venient and stated hours, at the school; where he will be required to make copies in stone or other material according to his trade, of some well-known and approved model. He will commence with some very simple object, comprehending but few parts, as (supposing him to be a carver in stone) the vermiculations in a quoin stone, or a leaf or flower by Gibbons from St. Paul's, or some simple foliage from one of our cathedrals or churches,—where it is found as the artist of old left it. He will repeat this again and again till his carving evinces that he begins to appreciate the work before him. To aid him in this, the most striking merits of the model will be pointed out to him by the teacher; and when finished his short-coming or his success fully explained."

IMPROVEMENTS IN STEAM-BOILERS.—A new construction of boiler has been patented by Mr. Thomas Champion, of Philadelphia, consisting of four or more annular cylinders one within the other, all connected together by tubular braces, and at distances equal to the thickness of each pair of annular surfaces. The tubes contain a number of evaporation openings, so arranged that the steam passes upwards into a steam chest placed immediately above. The products of combustion and heated air pass under the outside annular cylinder, and return between the interstices of all, which thus form a flue to the chimney. This arrangement, it is added, allows a free ebullition of the water and passage of the steam, with settlement of dirt and impurities in the lower parts, from whence they may be blown off; while a large heating surface is thereby exposed, and rapid evaporation secured. There is some difficulty in constructing these concentric annular cylinders, but to enable the maker to get at the rivets and finish them securely, he leaves the ends open until fixed, when he effectually closes them by metallic plates, pressed against by metallic tapered springs.

INSTANTANEOUS PHOTOGRAPHS.—An experiment, by Mr. Fox Talbot at the Royal Institution, appears to have proved clearly that photographs, for the future, may be *instantaneously* produced. The experiment consisted in illuminating, by electric light, a printed paper revolving with immense rapidity in the dark, and during the flash taking a photograph of it, without a blur or the thickening of a line! In future, as the *Literary Gazette* remarks, with such a process at command, photographic portraits will be obtained with all the animation of full life, instead of that stiffened serenity which even a sitting of a few seconds gives to the countenance. Nothing will be more easy than to take the most agile ballet-dancer during her rapid movements, or to catch the image of the bird of swiftest flight during its passage instantaneously over the field of the lens of the camera obscura. In America, it is said, they have discovered a process by which nature is copied in colours: here we have the means of fixing a shadow which passes as swiftly by as the flash of lightning. The preparation is a secret, but it is put on glass with albumen.

CONGREGATIONAL "OPENING" OF ST. PAUL'S.—On Sunday week, in the afternoon, for the first time, the pulpit was erected in the nave of St. Paul's Cathedral against the pillar near the monument of Dr. Middleton. From the western entrance, along the nave, as far as the chapel doors, there was one dense mass of attentive auditors. The voices of the officiating clergy were distinctly heard all over this large space. What can have hitherto prevented a congregational and free weekly "exhibition" of so hopeful and appropriate an order as this, but the twopenny exhibition, with the profits of which it was but too likely to interfere?

CONSUMPTION OF SMOKE.—A patent has been taken out by Mr. R. Rodham, of Gateshead, practical chemist, and E. R. Hoblyn, of Stepney, gentleman, who claims—1. The application of fans or blades, placed within a chamber, and caused to revolve at a high velocity, in combination with a stream or streams of water, for condensing and purifying smoke, fumes, gases, or vapours from their noxious and poisonous particles.—2. The arrangement of receivers to retain the products to be used in the manufacture of various colours.

THE DEVON HAYTOR GRANITE QUARRIES.—A company, it appears, has been formed, to work these ten large quarries, which have been for some time in abeyance. The material is good, and we are glad to hear that it is likely to be now made useful. Five hundred men, it seems, might be set to work at once, as the quarries are sufficiently cleared, with tramroads, &c., ready.

A DIAL IN TEMPLE BAR.—Allow me to suggest the expediency of erecting or affixing a double illuminated dial in the space now occupied by a window over Temple Bar. This would be a great boon to the thousands who constantly pass this the greatest thoroughfare in London. Two months ago I called the attention of the Lord Mayor and Sir James Duke to the subject, and I hear that the only obstacle which exists is, that the interior of Temple Bar is let to a neighbouring banker for something under 50*l.* per annum for stowing away old books.—*J. LLOYD*.

BREACH OF CONTRACT.—A workman, on Wednesday week, was charged at Walsall with refusing to enter on his employer's business, after signing a written contract to do so, and borrowing 1*l.* 6*s.* on the head of it. The employer is a bit-maker. Sentence, twenty-one days' imprisonment in the House of Correction, unless employ entered on as agreed.

CONCENTRO-RADIATIVE FORCE.—A "new motive power" is said to have been discovered, and "likely (at last, of course) to supersede the use of steam." So far as we can understand what is said of this new motive power, the idea of which was suggested by the spinning of a boy's top, it appears to consist in a combination of the centripetal force, operative in atmospheric pressure, that is, in ordinary parlance, of vacuum power, with centrifugal force. The combination of these two forces, the centripetal and centrifugal, is said to produce the requisite rotation; but again it is said that the rotation evolves the centrifugal force, which is used to perpetuate a vacuum. The account of it given in the *New York Tribune* is, in short, rather circumlocutory and obscure,—designedly so, it may be. The inventors, says a correspondent of the *Tribune*, "instead of trying to cheat leverage and gravity, combine gravity or pressure and centrifugal force, in the same manner as they act in nature, to produce rotation in matter; recognising both as independent and available principles on forces acting at right angles with each other, in the ratio of the square of their velocity. The centrifugal force being evolved from rotation without taxing or any way retarding it, is used in this invention not to produce motion, but to perpetuate a vacuum, which is but the measure of power; gravity or pressure being the propelling power acting on quicksilver, or any other liquid, the power of the vacuum being equal to the pressure created, whatever that may be."

THE IRON TRADE.—At the preliminary meeting of this trade on Thursday last, the resolution unanimously determined upon was that of not interfering with the present nominal list of prices, as settled now upwards of two years ago. Such a result was scarcely expected; and though there was a full concurrence that no better course for the time could be adopted, we have reason to know that individual members of the trade do not consider themselves, or each other, pledged to exact any such figures, so long as they find them impracticable.—*Birmingham Gazette*.

TENDERS

For the erection of a new School of Industry at St. John's Wood: Mr. George Legg, architect. (Exclusive of boundary walls.)

Dave	£1,405 0 0
Paper	4,443 0 0
Locke and Nesham	4,438 0 0
Bird	4,425 0 0
Ebbs	4,389 0 0
Cooper	4,337 0 0
Dent, plumber (plumber's work separate)	225 0 0

An alteration was made in the design, and Mr. Cooper's and Mr. Dent's reduced estimates accepted. The quantities were furnished.

For altering and enlarging St. Mary's Church, Barnes, Surrey: Mr. Legg, architect.

Serley	£1,597 0 0
Goodall and Hammond	1,585 0 0
Humphrey	1,523 0 0
Oades and Son	1,359 0 0
Locke and Nesham	1,319 0 0
Dove and Son (accepted)	1,290 0 0

The Builder.

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THAT we should find even now as we do, "educated" persons scoffing at the requirements of sanitary science, and denying all belief in the importance of the subject, affords a striking example of the strength of prejudice and ignorance. The insidious destroyers of life are not visible, and so they are permitted to roam abroad, and all the pain, misery, death, and guilt which they produce, are ascribed to "Providence;" the saving of life and sorrow effected by caging them is not immediately obvious, and therefore it is denied. Yet the evidences are so numerous and powerful that there surely ought no longer to be two opinions on the subject. The next generation will not believe it when they are told, that a Chancellor of the Exchequer in this has said, "Sanitary reform is a humbug."

There is an abominable place in Kensington, called Jennings'-buildings,—some time ago, indeed, it was a disgrace to any civilized community, and, as a matter of course, when the cholera afflicted the land, many persons (as many as thirty) died here in a very short time. Now, forming part of Jennings'-buildings, is a row of houses with a good supply of water, and provided with proper conveniences; and here, it is stated, there was not one death from cholera, nor was there any serious case! Further, when the houses in Jennings'-buildings were whitewashed and cleansed, the disease fled. Again:—it has been shown that out of 795 persons inhabiting the model lodging houses of the metropolis, only one was attacked by the cholera; whereas among the population of London one person in seventy-five was attacked. Every sanitary improvement has been invariably followed by a decrease of illness and death. And yet we are to be constantly told that "the sanitary movement is a humbug," and that no importance is to be attached to the statements that are made in connection with it. And even those who do not question the facts put before them act as if they did. They cannot deny the existence of the evils, but they will take the chance of escaping the results of them rather than make any effort to remove the cause; and the result is, that with all our talk, little or nothing is done: human life is still sacrificed: money is still wasted. Difficulties meet the advocates for lengthening life and lessening sorrow at every step: law is stronger than science; vested rights dearer than human life and enjoyment.

In a report by Mr. R. D. Grainger, on the present state of certain parts of the metropolis, recently brought before Parliament,* the writer shows how small is the improvement that has been effected, and places in striking contrast the condition of those who occupy the model lodging-houses of London, of which there are now eight establishments in operation, and the masses of the

people. Out of a population consisting of mechanics, workmen, porters, and a few clerks, amounting in number to 1,082, who occupy four of these establishments, viz., those in Old Pancras-road, Bagnigge-road, Streatham-street, and Albert-street, the deaths, Mr. Grainger says, have been about 1 per cent. in the year; while "the general average mortality in England," including all ranks in life, is somewhat more than 2 per cent. per annum, or more than double that of the four above-mentioned institutions."

"It is one of the best established facts of vital statistics," says the writer, "that fever is the surest test of the sanitary condition of town or locality, and that it affords at the same time the most accurate measure of the amount of preventable disease; on these grounds, therefore, reliable and illustrative evidence has a peculiar value. It was ascertained some few years ago by the excellent and accurate researches of Dr. Duncan, the present Officer of Health of Liverpool, that in the part of that city consisting of the parish of Liverpool, there were about 7,000 cases of fever annually, or 1 in 25 of the working population, an amount which has since, owing as it is believed to the improvements effected by the local Sanitary Act, been much reduced."

That these low fevers abound in all the poorer parts of London is familiar to every practitioner acquainted with these localities. In my notice of Tindal's-buildings and Pheasant-court, it is stated that there were in the London Free Hospital on the 1st May, 1851, nine cases of fever which had been brought out of those notorious fever nests; and that in one house twenty cases of fever had occurred in two months. In those courts the atmosphere is poisoned by the effluvia from foul and neglected privies, from dust heaps, filth, and overcrowding; in short from all the causes known to give intensity to typhus.

From the evidence I have received, it appears that in six out of seven of these model establishments, including the lodging-houses for single men, and containing about 975 persons, there has not been a single case of typhus since they were opened; whilst in the Metropolitan Buildings, which has been opened upwards of three years, and has an average population of about 550, there has been but one death from low fever; so that out of a total of 1,507 persons, one case only of typhus has occurred since these institutions were provided specially to test the value of sanitary arrangements.

Now, if for the sake of illustration, the 1,507 of the working population of the model buildings, several of which are situated in the most crowded and unhealthy parts of London, and where, as in Church-lane, fever prevails, be contrasted with the working population of Liverpool, about sixty cases of low fever ought to have occurred annually, and yet there has been but one case from the beginning. It is difficult to conceive of any evidence more significant than this, or more calculated to demonstrate the supreme importance of sanitary principles."

Demonstrate as we will, however, to some minds it is all useless: *we must wait for their children.* If we were to get rid of our graveyards; form paved ways and impermeable roads; build our houses to *live in*, and not to sell; give constant supply of water, light, and fresh air; it may be safely asserted we should reduce to half, the present average mortality of towns. We have said this for years: we said it when there were fewer to say it than there are now, and the experience of each succeeding year more fully confirms the truth of the statement. To raise the moral and intellectual character of the people while they remain in their present physical debasement is impossible. Grown in dirt, and kept in dirt, how can we expect to wash the earth from their souls and lead the spirit skyward?

To raise the masses in the scale of social order, we must first give them, after the means of getting their bread, light, air, water, and a decent dwelling. Let us earnestly exhort those who have long fought the good fight against filth and ignorance to persevere to the end.

Amongst other steps which must be taken, it is now most desirable to bring into operation the new Interment Act. To urge on this matter, the "Metropolitan Sanitary Association" have presented a memorial to Lord John Russell, wherein they set forth,—

"That the Metropolitan Interments Act provides that the Board of Health shall procure burial-ground, sufficient for the Metropolis, at a suitable distance from London; and that from the time such burial-ground or cemetery shall be made ready, the various parishes within the Metropolitan district shall, by an order of the Privy Council, be seriatim put under the operation of the Metropolitan Interments Act, and so the practice of intramural sepulture be speedily put a stop to within the Metropolis."

That the inhabitants of London regard the delay, which has occurred in bringing the Act into operation, with the strongest feelings of discontent, in which feelings your memorialists would respectfully inform your lordship they fully participate. Eleven months have passed since the Metropolitan Interments Act became law, and still the revolting practice of intramural burial is continued, and it is said the existing proprietary cemeteries (which are certainly at present far preferable to most other places of interment) are even less used than formerly: the public, believing that those cemeteries are soon to be closed, are unwilling to commit the bodies of their deceased relations to burial-grounds from which their own and those of other members of their families will hereafter be excluded.

If this be true, the effect of passing the Metropolitan Interments Act up to this time has been only to increase the number of interments in those old and crowded offensive burial-grounds, the use of which had caused so much disease, and raised the public voice to so loud a cry of indignation. Seeing, then, that the evils of intramural sepulture, so long and so loudly complained of, and which the Legislature have wisely determined to put an end to, continue, with few exceptions, in as gross and scandalous a manner as ever, your memorialists earnestly entreat your lordship, as first minister of the state, to impress upon the authorities, whose duty it is to put the Metropolitan Interments Act in force, the necessity of carrying into effect, without further delay, the wise provisions of the Act, that a very speedy stop may be put to intramural interments, and that the public may no longer have to complain that a measure called for by urgent public necessity should have been suffered to remain inoperative, whilst the evils which called it into existence have gone on increasing."

The arbitrations which were instituted for the purchase of two of the cemeteries, namely the Nunhead and the Brompton, have been closed, and the awards may be looked for in a few days. The negotiation for land at Erith, though nearly completed, appears to have been interfered with by want of co-operation on the part of the Treasury. If the Board of Health find themselves trammelled by other Government Boards, the sooner the question is brought fairly to issue the better.

The Government Water Bill pleases no one, and is being opposed at all hands, at great cost. The appearance presented by opponents in the committee-room is very striking. The Bill has been petitioned against by the sanitary body, because, amongst other striking objections,—

"It does not provide that water should be carried into every dwelling unless that can be done at a rate not exceeding 2d. per week, and not then, unless ordered by the churchwardens or overseers, with consent of the vestry."

In the opinion of your petitioners, no house not sufficiently supplied with this requisite of healthful existence should be allowed to be inhabited.

Because it contains no satisfactory guarantee that the supply shall be constant, and at high pressure.

* *Agar Town, St. Pancras.*—Report on the Present State of certain Parts of the Metropolis, and on the Model Lodging Houses of London. By Mr. R. D. Grainger. Printed by Order of the House of Commons. June, 1851.

Because it does not provide for the union of water supply with drainage works—an union so essential to the due and secure action of both.

Because it does not place the managers of the works under any efficient control or responsibility, either to the public or to the public authorities. The shareholders of the company are to elect the directors, but the public must bear the loss of their mismanagement and extravagance.

Because it will impose on the public an amount of rate far greater than would pay for works adequate to supply the metropolis with the purest and the softest water.

Because the amount of compensation proposed to be awarded to existing waterworks companies is excessive.

The arbitrators who are to assess the amount are not instructed to take into consideration either the cost of constructing the works required *de novo*, or the extent to which new works are rendered necessary in consequence of the defaults of the present companies, or the degree to which the companies have failed to fulfil the obligations to the public which they have voluntarily undertaken."

Further they oppose it,—“Because it does not provide that the water to be supplied shall be the softest and purest procurable.”

Of course nothing will be done with the Bill this session: we doubt, indeed, if the government ever intended that it should pass, but threw it out simply to keep the matter alive. Such tubs, however, are very costly to the poor whale: a thousand pounds a day will probably scarcely pay the expenses of the recent inquiry and opposition. When it is again brought forward, the sewerage question should be united with it, and the public interest made the leading motive of the Bill.

Again I repeat we reiterate our conviction of the pressing importance of good sanitary arrangements; and we call upon all in their several provinces to aid in obtaining them, and thus lessen the sorrows, increase the happiness, elevate the mind, and lengthen the lives of their fellow-creatures and,—themselves.

ON THE ANCIENT ROMAN ROADS AND MODERN BRITISH RAILWAYS.*

I PURPOSE on this occasion to enumerate and describe those great works of the ancient Romans, with a view of comparing their magnitude with the cast-iron lines that now traverse a single province of the old Roman dominions. Unpromising as this subject may seem, it has already occupied the attention of archaeologists. Nicholas Bergier, the French antiquary, who died in 1623, has left two quarto volumes which he entitled “*Histoire des Grands Chemins de l'Empire Romain*.” Pratielli, a writer of the last century, has left a book on the Via Appia; and Volpi, in his work on Latium, treats of the roads which traversed that region. These learned writers, however, tell us nothing of the Macadam of those classic days, and never rise to the idea of a good turnpike-road, with our usual quantity of toll-bars. The Latin grammarians distinguish three different denominations of roads—Via, Actus, Iter. The Via answers to the French Route Royale, and was the great main road from one capital or province to another; such were called *Vie Consulares*. *Actus* we should call a bridge-road, about half the size and dignity of the Via, adapted for donkeys and bipeds; and *Iter* seems to be a general term for any path wide enough to travel upon. The office of taking care of the public roads devolved upon the *Curatores*, who appear to have had about the same power to inflict penalties for damages or trespasses, as our railway companies have to keep the third class in order. Some grand lines of road were planned and completed during the republic, but the earliest and most successful

road-makers of the empire were Julius Cæsar and M. Agrippa: of the latter Dion Cassius says, that when he was *Ædile*, in the year of the city 721, he restored all the roads without taking a penny from the public treasury. The Emperor Augustus, of whom it has been truly said that with all his power and might, he had neither a glass to his window nor a shirt to his back, was magnificent enough to make up the Flaminian way as far as Ariminum at his own expense, and ordered the senators to do the same to all the other roads at their expense: he made also the *Milliarium aureum*, of which I shall shortly say something, and on the occasion of this general repairing of all the roads that issued from Rome, medals were struck in commemoration of the same, with the superscription *Quod Vie Munitæ sunt* (see medals Nos. 1 and 2, Nardini, vol. i.) Nero repaired all the roads in Spain, and I believe modern travellers in that country would like much to see him there again. Vespasian was a great restorer of the public Vie, and Trajan's restoration of the Via Appia is immortalised in sculpture. Marcus Antoninus undertook the roads in Germany and in Belgium, and the emperors in succession, however neglectful they might be in other matters, seldom got through their career without a little engineering in this line. Finally, Theodoric is the last of the men of power we read of who repaired roads in Italy. The devastating war of the Goths and Greeks put an end to all such useful enterprises, and the roads became for many centuries almost impracticable. The materials, torn up or pushed from their site, were used for erecting towers of defence, or walls to prevent incursions of barbarians, and not until civilisation began to dawn, did the highways receive any attention from the reigning powers of Italy.

I shall now say a few words upon the materials and construction of the *Vie Antiquæ*. Vitruvius does not disdain to give directions for making roads: he recommends that the engineer should choose solid ground and level it, and upon this lay his first covering; and that if there be any looseness in the soil, he must consolidate it by means of wooden piles—“*Fistulationibus cum magnâ curâ solidetur*.” We should hardly imagine that this is a subject for poetry, but yet it is from a passage in the Poet Statius, that we chiefly learn how a road was commenced. First they cut two parallel furrows, to indicate the width of the road, and then they cut down between these until they came to the hard bottom, and then began the levelling. As the construction proceeded, the road assumed a slight convex shape: the middle or top was called the *dorsum*, or back-bone of the way; or, as it is called in Virgil, “*in agere vie*”: roads that were left in the rough material were said to be *munitæ*, but when covered with cut polygonal blocks, it was a “*via strata*,” from whence is derived the Italian *strada*. Specimens of this “*opus stratum*” are still existing on the Via Ostiensis and the Via Appia, in the neighbourhood of Rome, but a piece in the best preservation is on the Via Albana, the triumphal way that led up to the temple of Jupiter Latiaris, on the Alban Mount; the letters V.N., Via Numinis, may still be read upon this pavement, which has kept its place for near 2,000 years. All these remains, and many others that might be enumerated about the hills of Frascati, Præneste, and Tivoli, are of the same description, being composed of large polygonal blocks of basaltic lava, found in many places near Rome, particularly in the quarries near the Lake Regillus, under the Capuchin convent, near Bovillæ, also near the sepulchre of Cecilia Metella.

This sort of stone was called by the ancient Romans *silex*, or *lapis siliceus*, and the places where it was got were called *lapidicinæ silicæ*: it will be sufficient to offer for your inspection some specimens of this material, which I gathered with my own hands in Italy. The Roman *Vie* were edged by a step on each side: these were called *crepidines*, margins, or umbones: they were about 9 inches in elevation. The other materials used in roads were a mixture of broken fragments of all sorts, called “*rudus*,” which we should call in plain English rubbish; *terra cotta*, called *testa*;

and that most plentiful of materials used in all the works of Rome, tufo. I also offer some specimens of that article taken from the quarries described by Vitruvius, near Rome. I shall shortly present you with a description of a Roman road quite finished, when the *rudus*, and the *testa*, and the calx, and the tufo, consolidated with the fistucationes, have been polished off by the stratification of basaltic lava. The Roman roads issuing from the gates of Rome, or branching out in the immediate neighbourhood, were twenty-nine in number: they were measured by a thousand paces, *Mille Passuum*, which is the origin of the word “mile,” and short round pillars, called *milliaria*, marked the distances from each gate. In the forum there was set up a pillar, on which were inscribed the distances from Rome to each city, where the roads respectively had their terminus. The distances were not measured, as has been erroneously supposed, from this pillar or golden *milliarium*, but they were measured from the gates. This fact of the distances being measured from the gates, is ascertained by the first *milliarium* on the Via Appia having been found in its place in the Vigna Nari, on the right of the St. Sebastian gate, and the distance of a 1,000 paces being measured by Fabretti towards Rome, was found to coincide with the ancient site of the Porta Capena. There are three ancient itineraries which have come down to us enumerating, like a modern *Livre de Poste*, the various roads and distances from place to place. The first is commonly called the Itinerary of Antoninus, because it was made and published during the peaceful reign of the Antonines, the golden period of the Roman empire. During those forty years of peace and good government, the arts and useful public works were encouraged; and it is one of the blessings upon which we may congratulate the profession of architectural science and art, that it flourishes best in the atmosphere of peace and good will on earth. The second Itinerary was discovered at Augusta (Aost), in the possession of a certain Conrad Peutinger, and is known under the name of the *Carta Peutingeriana*: it is evidently of Christian times, mention being made of St. Peter's Church: the orthography betrays the corrupted language of the eighth century, but notwithstanding these defects of composition and spelling, it is a precious document, and unique of its kind, being the only one that affords us the least information of the state of the world at that period. The third of these ancient Itineraries was found at Bordeaux; it describes the journey from that city to Jerusalem, and is known on that account under the title of the *Jerusalem Itinerary*: it appears to be of about the same date as the *Carta Peutingeriana*. These are the three documents from which is to be gathered all that can be known of the public roads of the Roman empire. The two ancient *Vie* best known to the present world, are the Via Flaminia, by which travellers from the north enter Rome, and the Via Appia by which they leave it to travel to Naples. The Via Aurelia, which led to Centum Cellæ, now Civita Vecchia, has recently acquired a celebrity which it never enjoyed in ancient times.

The Via Flaminia, however, does not proceed in the direction of the modern road to Florence beyond the Ponte Molle; after passing that bridge, which is two miles from the gate, the post-road falls in with the Via Cassia, and the Via Flaminia leads into solitudes and Mount Soracte. This celebrated Roman road was constructed by Caius Flaminius, the unfortunate consul, who fell at the battle of Thrasimene: at that time the Flaminian gate was at the upper end of the Corso, under the Capitoline Hill, so that it was always reckoned ad Pontem III. The Via runs through the Campus Martius; it ended at Ariminum, now Rimini, a distance of 222 miles; it passed through Narni, Terni, Spoleto, before it cut through the Apennines to reach Pisaro, and in some places, especially between the Ponte Molle and Soracte, considerable remains of it may be traced. The road which I shall seek now to describe, and make the object of comparison, is the Via

* Read by the Rev. E. Burgess, B.D., at the Ordinary General Meeting of the Royal Institute of British Architects, June 30, 1851.

Appia, upon which were bestowed the greatest care and expense, both under Republican and Imperial Rome. It was chiefly on the Appian way that the great triumphal processions approached Rome from the east; the chariot wheels of Pompey and triumphant Sylla moved over its pavement, which, in some places, still exists; its splendid sepulchral monuments on each side of it have left their skeletons to mark its direction; and we may still stand near the tomb of Cecilia Metella, and imagine, amidst the stillness which now prevails, the shouts of the applauding multitudes, which welcomed Cicero from exile. This was called the Queen of Roads, as Statius the poet sings:

"Appia Longarum teritur regina Viarum."

This road was first constructed by Appius Claudius, the consor, 310 years before the Christian era; it was repaired and laid down in many places with new silex by Trajan, and, in all probability, made entirely anew from Beneventum to Brundisium: several of the milliaris are still standing along the Pontine Marshes, bearing inscriptions which tell us that Trajan laid it down with silex, at his own expense, *Silice sua pecuniâ stravit*, and the dates square with the 104th year of the Christian era. We have a graphic description of the Via Appia given by the secretary of Belisarius in the sixth century, which it will be interesting to hear. "To traverse the Appian way," says Procopius, "is a distance of five days' journey for a good walker, and it leads from Rome to Capua; its breadth is such that two chariots may meet upon it, and pass each other without interruption, and its magnificence surpasses that of all other roads. For constructing this great work, Appius caused the materials to be fetched from a great distance, so as to have all the stones hard, and of the nature of millstones, such as are not to be found in this part of the country: having ordered this material to be smoothed and polished, the stones were cut in corresponding angles, so as to fit together in jointures, without the intervention of copper, or any other material to bind them, and in this manner they were so firmly united, that in looking at them one would say they had not been put together by art, but had grown so upon the spot, and notwithstanding the wearing of so many ages, being traversed daily by a multitude of vehicles and all sorts of cattle, they still remain unmoved, nor can the least trace of ruin or waste be observed upon these stones, neither do they appear to have lost any of their beautiful polish; and such is the Appian way." Whatever we may say about our modern railways, and great works of the present century, the paving of Appian Claudius, made just 2,161 years ago, might be safely recommended to the study of the curators of Oxford-street and the Marylebone vestry, the next time they lay their heads together to make a wooden pavement. I shall give but one specimen of the form of those ancient Itineraries to which I have alluded, by taking the journey from Rome to Capua, properly called the Via Appia: the further distance, from Capua to Brundisium, must be considered as an addition made subsequently. The Itinerary of Antoninus gives the stages and distances thus:—

Aricium.....	M. P. XVI.
Tres Tabernæ.....	M. P. XVII.
Apuli Forum.....	M. P. XVIII.
Tarracina.....	M. P. XXIII.
Fundis.....	M. P. XVI.
Formian.....	M. P. XIII.
Minturnæ.....	M. P. IX.
Sinuessæ.....	M. P. IX.
Capuam.....	M. P. XXVI.

The Via Appia coincides with the modern road that now leads from the church of S. Cesario, where the Via Latina branches out from it, to the church of S. Sebastiano: continual traces of the old pavement may still be seen, as the way runs between the naked masses of sepulchres to the ruins, commonly called Roma Vecchia. A little beyond these ruins, which appear to be the remains of a castrum, the old Via falls in with the modern road to Albano, which leaves Roma by the Porta S. Giovanni Laterano: at ten miles from the site of the ancient Capena gate, which stood under the

Thermæ of Caracalla, is to be recognised the site of the ancient Bovillæ; and in going from thence, the Via Appia passes through the slope of the Alban hills, and reaches the valley of Aricia; here we find the first great work which belongs to this queen of Roman ways. The modern road passes through the town of Aricia, but the old via passed beneath it, having to traverse a valley, and to sustain its level. It is here that we find those magnificent substructions to which I have already alluded: the whole extends for a length of 100 geometrical paces, and the greatest depth or elevation is 33 feet, the least 3 feet; the whole is a solid mass, except three arches, used for economising of materials, and for greater solidity; and I do not perceive that in the whole sixteen miles which we have now travelled from Rome on this via, there are any great cuttings or levellings which would pass the ordinary labour of laying down a road; from Aricia we descend to Genzano, and approach the Lake of Nemi.

The Via Appia having now reached the edge of the Pontine Marshes, runs in a dead flat to Terracina; the next two stages (mutationes) after Aricia, bring us to names consecrated in sacred history. The Christians of Rome thought it not a journey too far to go out, some thirty-three miles, and some fifty-one, to meet the great Apostle of the Gentiles coming from Puteoli, at Appii Forum and the Three Taverns. But at Terracina it was necessary to cut away the rock, to make room for a passage between Anxur and the sea-shore; the white rocks of Anxur still shine in the sun, as they did when Horace made his journey to Brundisium, and I consider this passage of the rocks of Anxur to have been the second great work in making the Via Appia. Sixteen miles further is the town of Fondi, and it is easy to see that much labour has been expended about that ancient town, and about Itri, in carrying on the straight line of road, but after clearing Formia, near the present Mola di Gaeta, the difficulties must have ceased: the famous Minturnian Marshes might require a large quantity of the Rubus and Pistacutiones of Vitruvius, to gain a solid bottom, but nothing serious obstructs the engineer until he arrives at Capua, having effected a distance of 142 miles. There is one particular in which the engineering of Roman roads and modern railways coincided: they both pursued a straight line, both filled up hollows, or bestrode valleys and glens, by viaducts and bridges, both cut through hills, and cleared away opposing rocks, and even a tunnel is not wanting to compare with some of our own, in the Grotto of Posilipo, near Naples, and the cuttings of the rocks of Anxur may be placed at humble distance with the blasting of the cliff at Dover. But in making these comparisons, it is always to be borne in mind that the ancients had no gunpowder, and wanted all those mechanical inventions which modern science has given us; but even in a comparison of manual labour and quantity of material, it might, I think, be shown that all the great works of the Roman Empire would hardly equal in the aggregate the works which now exist in a single, and that the most contemptible, province of the dominions of Augustus Cesar. Before I proceed to speak of our own great works, I will enumerate some of those of the greatest celebrity belonging to the ancient Romans. The substructure of the Arician Valley may be calculated by cubic feet of masonry, if we may so call these large masses of stone laid one upon another: taking those substructions at 500 feet in length, 18 feet in mean depth or height, and a width of 26 feet, as measured by Pratilli, and supposing the mass to be solid and uniform, we get an amount of 234,000 cubic feet. I have already mentioned the cutting of the rock at Terracina: another example of great manual labour is to be seen in going from Rocca di Papa to the Via Latina, under the Mons Algidus: the mount is cut for a considerable distance down to a depth of 50 feet, so as to give a narrow passage, in which the traveller finds himself a prisoner, if any one chose to block up the entrance either way. Again, three miles from Aqualagna on the Via Flaminia, not far from

Fossombrone, there is a great work, a narrow passage cut out of a rock, a part of which is even cut through, so that an arch is formed over head; it appears from traces of inscriptions, that Vespasian was the author of this bold enterprise.

We are all familiar with the Pont de Gard, near Nîmes, which I cite because it was a bridge as well as an aqueduct: perhaps, the greatest work of all is the Via Trajana, leading to his bridge across the Danube; there, under a perpendicular cliff, a road is ingeniously cut out, and a foundation given to it by means of beams inserted in the rock; and every one must admire the skill which has overcome such formidable obstacles to making a road. Drawings illustrative of this great work, and a detailed description, may be seen in Paget's work, lately published: the bridge to which the Via Trajana led, was the same as that which is sculptured on his triumphal column.*

THE SEVEN PERIODS OF ENGLISH ARCHITECTURE.†

3. *The Transitional Period*, A.D. 1145-1190.—In vain do we look in this, the third Period, for any of those proofs which "F. S. A." promised us of the truth of his proposition, that "the peculiarities by which Mr. Sharpe characterises his different Periods were not successive but contemporaneous." Not a single "well-known example"—not one "well authenticated date"—appears to support his assertion. From this utter absence of all attempt to redeem the promise, on the strength of which he craved space in your journal, he diverts our attention by the following remarks:—"This begins just thirty years too early: the earliest authenticated instance of the transition of style in England is the choir of Canterbury, begun in 1175." Now, if "F. S. A." will turn to page 20 of the "Seven Periods," he will find a list of twenty-eight important and well-known buildings, which I have given as examples of the Transitional Period, and which are placed pretty nearly in the chronological order in which they were probably built. Amongst these, the choir of Canterbury stands the last but three. His assertion therefore would seem to imply one of two things, namely, either that the twenty-four buildings which precede Canterbury in that list, contain none of the features described by me as characteristic of the Transitional, and are not Transitional buildings at all; or, that they were built subsequently to the year 1175. I leave the choice of these two alternative propositions in his hands,—and will answer him when I find which he elects. Meanwhile, I declare both to be untenable.

"F. S. A." goes on to assert that "occasional instances of the use of the pointed arch may be found earlier, and indeed throughout the Norman style." Here again I have to join issue with him, and call upon him to name, if he can, a single building in England, the construction of which can be proved, not by a speculative, but by a "well-authenticated" date, to be earlier than A.D. 1145, which exhibits the pointed arch.

Further on "F. S. A." asserts that "the pointed arch alone is no proof of transition of style;" had he, instead of this, asserted that "the pointed arch is not the only proof of transition of style" in England, he would have been more correct: it is never used without greater or less indications of progress in the details, and other parts; these indications being naturally in the earlier examples less apparent and pronounced, than in the later ones.

4. *Lancet Period*, A.D. 1190-1245.—Under this head "F. S. A." makes, for the first time, some attempt to act up to his promise; and in support of his assertion that "Lancet windows were used for a much longer period than Mr. Sharpe assigns to them, contemporaneously with windows of other forms,"—adduces, as cases in point, the windows of Becket's Crown of Canterbury, which he says "are as perfectly lancet-shaped as any others that can be cited;" and "the cele-

* To be continued.

† See p. 417, ante.

brated Five Sisters at York, in the North Transept, built between 1250 and 1260."

Now the windows of Becket's Crown are broad windows of pointed form,—certainly not much resembling a lancet in shape,—and by no means of that elegant and well-known proportion which is so universal in the Lancet Period, and which gave rise to the term.

But even if they had been of more advanced character than they really are, there would have been nothing remarkable in the fact that traces of a feature so characteristic of an entire Period as the one in question, should have made their appearance, at the close of the preceding Period, or that we should find here and there, in some of the latest Transitional Buildings, a dog-tooth moulding, a stiff-leaved capital, or a lancet window. The qualification, therefore, with which I undertook to discuss the proposition of "F. S. A.," referring to the progressive character of our National Architecture, is the best answer I can give to the argument which he proposes to found upon the admitted fact, that a window of pointed form was constructed in the east end of Canterbury Cathedral half a dozen years before the true commencement of the proposed Lancet Period.

Now, if "F. S. A." will apply precisely the same argument to the close of the Lancet Period that I have applied to its commencement, and make precisely the same allowance, in point of time, for the occasional occurrence of a Lancet window in the few first years of the Geometrical Period, he will no longer wonder to see, as in the north transept of Westminster Abbey, genuine Lancet windows still occurring occasionally in the early part of the latter Period; and if, further, he will apply this same mode of reasoning to the whole of the Seven Periods in question, he will find that all his difficulties will disappear, and that sufficient margin will be given to cover those few apparent anachronisms which appear so much to disturb him, and which compelled Mr. Rickman, in his division of church architecture into four styles instead of seven, to make the periods of transition between two styles almost as broad as those of the styles themselves.

Now "F. S. A." asserts that the Five Sisters of York Cathedral were built A.D. 1250-1260, but in order to judge whether this is a speculative or a "well-authenticated date," I must again beg him to give us his authority, and the original text, *ipsisimis verbis*, from which he derives it. For although A.D. 1250 is only five years later than A.D. 1245, I am not disposed at present, and in the absence of such authority, to believe that this work, although of rich and advanced character, is of so late a date as that ascribed to it by "F. S. A."

5. *Geometrical Period*, A.D. 1245-1315.—The whole of the remarks of "F. S. A." under this head are simply assertions exhibiting his anonymous opinion upon several points unsupported by a single "example" or a single "date." He has, however, made a reference here which I cannot pass over so lightly. After stating that this Period includes part of two of the established styles, the Early English and the Decorated, he proceeds, "The idea is not a new one: the same division and the same name for it was proposed by Mr. Freeman to the Oxford Architectural Society in 1842." Now if this be the case, and if the proposal went to the extent of separating and distinguishing, by a peculiar title, not merely the windows and tracery of this period, but the entire buildings themselves, their mouldings and details, and of identifying them by certain recognizable peculiarities of form and fashion, then undoubtedly Mr. Freeman anticipated by several years any publication, on my part, of similar views; but, whether his proposal went to this extent or not, it is very evident that Mr. Freeman's views and my own, and I think I may add those of two or three other architecturalists of no ordinary repute, have been running for some years past in singularly similar courses; and that, too, I believe, with little or no intercommunication.* Of Mr. Freeman's recent valuable contributions to the stock of information

we are accumulating on this subject, and of the acuteness and industry which he brings to the task, it is impossible to speak too highly; and if "F. S. A." supposes that by the suggestion he throws out he may in any degree lessen the interest which each of us may take in the labours of the other, he grievously deceives himself.

6. *Curvilinear Tracery*, A.D. 1315-1360.—Here for the second time "F. S. A." brings forward facts. He instances a few buildings at the close of the Geometrical Period, in which there are windows containing Curvilinear Tracery; and argues accordingly, not only that Geometrical and Curvilinear Tracery are contemporaneous, but that such a fact is a fatal objection to the separation into two classes of Geometrical and Curvilinear buildings: similarly, I suppose, if he found a building in which, as is frequently the case, there occurred examples both of the chevron and the dog-tooth mouldings, he would declare the distinction between Norman and Early English buildings to be at an end. Wymington Church, to which he attaches the date A.D. 1270-1290, belongs to the latest part of the Curvilinear Period; that is to say, nearly a century later than "F. S. A." declares it to be. We want, therefore, his authority for this date.

7. *Rectilinear Period*, A.D. 1360-1550.—As neither "examples" nor "dates" illustrate his remarks, we will leave the few words which he devotes to this Period to carry what weight they may.

In conclusion, let us again refer to the proposition "F. S. A." pledged himself to prove: "Mr. Sharpe's divisions were not successive periods, but were frequently contemporaneous, as is easily proved by well-known examples and well-authenticated dates." Has he proved this? Has he attempted to do so as regards five out of the seven Periods? Has he not substituted unsupported assertions for the proofs which he declared he possessed? And, in the case of the two Periods in which he has brought forward examples and dates, has he, even supposing his dates to be correct, proved his proposition?

I leave the answer in the hands of your readers, and will conclude, for the present, by requesting him to supply us with the authorities on the strength of which he asserts the Five Sisters at York to have been built A.D. 1250-1260, and Wymington Church A.D. 1270-1290.

EDMUND SHARPE.

I HAVE to apologize to Mr. Freeman for the mistake I have inadvertently fallen into in attributing to him the first proposal of a "Geometrical Style." I was certainly under that impression; but the point is of very little moment. I merely wished to show that the idea was not a new one; that it had been proposed ten years ago and not adopted. Respecting Mr. Cox's letter I have only to observe, that I understand by a Period, a fixed space of time, and not an indefinite one, and that the term appears to me badly chosen, as calculated to mislead. Mr. Sharpe's theories are not supported by facts: he generalizes too rapidly from a few instances, and overlooks an equal number of instances which tell the opposite way. His theory respecting the use of the pointed arch is one of these cases: it is true in some instances and not in others, and the examples are about as numerous on one side as the other: for instance, in Christ Church Cathedral, Oxford, the arches of the nave are round, while those of the clerestory are pointed, being exactly the opposite of Mr. Sharpe's theory. This church was finished about 1180, and the pointed arch does not occur except in these clerestory windows, obviously the latest part of the building. The choir and its aisles, which are the earlier portions, are good Norman work, though late: the nave, with the vaults of the aisles and the clerestory windows, are Transitional. The nave of Ely Cathedral is another instance of late Norman work, within Mr. Sharpe's Transitional Period: the remains of the Infirmary Church, so long called the Saxon Church, probably belong to the same period. The chapter-house and gateway of Bristol also belong to this period, and are not of Transitional charac-

ter, though late Norman. I quite agree with Mr. Cox, that in one sense the whole history of architecture is one of continual change, and that the division into styles is arbitrary; but after such a division has been generally agreed upon for the last thirty years, and after its general accuracy has been examined and attested by a host of observers at least as learned, as careful, and as accurate as Mr. Sharpe himself, it is rather unreasonable of that gentleman to assume his own individual observations to be superior to those of all others combined. If he were content to make his observations subservient to the general cause by adopting the received system, instead of endeavouring to upset it altogether, it would not only be more modest, but he would be more likely to receive thanks, and to have his labours properly appreciated. Mr. Cox says, that "in matters of system and principle we are agreed." I shall be glad to find it so, but, as far as I understand the matter, Mr. Sharpe refuses to adopt the received system of four great divisions (corresponding nearly to the four centuries), with subdivisions and transitions between each. He wishes to establish a new system of his own, with seven great divisions, which he calls periods. It is against this change of system that I protest, as these proposed new divisions are less marked, less true, than the old ones. The features which Mr. Sharpe chooses as characteristic of each successive "period" are not so in fact: the instances which do not apply are almost as numerous as those that do. The different varieties of windows on which Mr. Sharpe relies do not sufficiently mark successive periods: they are almost as often used simultaneously. Mr. Cox says that I lay "too absolute a stress upon the importance of dates;" but it appears to me that in a question of this kind everything depends upon dates: if I can show that Lancet windows, for instance, were commonly used both before and after Mr. Sharpe's "Lancet Period," such a division can only mislead, and we must have better ground than this before we agree to give up the received system, and adopt Mr. Sharpe's new one. In my last letter, in referring to Dugdale as my authority for the date of Ilfley Church, I of course meant only to refer your readers and Mr. Sharpe to the authority from which I had taken it; but the real authority is obviously the Kenilworth Register, as quoted by Dugdale. I have not access to the original register, and do not know whether it is still in existence or not.

Cambridge. F. S. A.

THE ART-UNION OF LONDON COMPETITION STATUETTES.

MOST of our readers who have visited the Sculpture Court in the Great Exhibition have doubtless observed the octagon stand in the centre of the room, containing, in stages, the statuettes sent to the Art-Union of London, in reply to the offered premiums of 100*l.* and 50*l.* for the first and second best figure adapted for bronze. The council, desiring that the works should be exhibited to the public before adjudication, have only just now made their selection: they have awarded the first prize to "Satan punished in the moment of supposed triumph," found to be by Mr. H. H. Armstead; and the second to the statuette called "Solitude," found to be by Mr. John Lawlor. They have further pointed out for special commendation "Ephialtes chained" as a work of great merit, although not adapted to their wants: the author of this is Mr. F. H. Hunt.

DONCASTER WATER-WORKS.—The corporation have advertised for plans and estimates of water-works suitable to the locality; premium 100*l.* The source of supply, it appears, is confined to the river Dun, at or above the weir of the present water-wheel, and the works required are stated to be such as to insure a constant supply of filtered water, the altitude of service to be adequate to supply the top rooms of the highest houses in the most elevated part of the town, and to the project so much of the present system of works is to be adapted as is practicable.

* Mr. Freeman's letter of last week had not appeared when this letter was written.—Ed.

NOTES IN THE PROVINCES.

Workop.—The new Corn Exchange at Workop was opened on Wednesday last week. It is situated in Potter-street. The approach from the street to the level of the Exchange is by eight steps of Yorkshire stone. From a corridor, through the vestibule, is the entrance to the Exchange, which is 58 feet long by 29 wide, and 19 feet high: the assembly-room over it is of the same size. The Exchange is lighted by five windows on the east side, and four on the west. The principal staircase consists of 31 steps, up to the landing of the assembly-room. This is a large room, capable of holding 1,000 people standing. It is lighted by five windows on each side, and has three fire-places. The orchestra at the entrance end is 21 feet 6 in. in extent, the width 12 feet 6 in. Beyond the assembly-room will be the magistrates' retiring and refreshment-room. It is lighted by two Venetian windows, one at each end. The ceiling of this room consists of sunk panels and enriched cornices. Passing through the Corn Exchange, the sack market is reached: it is 33 feet 6 in. in length, by 17 wide; beyond which, to the south, are the butchers' shambles, which comprise ten shops. This building is octagonal, and has a projecting roof 13 feet 6 in. for fruit, butter, vegetables, poultry, and earthenware markets, and at the two extreme angles will be the fish market. Mr. Gilbert, of Nottingham, is the architect, Mr. Ferguson, the contractor. The Duke of Newcastle, Earl of Scarborough, and a number of other gentlemen were at the formal opening, and at a dinner which followed.

Nottingham.—"At a recent meeting of the Nottingham town council," says a local paper, "the formation and appropriation of public walks and recreation-grounds for the inhabitants, underwent discussion. The committee appointed to superintend the setting out of the newly-enclosed lands, reported that at an early day the arboretum and extensive boulevards or pleasure walks would be ready for opening to the public, when they suggested that a grand *fête* be held. It was further suggested that the foundation-stone of extensive refreshment-rooms be laid on the same day in the arboretum, to be built partly after the manner of the Hyde-park building, and appropriated to the purposes of a conservatory or winter-garden, to furnish objects of study for students at the School of Design, and the means of constant intellectual recreation for all classes of the inhabitants. The suggestion for a *fête*, or inauguration, was unanimously adopted, and an invitation is to be given to the royal commissioners."—The Messrs. Marshall, of Leeds, well-known spinners and woollen manufacturers, are about to erect factories at Nottingham, it seems; and other wealthy firms, from Lancashire and Yorkshire, are said to be also selecting sites for similar purposes.

Birchanger.—The old roof of Birchanger Church has been replaced by a timbered wrought and stained open roof with carved stone corbels, from drawings by Mr. Pritchett, of Bishops Stortford, architect. A Caen stone bell turret has been erected at the west end. The works were done by Mr. Erswell, of Saffron Walden, builder.

Windsor.—Contracts have been entered into for a new 6-inch main to be laid from the gas-works to the top of Bier-lane, for the better supply of gas to the lower part of the town, and of Eton. Contracts have also been taken for a new gasholder, 50 feet in diameter, to contain about 30,000 cubic feet of gas; and an additional number of retorts are being erected, and other improvements contemplated. The company, we hope, says the *Windsor Express*, will continue to bear in mind that the purer the gas is the more it will be liked; the cheaper it is the more it will be consumed; and last, not least, the greater the consumption the greater the profits.

Odiham.—The three chancels of the parish church of All Saints, in this town, have been re-opened, after restoration. The repairs comprise five new windows, with geometrical tracery. The old chancel arch, which was in a precarious state, has been rebuilt, and the

stone work of the old piers has been restored, and the proportions of the arches displayed by the removal of pews and galleries. The parclose on either side of the centre chancel has again been filled with carved tracery of the same designs as before, and stallwise seats have been arranged against them in accordance with old seats which formerly filled the chancel. The chancel is ceiled with ribbed paneling, tracery being introduced at the eastern end. A curiously carved pulpit of the age of the Stuarts, thrown aside as lumber, has been repaired, cleansed, and fixed upon a moulded stone base against the south pier of the chancel arch. On examination, the walls, it is said, were found in such an unsettled state that iron cramps were necessary to ensure their safety: they have been rendered ornamental. These and various other works were carried out by Mr. John Hellis, of Odham, builder, under the guidance of Mr. H. Woodyer.

Worcester.—At another meeting of the subscribers to the window proposed to be erected in the Cathedral to the memory of the late Queen Dowager, it was stated by Sir E. H. Lechmere, on the part of the committee, that if the testimonial were set up in the Lady Chapel, as decided, the cost would be 900*l.*, in consequence of the required alterations in the stone-work; and as it appeared that the amount of the subscriptions was not quite 700*l.*, it was proposed to abandon this choice, Lord Lyttleton saying that the only alternative was to select the south window of the great transept. The only objection to that window was its being so high up. That selection, according to a local paper, was ultimately confirmed, and the committee were instructed to procure designs as soon as possible, and submit them to a future meeting.

Winterbourne.—The foundation stone of ten almshouses was laid here on Wednesday last week by Mrs. Jones, widow of the Rev. J. W. Jones, at whose expense they are to be endowed for infirm and aged poor of the parish. The design was furnished by Mr. W. B. Hull, architect.

Swansea.—We understand that the contract for the Swansea Docks has been taken, and that they will be commenced immediately.

Hereford.—The formal re-opening of the church of St. Francis Xavier, in Broad-street, after its entire cleaning and redecoration, took place on Thursday last. The decoration, which has been executed by Mr. H. T. Bulmer, is chiefly Byzantine. The walls, as described in the local *Times*, are in dead green of various shades; the sunken columns being relieved with a floral design, of brighter hues, running perpendicularly. The coved roof is panelled in drab and other shades of yellow; and the roof of the skylight is covered with golden stars on a deep blue ground. The effect of this decoration is said to be to get rid of the somewhat ball-room character of the building. "The 'sanctuary,' or eastern end," continues our authority, "is, of course, more highly decorated: under the bright sunlight, with the added light of tapers, the rich hues of flowers, and the gorgeous vestments of the bishop and his priests, the picture was very rich and imposing, without the glare which we have erewhile seen in such spectacles. The walls of the 'sanctuary' are decorated in oblong, square, and lozenge-shaped divisions of green, lilac, blue, and gold; the divisions enclosing flowers, the sacred monogram, &c. The model of the Holy Sepulchre, which is gilt, with red sparingly introduced, rests upon an altar composed of white marble, panelled with green and other shades of the same stone. The columns which support the roof of the apse, or recess behind the altar, are painted green, with a floral device in flesh colour carried around spirally. This is, to our mind, the least satisfactory part of the decoration: the too strongly contrasted colours of the pillars uniting somewhat harshly with the rest of the picture."

Deonport.—The last report of the progress of the Gas and Coke Company is described in a local paper as an extremely favourable one. A dividend at the rate of 12*l.* per cent. per annum for the last half-year has been de-

clared, and intimation given of a further reduction of price to 5*s.* a thousand cubic feet.

Birmingham.—The church of St. Jude is finished. This new edifice, which has been built by Mr. Wilson from designs by Mr. Orford, is in the Early English style, and consists of nave, aisles, sacristy, and chancel. There is no tower, but a bell turret is raised over the west gable. The building contains 1,300 kneelings, all with open backs, like plain stalls, of which 1,000 are free. The donor of the site, General Vyse, has commissioned Messrs. Pemberton, of Newhall Hill, to fill the four chancel windows with stained glass. One of the windows is of two lights, and contains in the head the arms of General Vyse. The other three are each of a single light, crossed diagonally by diapered bands of ruby and blue. Round each of the windows is a floriated border. Messrs. Pemberton have added, as a gift from themselves, the staining of a small window over the chancel arch. Between 200*l.* and 300*l.* are yet wanted before the church can be offered to the bishop for consecration.

Wolverhampton.—The opening of the new Corn Exchange, according to the *Staffordshire Advertiser*, is likely to be retarded by an "untoward event" which is said to have become awkwardly manifest during the last few days, viz., the gradual sinking of the dome of the building, the weight of which, nearly thirty tons, has apparently proved too much for the roof. The building is to be thoroughly examined by a competent architect. Precautions to prevent any accident or further subsidence of the dome have been taken in the meantime by supporting those portions most exposed to the strain of the materials. An opinion has been expressed that the extreme heat of the weather lately contracting the woodwork and expanding the iron materials, has contributed to the accident.

Burslem.—The foundation stone of Sneyd district church was laid on Tuesday week. The building is in the early English style, and consists of a nave of five bays, with north and south aisles, and a chancel. The north-western angle of the building is surmounted by a tower and spire of considerable dimensions, the latter of which is covered with stone-coloured tiles. The church will accommodate about 450 adults besides a number of children, and the seats will be free. The architect is Mr. G. T. Robinson, of Wolverhampton, and the builders are Messrs. Holmes, of Liverpool; Mr. Ralph Hales, clerk of the works.

Liverpool.—One of the local papers remarks that whilst other branches of trade and commerce are increasing in the port, the iron trade, which once gave employment to thousands of artisans in Liverpool, has been suffering a gradual and serious declension, sufficient to threaten that, at some early day, it may, for all but repairing purposes, become entirely extinct. This is considered the more strange from the extended and extending use to which iron is now being applied both in shipping and in architecture. Certain it is that the trade has been gradually leaving the Mersey and settling down on the Clyde or elsewhere. For many months the furnaces at several large foundries in the town have been blown out. It was only the other week that a composition with their creditors by the enterprising proprietors of the Windsor works was announced, and now there is to be a sale of the machinery and materials of the Clarence foundry,—a sale in which the lots are so extensive, that thirty-four days are expected to elapse before the auction can be brought to a close.—Connected with certain "startling disclosures" in the dock surveyor's department, where a most elaborate, distinguished, and astounding system of jobbery is alleged to have been going on for some years past, it is said that although "the salary of the dock surveyors is 3,500*l.* per annum, yet it appears that the dock walls are generally in a cracked and unsafe state, being only held temporarily together by iron plates, bolts, and tie-rods, at an enormous expense." A sub-committee has been appointed, it is said, to put matters to rights.

We must hear more before we admit the truth of the allegations.*

Glasgow.—A swimming-bath has been formed at the Paisley-road. The water is supplied by the Gorbals Gravitation Works. The length of the bath is 60 feet, breadth 20 feet. At Anderston, too, as we lately noticed, exertions are still kept up to establish cheap public baths.

Scullomie, Kyle of Tongue.—A new harbour, on the north-west coast of Scotland, has just been contracted for on plans furnished to the Duke of Sutherland by Mr. J. Bremner, C.E., Wick. The harbour is to be at Scullomie, in the Kyle of Tongue, and county of Sutherland, and will be erected at a cost of 3,000l. The depth of water at high-water of spring tides is 23 feet, and at low water 8 feet; at high-water of ordinary tides 21 feet, and at low-water 10 feet.

Bradford.—The School of Design, which has been in operation for some years at Bradford, in connection with the Mechanics' Institution, is about to be removed from it, and the local *Observer* fears, given up, and the Mechanics' Institute is greatly pressed for want of room, and the Athenaeum, exclusively used by the School of Design, is intended to be converted into a reading-room. The *Observer*, however, proposes the erection of additional buildings rather, on vacant ground attached to the Institute. The cost of suitable buildings, filling up the whole of the vacant ground, would be somewhere about 400l.; but should only half of the ground be built upon at present, it would cost some 200l. It would indeed be a disgrace to a manufacturing town like Bradford, depending as it does so much upon beauty and effect in the goods produced, were so important an institution as the School of Design given up.

Durham.—The various tenders connected with the erection of new markets for this city having been considered by the directors of the company authorised by Act of Parliament to erect the buildings, the entire works were contracted for as follows:—Masonry, Mr. Forster; joinery, &c., Mr. R. Robson; painting, &c., Mr. Meggeson; slate work, Mr. R. Rule; plumber's work, Mr. E. Heron; plasterer's work, Mr. C. Coxon, all of Durham; and iron roofing, Mr. Charlton, of Newcastle.

THE VALUE OF DATED STONES.— HERALDIC INSIGNIA.

In your article in last week's *BUILDER*, referring to what the Americans have done and ought to have done, in regard to the Great Exhibition, you make some just remarks on the historical value of recorded dates, such as we are accustomed to bury on foundation stones, or which may be occasionally placed in more conspicuous situations, on inscribed tablets, or in windows; or which might, as the American suggests, be impressed upon the surfaces of the very bricks and other materials used in building.

This has reminded me to request you to denounce a trifling, but still very reprehensible, piece of Vandalism which has been recently perpetrated in the city of Westminster. You are aware that it was a frequent practice of the last century to place a stone tablet at the corner of a street, with its name carved thereon, and occasionally the date of the street. Such a stone there exists, with the date 1769 (if my memory rightly serves me), at the corner of Fludger-street, near Downing-street.

* One of the Liverpool papers, in giving an account of these "cafés d'obscures," says:—"The buying and selling of situations has been general, one man having retired upon a competency realised by these malpractices: another had two private vehicles, one for Sundays and the other for week days, built in the yard, at the cost of the dock estate, the expenses being charged to various accounts, so as to conceal the transaction; others have received the full amount of their salaries, in some instances as much as 220l. a year, although absent from their duties the whole summer; one man, who died in 1847, appears in the books as having been fully employed till 1840, his widow continuing to receive her deceased husband's wages, even after she had married a second husband; another man received wages and such money and a few funeral expenses, seventeen months before his death; bakers, joiners, tailors, and carters, and to be wholly unfit and incompetent, have been appointed at high salaries as foremen and clerks; and mere boys have been paid 30s. a week while out on pleasure excursions among all classes in Liverpool by these disclosures is not to be described."

Though this stone was perfectly legible, and neatly executed, some party, who a few weeks ago had obtained the employment of repainting the names of the streets, deplastered over the stone, and thus obliterated an interesting, though humble, public monument. Without attaching undue importance to this petty piece of mischief, I think it deserves to be publicly noticed and stigmatised as a wanton act of mutilation. The like may have been done in other places out of the sphere of my observation. It presents a melancholy contrast, when we observe the British Americans yearning with deep interest to recover the records of their forefathers, whilst we are heedless of their destruction under our very eyes.

Having my pen in hand, allow me to add a remark on the note of your leading article, which states that "a wild boar" was the crest of King Richard III. That was not the case. His crest was the same as the royal crest at present—a lion passant crowned. The boar was his beast, used to support a shield or carry a banner; also, as a cognisance or badge for his retainers, and as a pendant for his collar of livery. It was usual to typify great men by their heraldic beasts, and thus Richard of

Gloucester was called the Boar, or, for rhyme's sake, the Hog. From the disuse of cognisances (except in a few lingering instances), this is an error of not unfrequent occurrence. In many instances the ancient cognisances of our nobility are obsolete, and nearly forgotten; in others they have been converted into crests or supporters, or even into quarterings; but the confusion of modern ideas upon the subject does not necessarily involve any ambiguity when we are speaking of times when these several insignia were perfectly distinct.

J. G. N.

SEWAGE OF CHESTER—COMPETITION.

The following is the result of a competition for the first division of a main intercepting sewer to concentrate the drainage of the city of Chester into one channel, so that the whole of the sewage may be conveyed some distance down the river Dee before it discharges itself, or to a convenient point where it may be used as manure for the low lands on the banks of the river.

Size of sewer, 3 feet 6 in. by 2 feet 8 in.; depth varying from 10 feet to 18 feet. Mr. Baylis, engineer.

	BRICKWORK.			
	4½ inch.	9 inch.	4½ in. arch. 9 in. invert.	
Miller, John, Bebbington	£ s. d. 0 12 0	£ s. d. 0 16 0	£ s. d. 0 13 0	Per lineal yard, including brickwork and excavation
Murgatroyd, David, Birkenhead	0 12 6	0 10 0	0 18 0	Do
Cooper, E., Macclesfield	0 13 6	1 1 0	0 18 0	Do
Benbow, W., Liverpool	0 14 0	0 13 6	0 16 6	Do
Jones, Peter, Manchester	0 13 6	0 18 6	0 15 6	Do
Maw, Wm., Liverpool	0 12 6	1 13 6	0 14 9	Do
Edwards, Thomas, Birkenhead	0 14 0	...	...	Average ditto
Hemingway, B. and Co., Liverpool	0 15 3	1 4 3	0 19 6	Do
Graham, John, Bebbington	0 16 0	1 0 6	0 17 6	Do
Clayton and Green, Liverpool	0 16 6	1 14 2	1 5 10	Do
Smith, Edward, Birkenhead	0 16 0	...	...	Average ditto
Houghton, H., Liverpool	0 17 9	1 12 3	1 7 0	Do
Humphreys, E., Chester	0 16 6	1 3 9	1 1 6	Do
Roberts, R., Chester	0 19 0	1 4 0	1 4 0	Do
Middleditch, J., West Derby	0 19 10	1 19 7	1 2 9	Do
Craven, William, Liscard	0 19 3	1 11 3	1 3 9	Do
Oasley, Moses, Liverpool	1 0 0	1 6 8	1 4 0	Do
Stainton, Henry, Everton	Schedule of Prices	...	...	Do
Earthwork, 1s. per cube yard	0 2 6	0 3 6	...	Brickwork per lineal yard.

SIGHTS AND SCENERY.

The Royal Italian Opera House.—For the Italian version of the *Zauberflöte*, which has been admirably produced here under the title of *Il Flauto Magico*, Messrs. Grieve and Telbin have produced a series of scenes illustrating ancient Egypt, which have much completeness and consistency. The buildings are polychromed, and the details (misunderstood a little here and there) are well attended to. The last scene is a colonnade of caryatides, after those in the Memnonium. The strength of the cast of this opera is unexampled. Last week, when the Queen visited this house in state, Mr. Gye constructed a very elegant box in the centre of the house, and fitted up the saloon and retiring rooms with glass curtains, a thousand flowers, and much good taste. We are happy to see his efforts are appreciated.

The Polytechnic Institution and the approaching Eclipse.—We were glad to find a large crowd the other evening at the Polytechnic Institution, listening to Dr. Bachoffner's very clear and instructive exposition of the phenomena of eclipses in general, and of the expected eclipse of the sun on the 28th inst. in particular. We recommend our readers to go and hear it. The obscuration of the sun will commence at three minutes past two, and end at five minutes past four. The greatest obscuration in the metropolis will be at twenty minutes past three, when the sun will appear as a narrow crescent. Observers should look for the appearance of certain rose-coloured prominences, which are expected to be seen projecting beyond the sun's disc, and which are at present ill-understood. Let our readers prepare their blackened glasses, and take care that they don't put the wrong side next the nose!

Entrance to Places of Amusement.—Pray lift up the voice of your powerful journal against the disgraceful carelessness of arrangement which causes such perilous crushing at the doors of our public places of resort. Verily

"they manage such things better in France," and the simple way in which the admission of the most eager crowd is effected is worthy of admiration and adoption. Instead of being allowed to block up the doorway indiscriminately, visitors are obliged to stand in file between barriers made along the walls for the purpose, and which somewhat resemble the landing ladders used at our steamboat piers. As there is only room for one person, or at most for two persons abreast, it is evidently out of the question to obtain any more advanced position by pushing between those in front (such pushing in France would be resented as an affront), and therefore every one quietly keeps his place, and follows those in front as fast as they are admitted. At Windsor, on Tuesday last, it was quite humiliating to hear the Frenchmen and their ladies, when crushed and bruised, and tossed to and fro, remark bitterly upon the stupidity of a nation which calls itself great, and exclaim, "Ah, c'est affreux! pourquoi donc ne fait-on pas faire la queue? Dans aucun pays de l'Europe on n'est traité comme ceci!" Why should not the public form "la queue," at railway booking offices on excursion train occasions, at theatres, and wherever a crowd is expected? F. N.

Marshall's Grand Tour through Europe.—The removal of Mr. Marshall's interesting and extensive panorama from the Concert-room of her Majesty's Theatre to the Large Hall in Leicester-square, has interfered with its success though it has not lessened its merits, and we would, therefore, for the sake of the artist, again draw attention to it. The views in Venice, and the Rhine scenery, are especially well painted and truthful. We may mention, as very creditable to Mr. Marshall, that he has placed free admissions to the diorama at the disposal of many of the public schools, and has received in return gratifying testimonials of its educational character.

Mr. Hertz's Museum.—We have had

much pleasure in examining the well-known Museum of Mr. Hertz, in Great Marlborough-street, which has been opened for private inspection by cards, during the sojourn of strangers in the metropolis. It is designed more particularly to illustrate the rise and progress of art, and to corroborate the truth of traditions in respect to arts, habits, and employments of the ancients, than to constitute a mere collection of miscellaneous antiquities. It contains more than 2,000 specimens of Assyrian, Babylonian, Greek, and Roman seals and cameos, and will well repay those who are fortunate enough to get admission, for the time they may spend in the examination.

WHERE ARE THE POOR TO DWELL?

Few practical men of business have read more than I have of the opinions of others, on the subject of the demoralizing influence brought to bear on the working population of large towns, by the want of fitting domiciles. My practical experience induces me to look with light esteem upon all the plans which have been suggested, because they are deficient in the essential requisite necessary to secure their simple existence, viz., sites on which to place their suggested improvements. I have myself, at considerable expense and trouble, cleared out a row of houses, refused to allow them to be tenanted beyond their proper use, and have, as compensation for my pains and money, the "satisfaction" of seeing the neighbouring street, formerly a street of decent repute, crowded with those who have been removed from mine. The result of my study and experience has convinced me, that there is an existing evil in the mode of letting out new property, and of granting powers for improvements, which must be removed before any extensive improvement can take place in the dwellings of the working population. It will naturally suggest itself to most, that it would be a movement of doubtful advantage, to interfere by legislative enactment with the arrangement any individual or corporate body may make for the disposal of their respective properties; but it could scarcely be called unjust, if, when the corporation of the City of London applies to Parliament for extraordinary powers, enabling them to purchase the property of others (whether willing to part with the same or not), that the Government of the day should insist on a reservation of sites for working men's dwellings. In the private Acts of Parliament for improving the Grosvenor Estate, in Piccadilly, there are special clauses against "vulgar wheels" passing over the roads, and in the private arrangements there are special clauses against building property of an inferior description as to value. In the Paddington Estate, belonging to the "See of London," there are also special clauses in Acts of Parliament and in private arrangements, all tending to remove the possibility of building a working-man's dwelling, tending also to throw the burden of the support of the poor from the new estates on to the old parts of the metropolis; instance the case of Hyde Park-gardens, which used to be the "Whitstery" of the "West End," and are now abodes fit for princes; and who would find fault with this? But why should the "Whitstery" be turned over to the parish of St. Luke, Chelsea, at Kensal-green? Would it have been an act of injustice, in either case, when application was made to Parliament for special powers, or for powers which could be used for special benefit to those applying, if they were required to reserve "sites" for working-men's dwellings? The only apparent disadvantage in this is the difficulty of joining the dwellings of the wealthy to those of the working community; but this could easily be corrected by giving a power of "exchange of site." Being myself "a working bee" in the prolific hive in which we live, I know sufficient of the feelings of those who live by giving an honest day's work for an honest day's wages, to feel satisfied that it would be no comfort to them to live in a situation unbefitting their position in society; but my entire experience convinces me, that no language which I could command would exaggerate the

evils which arise from the unfit dwellings of the working population of the metropolis; and the executive power has much to answer for in having allowed, for many years past, large bodies of the working community to be turned adrift, for the purposes of improvement, without taking care that accommodation should be provided, at least in proportion to the numbers removed.

WM. DRAUCE.

REVIVAL OF ALCHEMY, AND HONOUR TO LEGERDEMAIN, IN THE BRITISH ASSOCIATION!

AMONGST the papers read at Ipswich was one by M. Dumas, the celebrated French chemist, which has raised no little philosophic excitement. It is described as "On certain relations between atomic weight and space of chemical bodies, and the probability of not only transmuting metals but of originally creating them!" All honour to the philosopher's stone! Who will venture now to perpetrate stale and stereotyped jokes on this ancient and orthodox acmé of absurdity? Not Dr. Faraday at least; for he is said to have been "delighted with the logic and the revelations," and what is more, to have thought it worth while to follow up the investigation,—that is, virtually, to seek for the philosophers' stone!!

Knowing a little of the really ancient history of chemistry, and having at least a more than ordinary respect for the ancient chemists, who clearly, as we have before said, were conversant, not only with oxygen and hydrogen, but with some of the most recondite elements of nature, such as bromine, fluorine, &c., and not only solemnly declared that they knew, experimentally, that gold, silver, and the other metals, were compounds, and that they could and did produce such compounds from their constituent elements or ingredients, but also gave deliberate though quaint and enigmatical instructions how to proceed,—we would soberly and seriously advise both Dumas and Faraday to look into the writings of some of the most trustworthy amongst these ancient chemists, such as Sir T. Ripley, St. Dunstan, Geber, Basil Valentine, &c., carefully avoiding such quackish and suspicious characters as Paracelsus and Van Helmont. Not long ago, we remarked that a mistaken idea prevailed that the alchemists—the adepts—were mere seekers of supposed agents with which to compound lead, &c. so as to constitute gold and silver, whereas they made unlimited pretension to an actual and experimental knowledge of the fact that such agents exist, or can be prepared; and, therefore, that they could not stand in the category of mere mistaken or ignorant enthusiasts at all, but must either be the most deliberate, wilful, and unaccountable of liars, or must be believed when they state that they were well acquainted with such agents, and could produce one metal out of another, and especially gold and silver, whenever they chose. Now the present time appears to be a favourable one for that reconsideration of the merits of the alchemists, whether as deliberate liars, as mere enthusiasts, or as actual metal producers, which we at same time suggested. We have also pointed attention to the fact, that Professor Graham has already published views in regard to the constitution of the metals that are curiously alchemical. It was Sir H. Davy's conviction too, that the time would come when metals, and even gold and silver, might be produced, as he was clearly of opinion that they were all compounds.

The merely semi-serious allusion to legerdemain in the heading to these cursory remarks was suggested by another curious circumstance that occurred at the Ipswich meeting. M. Bouigny, another French savant, at one of the sections, undertook to thrust his hands into a pot of melted iron, to be prepared for this purpose at the foundry of Messrs. Ransome and May. Accordingly, a large party assembled at the reception-room, and proceeded with the French philosopher to the place of fiery ordeal. A pot of glowing metal, red hot from the furnace, being placed before M. Bouigny, this gentleman, having damped his

right hand with a little water, plunged it with perfect impunity into the mass. The sensation, he assured the spectators, was one of cold rather than heat, and he gave the following rationale of the phenomenon:—"The moisture on the skin became converted, by heat, into that peculiar condition termed aspherical vapour, which, being a bad conductor of heat, effectually prevented the skin from being burned."

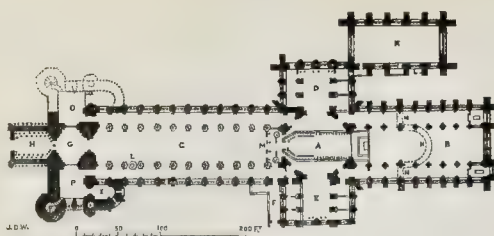
In the wreck of ancient science, handed down to us mainly through the very questionable and discreditable medium of miracles, magic, and even much of what is called alchemy, we think we can trace the evidence of a state of enlightenment of which men generally, proud of modern acquisitions, have as yet little conception. Curious proofs of the existence of this ancient "illumination of the minds of men," ever and anon turn up among that strange and antiquated race, the stereotyped and antediluvian-like denizens of "The Celestial Empire."

THE "RIDGE AND FURROW" ROOF.

THERE is another claimant for the credit of having invented the ridge and furrow roof, as used at the Exhibition building. The Rev. Mr. Carlisle, an Independent minister of Romeford, Essex, has addressed a letter to the *Morning Herald*, wherein he says,—"In the year 1828 I made extensive arrangements for garden culture, and after succeeding (to the astonishment of the horticultural world), with the aid of reflecting walls of various angles, in the perfecting of the growth of out-door grapes, I spent considerable time on the laws of optics and the formation of a glass roof embracing three aspects, in order to prolong the heat, and obviate the necessity of late fire-forcing. For this purpose I erected a house, 85 feet in length; and under its crystal roof I cut grapes in the middle of August, possessing ultra-marine hues never before nor since equalled in my locality, barring the out-door grapes cut in October, which were perfected by the assistance of reflecting excavations. In the midst of hail-storms rushing like eddies from all points of the compass, I tried, at various times, the comparative merits of the common flat roof and the Vandyke model. The flat had generally more than half the panes of glass broken, while the Vandyke remained uninjured. Should any of the learned in the scientific world feel sceptical respecting this assertion, they have only to relieve themselves of their doubts by a visit to my domicile, where I shall be very happy to see them. They can also see the principle of the Vandyke roof, which I erected eleven or twelve years ago, at Captain Cox's, Corbet's-tye, Essex; at the Rev. Mr. Stacey's, clergyman of Hornchurch; and at the Rev. Mr. Fanshawe's, clergyman of Dagenham; also another, about thirteen years ago, at Henry Rudd's, Esq., Newington-green, near London. Between twelve and eighteen years ago I was in the habit of exhibiting the productions of the earth at various societies in and about London, where I often met with the Duke of Devonshire's gardeners, and many others in the service of the aristocracy. When at dinners with them, I made no reserve of any plans I was executing for the advancement of the horticultural world. Of course, the Vandyke roof often became the chief object of conversation; and, had there been [then] such a roof in the possession of the Duke of Devonshire, or any other gentleman in the United Kingdom, it is but a fair inference to draw that I should have heard of it. Upon this reasonable supposition, I ask whether the admirable novelty of a Vandyke roof, flowering the Victoria regia amidst the glories of Chatsworth, was the immediate parent of the Great Exhibition building? This question can be best answered by Mr. Paxton; and on that gentleman I call, either to prove himself the original inventor of the Vandyke structure, or to apportion to me that honour."

We understand that the harbour of Kingstown is to be improved, and that the sum of 10,660*l.* is to be laid out upon it by the Board of Public Works.

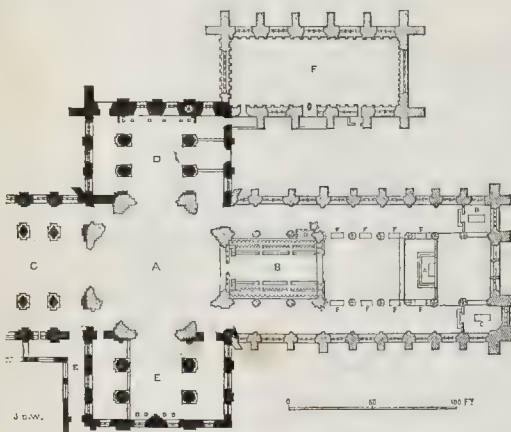
ELY CATHEDRAL.



GENERAL PLAN.

REFERENCES.

- | | |
|---|--|
| A The Octagon, with the arrangement of Choir, previous to 1769. | H West Porch or Galilee. |
| B Space commonly known as the "Presbytery." | I St. Catherine's Chapel. |
| C Nave. | K The Lady Chapel—sometimes erroneously described as the Chapter-room. |
| D North Transept. | L Font. |
| E South Transept. | M Rood-screen. |
| F Part of Cloisters (ruined). | NNN Foundations of original Norman wall. |
| G Western Tower. | O Foundations of North-western Transept. |
| | P South-western Transept. |



CHOIR AND TRANSEPTS, SHOWING NEW ARRANGEMENTS.

REFERENCES.

- | | |
|---|------------------------------------|
| The black tint represents the Norman work of Abbots Simeon and Richard, 1081—1093. | |
| The lined tint represents Bishop Northwold's work, 1229—1254. | |
| The dotted tint represents the work of Bishops Hotham, Montacute, and Lisle, 1316—1361. | |
| A The Octagon. | A Altar, as now proposed. |
| B Choir, as now being carried out. | B Bishop Alcock's Chapel and Tomb. |
| C Nave. | C Bishop West's Chapel and Tomb. |
| D North Transept. | D Organ, and Staircase to ditto. |
| E South Transept. | E Part of Cloisters (ruined). |
| F Lady Chapel, or Chapter-room. | F F Tombs. |

NEW CHOIR SCREEN, ELY CATHEDRAL.

THE choir of Ely Cathedral, till the middle of the last century, extended across the great central octagon and one bay (or, including the screen, two bays) into the nave, while the altar was one bay only to the east of the octagon;—all the eastern parts (known as the presbytery) being unoccupied, except by monuments, though formerly used as the place for shrines.

In the seventeenth century, under the influence of Bishop Mawson, the choir was removed to the extreme east end, thus going into the other extreme; and, instead of two bays of the western arm being taken into the choir, three of the eastern arm were thrown into the nave.

The arrangement now in progress takes an intermediate line, and the screen is placed in the eastern arch of the octagon. One great object of the present work is to do away with the solid screen between the nave and choir, substituting an open one; so that persons will be able to attend the service, if they please, while in the octagon, and a view will be obtained of

the interior of the choir from the nave—thus doing away with the anomaly of three-fourths of a cathedral being cut off, and rendered so much useless space.

The principal difficulty of such an arrangement arises from the usual cathedral arrangement of returned stalls, which, especially if they have canopies, obstruct the view, and render the arrangement nugatory.

One of the few precedents which suggest any mode of getting over this, is Henry VII.'s chapel, where it is met by having only one return stall on each side, which long custom has rendered almost the necessary position for the two principal authorities, thus leaving a large space between, which may be of open work. This arrangement has been followed at Ely. The other stalls are necessarily limited to the three bays built by Bishop Hotham, as beyond them there is a pier of considerable projection intercepting their further extension. The space beyond this, hitherto bearing the name of Presbytery, though but the name, will now become so more really, as, during ordina-

tions, visitations, and on other great occasions, it would (with any supernumerary stalls) be devoted to the clergy of the diocese. It is flanked on either side by the noble monuments of various ancient bishops, &c.

The altar will not be placed at the extreme east end, but, according to the almost inviolable English cathedral arrangement, against a rich screen somewhat in advance, thus bringing it forward within a reasonable practical range.

The accompanying plans, for the use of which we are indebted to the Editor of the "Architectural Quarterly Review," show the previous arrangement and the changes proposed to be made.

The new screen—of which we give a view—is of rich open wood work, the lower portions filled in with brass work. The gates are of brass.* The bishop's and dean's stalls have very lofty canopies after the type of those at Amiens, though not resembling them in design. It should be mentioned, that the two official stalls are in most cathedrals occupied by the dean and sub-dean, but that there exists a local peculiarity. In the early days of the abbacy, they were, as was usual, occupied by the abbot and prior, but in 1109, the abbot was created bishop, and the abbey remained ever after without an abbot, the bishop taking his stall, while at the dissolution the bishop retained his place, and the prior was converted into a dean.

The ancient stalls, designed probably by Allan de Walsingham, are restored, and occupy the sides of the choir: in front of them are ranged subsellæ, of similar design.

The canopies of the ancient stalls are of two divisions in their height, the upper one being a series of wide, shallow niches, with rich canopies: these it is hoped to fill with sculptured groups. The stall ends generally are of very rich design, composed somewhat after the spirit of those at Cologne, though more lofty and light, and of course much less rich. The upper range will have under the canopies a series of statues, of the principal among the ancient benefactors of the church, and for finials they are crowned with figures of kneeling angels, with musical instruments: the fronts are generally of open work, so as to allow a view of the miserere seats behind.

The organ is placed in a position differing from that of any other in England, though not unfrequent abroad, being suspended, as it were, from the triforium. It will be decorated in some degree with diapering and gold. The parts seen are chiefly the great organ and choir organ, but most of the more cumbersome parts, the growth of modern improvements, are placed behind in the triforium gallery.

The organ is by Mr. Hill. The case by Mr. Rattee.

The pavement will be a mixture of black and veined marble and tile tesserae, the latter by Mr. Minton.

The woodwork of the screen has been executed in an admirable manner by Mr. Rattee.

The whole is being executed under the direction of Mr. G. G. Scott, architect.

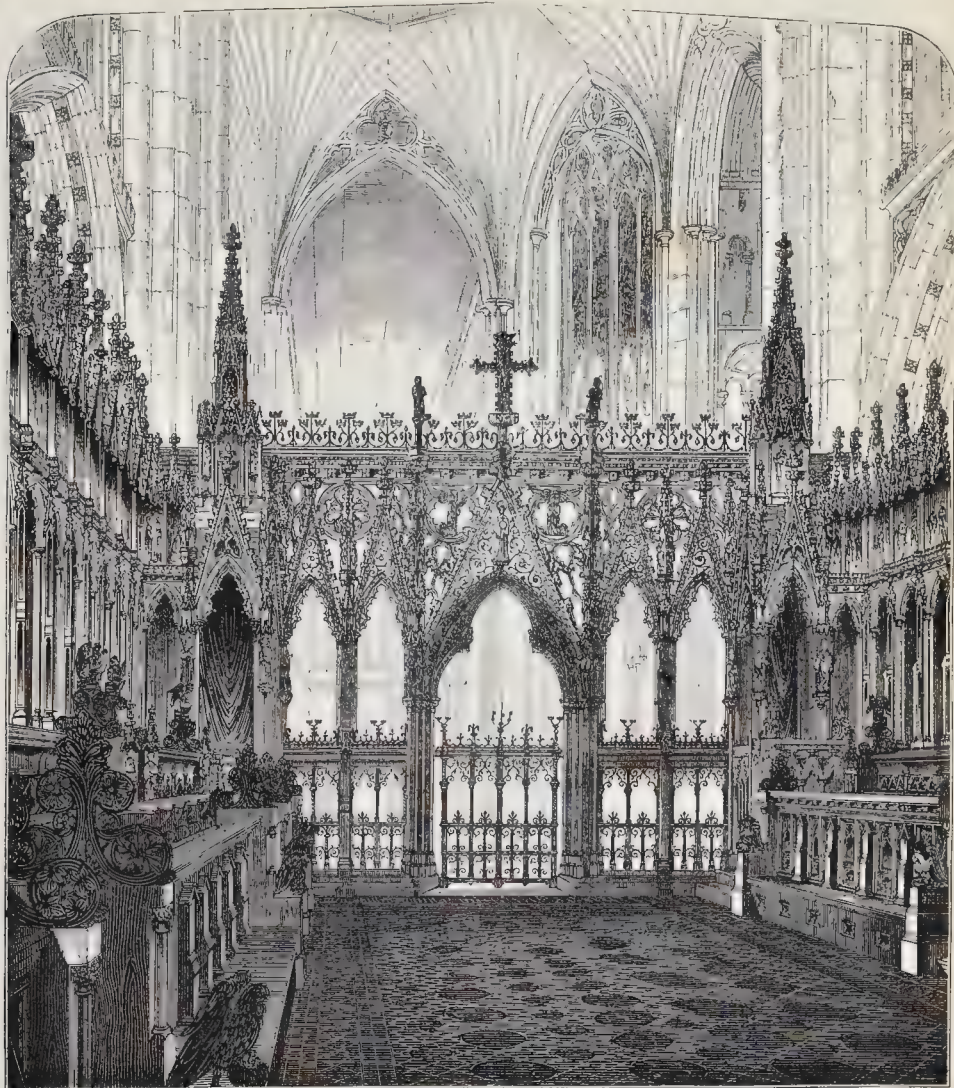
THREATENED ADULTERATION OF CHEAP GAS.

WE find that a bugbear which we long since faced and exposed as a fallacy is again raised up to frighten the gas-consuming public into a love of dear gas; namely, that the companies will "hereafter" reduce the illuminating power of the gas supplied at 4s. in the metropolis,—that is, will virtually, and in fact, adulterate it,—to the extent of 37 per cent., still charging 4s. for it! And it is a defender and justifier of the companies who says so! Now, whatever may be the strength of the desire, or the weakness of the scruples, of the companies hereafter (when snugly amalgamated) to adulterate the article which they at present supply in admittedly a 37 per cent. better state at the very price to be "hereafter" charged for stuff 37 per cent. worse, to the extending circle of their gas consumers,—we will once more point out at least one sufficient reason why they

* These we shall hereafter give at large.

NEW CARVED SCREEN, ELY CATHEDRAL.

MR. SCOTT, ARCHTCT.



BAGGILL DEL.

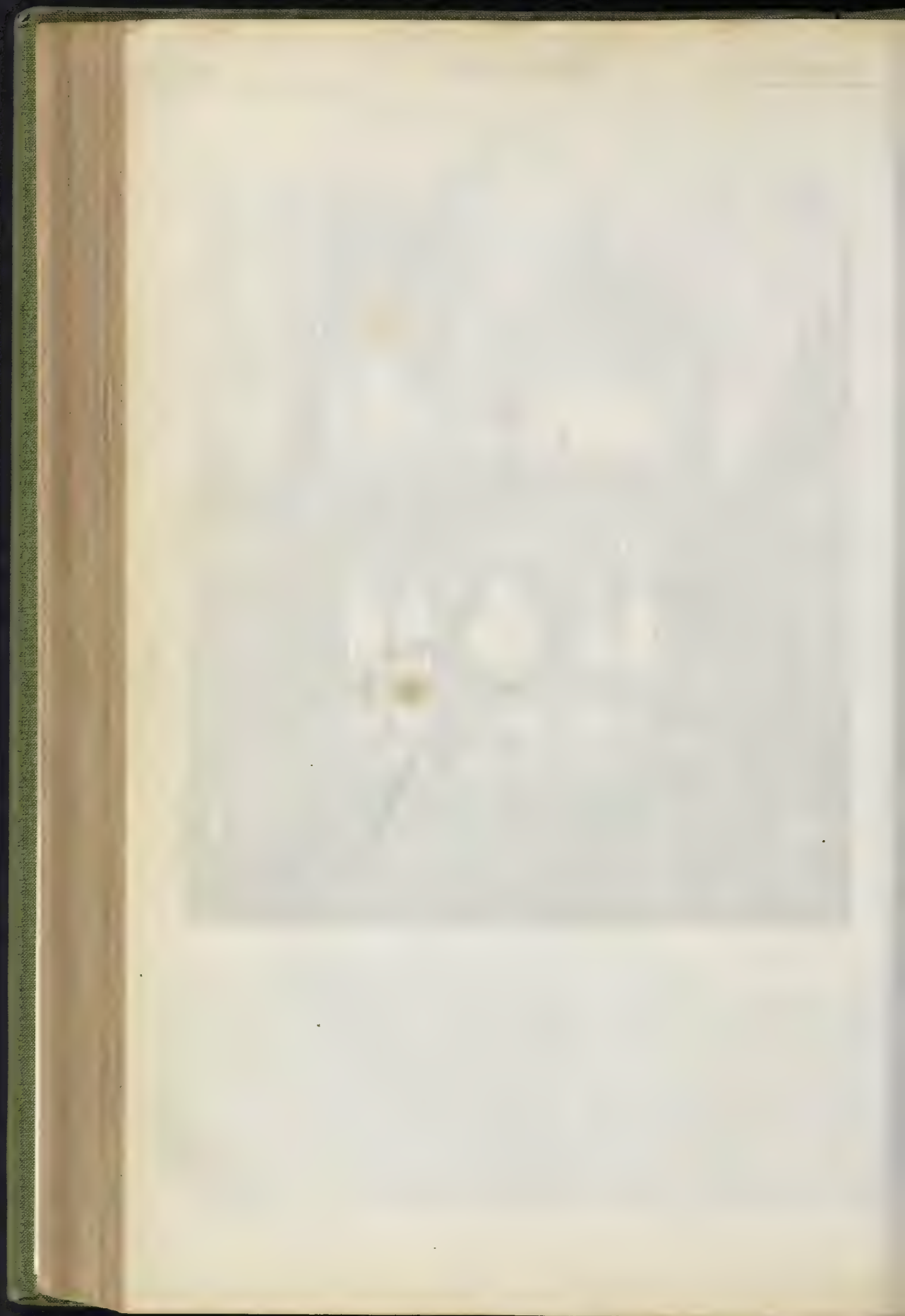
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neither can nor will do any such thing, but, on the contrary, will and must even improve the gas "hereafter" so supplied. That reason is simply this: The grand field of profit to companies selling cheap gas must eventually and necessarily be the general population of towns: the extension of the domestic uses of gas both for light and heat is an almost boundless field of profit, on which the companies can scarcely be said to have yet entered: on that field, however, they must enter: the extending public desire irresistibly impels them in that direction: it is there that their profit "hereafter" is to be reaped—their harvest won. But it is not only impossible that gas adulterated to the extent threatened can ever have its uses extended in the domestic sphere; it must even be, on the contrary, still further purified ere this can be done: it is not yet pure

enough. The threat, therefore, is an empty one, which never can be fulfilled. Cheap gas must be made good, if continued to be made at all; because the people demand it, and because nothing but good gas is endurable—or will ever abound—in their domiciles. Let the people persist, then, in their demand for cheap gas, without any fear of the threatened bugbear. Is it not remarkable, by the way, that in the very article containing and justifying the threat of adulteration alluded to, the following sentence, in reference to the movement at Newcastle, should have occurred? "It can scarcely be expected that the present price of 4s. 6d. per 1,000 can be maintained on the banks of the Tyne with coal at 4s. or 4s. 6d. per ton, while the same, or better gas, is selling at 4s. on the banks of the Thames, with coals at 14s.; and

every day's experience shows the danger of any trading company holding out too long against the reasonable requirements of the public."

Then the metropolitan companies do and can afford to sell at 4s. as good, at least, or even better gas, than some other communities are supplied with at a higher price; and the demand of the public that it should be so, would almost even appear admittedly to have been a "reasonable requirement." And yet, until this reasonable requirement was granted the demand was loudly declared to be most unreasonable. Much more unreasonable it appears to us is the fact that, although the companies can and do afford to sell a gas such as the present is said to be, at its present price, they threaten, however vainly, hereafter to adulterate it 37 per cent., and still to demand the same price for it!



ROMAN ROADS AND RAILWAYS.

On the occasion of the last meeting of the Institute of Architects, when the Rev. Mr. Burgess read his interesting paper, in which he drew a comparison between the *vie* of Rome, the mistress of the ancient world, and the highways of England, the great ruler in modern days, I ventured to make a few remarks which the lateness of the hour prevented my developing properly at the time, and for which I would now request the favour of a small space in your journal.

The only point on which I differed with the author of the paper under discussion was, where he said that the part of the Apian way most easily constructed was that portion of it which ran through the marshes. Now, Sir, I have always found that the real engineering difficulties are presented under such circumstances: deep cutting, tunnelling, heavy embankment, &c., are in the majority of cases to be looked upon not as presenting difficulties, but as involving questions of time and expense. I have made railways in Belgium through districts where piles nearly 100 feet long were driven into the ground without reaching the solid bottom, and where bridges have to be built in such localities either to afford an outfall for a stream or as a means of allowing communication underneath a road-embankment: then the engineering difficulties are great indeed.

While on the subject of roads, I made a few remarks connected with their direction. The Romans, it would appear, sought to establish road communications in preference to going long voyages by sea; but since their time, until within the last few years, locomotion by water had almost superseded that by land, owing to the more rapid communication which could be made on the former. Wherever enlightenment and civilisation made their way, improved modes of navigating the seas were introduced, and canals everywhere were constructed; but now, on the contrary, in consequence of the improvements in railways, it is found that travelling by train is far more expeditious than by packet, and we return again to the good old system of overland routes, and indeed, when we consider that, owing to modern improvements, we can travel by rail at the rate of 50, and even 80, miles an hour on land, while at sea we are limited to 12, or at most 17 knots per hour, I think it will readily be admitted as a general principle, where we have it in view to effect a communication between two places on the globe so situated as to make it optional whether we make such communication by land or by sea, or partly by both, that the great problem to be solved is, to find in the given distance the maximum amount of land to be traversed, and the minimum of water; and it may even happen that we will find it more advantageous to go a long way round by land than to make at once for our destination by sea.

It is clear from this, that in the present state of things every mile of way that can be made on *terra firma* instead of by sea, effects a considerable saving of time in going from one place to another. And if this fact can be established with regard to the conveyance of passengers, how much more does it apply to the communication of news, since by the electric telegraph information is transmitted on land almost with the rapidity of thought itself.

Under these circumstances I cannot but regret that the Government Commission has reported against the project of establishing a packet station on the western coast of Ireland, so as to make the communication with America shorter, and considerably more expeditious. I do not, however, despair of seeing the plan carried into execution when the great advantages it would confer upon our country are considered, irrespective of private interests, for it would make England and Ireland the great highway between all the northern countries of Europe and the New World. Countries on the high road to places of importance, such as France, Switzerland, Belgium, &c. derive considerable wealth and consequence from their position; and the benefits certain to arise from making England and Ireland a thoroughfare for all nations, instead of being,

as they are now, the "*ultima thule*" of the eastern hemisphere, cannot be overestimated.
W. H. V. SANKEY.

RIO DE JANEIRO.

ACCORDING to a recent writer in the *Revue des Deux Mondes*, the population of the capital of Brazil is nearly 250,000. Though externally its appearance is sufficiently imposing, its architecture is rather heavy than otherwise. The churches (which are numerous) do not affect, as do most of those in America, the graceful forms of the *renaissance*: most of them have been built in the style of Borromini,—that style so cold and pretentious,—the style of the worst epoch of Italian degeneracy. In fine, the buildings of Rio, viewed artistically, present little that is interesting. With respect to the environs, I may observe that, apart from some picturesque sites and agreeable landscapes in the isles of the bay, there is nothing in them which reveals in all its majesty Nature as seen in the Brazils. After a few days of sight-seeing, the stranger will have known as much about the curiosities of the capital as the inhabitants themselves; and he will then, quickly enough, turn his attention to them. A community which trains itself to politics, which labours courageously to reconcile its ancient manners with new institutions, is always a curious spectacle; but which, on this virgin soil, derives an additional fascination from the singular beauty of the localities and the climate.

RAILWAY JOTTINGS.

THE works on the Shrewsbury and Hereford line near Shrewsbury are making rapid progress under Mr. Brassy's contract. The old course of the river Rea has been diverted for a short distance into a new channel, and a viaduct is in progress over the river and adjoining streets. Most of the bridges on the whole line are nearly complete, and the embankments and cuttings are in a forward state. —Mr. James Currie, in a letter dated from Southampton, gives an account of a railway guard employed in America, and a drawing and description of which is given in Stevenson's "*State of Civil Engineering in North America*." This guard consists of a strong timber frame about 12 feet long, hinged to the fore axle of the locomotive engine, and projecting in front of the engine about 8 feet. The front end of this frame is shod with iron, and is kept about an inch above the surface of the rails by means of a pair of wheels about 2 feet in diameter, attached to the frame some 3 feet in advance of the engine, and which run, of course, on the rails. "This apparatus (says Mr. Stevenson) affords a complete protection to the wheels of the engine. I experienced the good effects of it upon one occasion on the Camden and Amboy Railway. The apparatus might be introduced with much advantage on the railways in this country, on which accidents, attended with the loss of several lives, have happened from similar causes."

—The companies appear to be now reaping their anticipated harvest from excursion traffic, especially to the metropolis. The circumstances are instructive, and fully justify our warnings on the subject of fares. While, for instance, the Great Western have been carrying numerous trains, some of them containing no less than 1,400 passengers, from Bristol, Bath, Chippenham, Devizes, and various other places, to the metropolis, at about half the ordinary fares, and were at length induced by the success to announce a series of daily excursion trains, a Hampshire paper, in reference to the excursion trains from Southampton, says, "they are very little patronised, and for the people of this town and neighbourhood, and for the most obvious reason—the fares are too high for mere pleasure-seekers. Every week the Londoners are enabled to come down to Southampton and return to town for the sum of three shillings; while on Monday week, the lowest fare of the cheap trip to London and back was 7s., the second 12s. 8d., and the first 18s. 6d. Now what was the effect of charging the people of Southampton more than twice the fare fixed for the Londoners? Why, that

very few availed themselves of the inducement held out to them to visit the metropolis, even with all the attractions of the Crystal Palace. In the first-class carriages there were two passengers; in the second class, two; and in the third class, forty-three! On the following day there went, by the Exhibition train, in the first class, two passengers; in the second, nine; and in the third, 110. Can there be any question as to the reason which causes so few persons to go by the Exhibition train? By this short-sighted policy many families will be prevented from visiting the Exhibition at all who would at least go once, and many individuals who may possibly pay one visit would go a dozen times if they could only have the advantage of low fares. The directors ought to know that it has been a settled axiom since the days of Swift that in finance two and two do not always make four." The London and Brighton company, on the other hand, lately announced a trip from Portsmouth to London and back, a distance of nearly 200 miles, for 4s., giving the excursionists nearly eleven hours in London.

IRISH ARCHITECTURAL AND ENGINEERING INTELLIGENCE.

A district model school is to be erected at Limerick by the Commissioners of National Education, according to plans prepared by their architect.

The new convent of Mount St. Vincent, in the vicinity of the western entrance into the city of Limerick, is to be proceeded with immediately, and Messrs. Duggan and McLean have been declared contractors for its erection, at 5,100l.

The Irish Amelioration Society intend completing and extending their buildings at Derrymullen, in the county of Kildare: the plans and specifications for the same have been prepared by Mr. Yarrow, C.E.

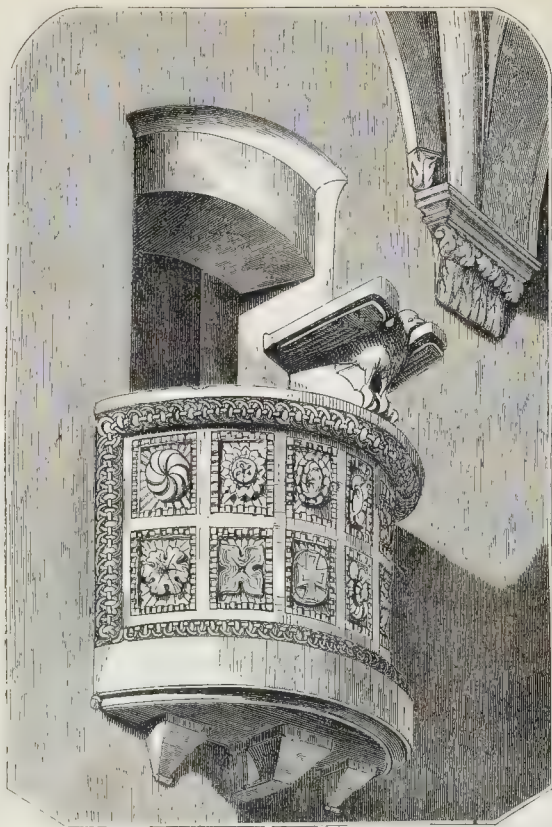
A new workhouse is to be erected at Donaghmore by the Board of Guardians of that union: the working drawings have been furnished by the architect to the Poor-Law Commissioners.

A new bridge is to be erected at Corbally, the amount of expenditure not to exceed 2,400l.: maps, plans, and specifications for the above have been prepared by the county surveyor.

ENTERTAINMENT OF ARTISANS BY MR. PETO.—A "Great Exhibition Club" having been established amongst the artisans of Norwich, some of the moneyed people there, approving of the object, lent a hand so heartily that in place of merely aiding and increasing the fund, they enabled the whole of the subscribers to come up to town for five days, visit the exhibition and other sights along with their wives, and go home again with their original subscriptions in their pockets. While here they were entertained by Mr. Peto at a good plain English dinner (and something more, it appears, than a good plain dessert), served up, under Mr. Peto's own presidency, at the Pavilion Hotel, at the terminus of the North Woolwich branch of the Eastern Counties Railway. The mayor and sheriff of Norwich, Mr. Roney, and other gentlemen, were also present.

TUBES FOR MAIN SEWERS.—Will you, or any of your correspondents, say whether tubes are used in any large towns as main sewers, and whether there are any objections of a feasible character against their use. In this town (Manchester), I believe tubes have been used as main sewers for second and third-rate streets during the last two years; yet, notwithstanding such practice, the townships of Ardwick, of Chorlton, and of Hulme, which are adjacent to Manchester, and form part of the borough, have never relinquished the brick sewer. It would appear from this, that the propriety of constructing main sewers of tubes is not sufficiently established, or the practice would be generally adopted. On the other hand, if the tubes are not calculated to be made use of for main sewers, the surveyor has loaded himself with a responsibility of a very onerous character.—J. HARTER.

PULPIT AT S. BENEDETTO, SUBIACO.



PULPIT AT S. BENEDETTO, SUBIACO.

THE monastery of S. Benedetto is situated about a mile from Subiaco, and is a very irregular building, owing to the steep and rugged form of the rock on which it is built. It was founded about A.D. 450, but the present buildings are of course much later, and date from various periods. There are two chapels at different levels: in the upper one, which dates about 1070, is the pulpit given in the engraving. It is executed in marble, and the details of the enrichment show a reminiscence of classic ornament, like most of the works of that period. The walls of the chapel are covered with paintings and elaborate borders of polychrome ornament, but the pulpit is without any colour, and forms a pleasing contrast.

C. F.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Royal Academy of Belgium.—Class of Fine Arts.—Sitting of 27th June last.—We perceive that the plan of uniting all departments of higher instruction into one body corporate, has been carried out in Belgium; and the proceedings of the Academy of Fine Arts are reported with a sort of parliamentary appearances. At the above sitting, the Home Secretary of State informed the Academy, that 5 per cent. of the entrance fees and sale of catalogues of the exhibition of 1851 will be reserved for the general fund of Belgian artists, and 3 per cent. placed at the disposal of the directing commission of this exhibition.—Report read on the subject proposed for prize: "What were the transformations which the base and capitals of

columns have undergone in the succession of different architectural styles, and what were the reasons of these transformations." Five commissioners were selected for the adjudication of this prize. M. Melsens, member of commission, named for answering an inquiry made by the Secretary of State concerning "the best method of cleaning statues," spoke on the experiments undertaken for effecting the object in view. The further proceedings related to other branches of art.

Improvements, Brussels.—Our Belgian neighbours seem to feel, that all well-directed activity engenders new activity, tantamount to value and money. The faubourg Schaerbék-Brussels has, of late, assumed quite another appearance, and the part near the north terminus possesses some very airy and healthy blocks of houses. In the centre a new church of Byzantine style is rising, which, being in a straight line with the Rue Royale, can also be seen from the Porte de Schaerbék. With a view to salubrity (*assainissement*), a new street will be opened towards the part of the Rue des Palais.

Exhibition of the Rhenish Art Union.—This important art-association dates from the year 1836, when delegates from Darmstadt, Carlsruhe, Mannheim, Strasburg and Mainz, met at Heidelberg, for combining their forces into one focus of activity. At that time the school of Düsseldorf was at its apogee, and even the first year's produce for art-work sold, amounted to 23,000 florins. There, amongst many inferior capacities, shone nascent and even great talents. Soon, however, the interest and the worth of the exhibitions were on the decline, and although the committee declared that "their

scope was not to serve mediocrity, but true art," the representatives of that true art had successively retired from the contest: they did not require any more patronage or orders; they were overwhelmed therewith. Thus, triennial, instead of annual exhibitions were proposed, but declined, for not "spoiling the fair to mediocrity." Thus the fatal word of *Marasmus senilis* (*juvenilis*?) has been uttered by some German art-critics; a fact which cannot escape the chronicler of art-events. The exhibition at Darmstadt, opened on the 5th of June, contains 289 articles. With the exception of some sketches of the late scene painter Schilbach, and two galvanographies of Leo Schöninger, they contain nothing worthy of record.

Conservatory of Arts and Trades, Paris.—This institution is successively acquiring a great development, and has been compared, not improperly, to a working cyclopædia of arts and trades. A new gallery has just been opened to the public, situate on the ground-floor, and lighted by windows from the fine garden of the former convent. The gallery comprises machines relating to textile art and their various products, as well as models of telegraphs, hydraulic motors of all kinds, presses for coining, gasometers, &c. The conservatory counts already fifteen galleries, thus reorganised by their talented present keeper, Colonel Morin. The old refectory of the convent will contain the rich library of arts and trades, having undergone a perfect restoration. It is a work of Pierre de Mortiel, the famous mason of the times of St. Louis. Very fine columns support the Ogive vault, richly decorated with mouldings; and be-

sides eighteen *rosaces*, there are sixteen double windows, the door of the south resembling rather the work of some goldsmith. On the east side of this huge refectory are two female busts, representing Art and Science: others represent Chemistry, Sculpture, &c. The establishment is kept in perfect order, and much resorted to by students and operatives.

Systematization of the Seine, Paris.—The improvement of the navigation of this river, and other ameliorations on the bankside, will occasion the demolition of the two bridges of Petit-Pont and Saint Charles, and their reconstruction after a new plan. By this and the barrage and sluices above the Pont-Neuf, opposite the Hôtel de la Monnaie, even the heaviest loaded crafts will be enabled to pass here. Instead of the actual construction of these bridges presenting two or three arches of a nearly semicircular form, and a width of 6 to 9 metres, they will be built with one flat arch of a considerable span. This, however, will require the buying and pulling down of several houses situate in the Marché-Neuf, whose foundations descend in the very bed of the river, and thus break the regularity of the quays. Before the year 1731, the whole of the Marché-Neuf consisted of houses built in the bed of the river, which incroachment on public convenience will now be definitively put an end to.

CHRISTIAN FREDERICK TIECK, SCULPTOR.

As the name of this distinguished artist is intimately connected with the sculptures of the Walhalla, the following life-notice may be of general interest:—C. F. Tieck, brother to the poet, Ludwig Tieck, was born in Berlin, and first apprenticed to a stone-cutter: subsequently, he entered the Academy of Fine Arts, under Schadow, and, impelled by his (elder) brother, soon began to seek after the ideal and poetic in art. Having obtained a grant from the Academy, he went to Paris, and studied in the atelier of David, the painter, showing his just appreciation of the connection between design and sculpture. A relief, published in the *Annales du Musée* (vol. i. p. 9), representing Priam asking Achilles for the corpse of Hector, attracted great notice. Thence Goethe called him in 1801 to Weimar, where he executed several reliefs and busts for the Ducal Palace. Amongst the latter that of Goethe himself, and that of F. A. Wolf, the philologist, are of great merit. In 1808 C. F. Tieck visited Italy, until Mde. Staal called him to Copet to make the reliefs of the Necker family-vault. Later he executed at Carrara the life-size statue of M. Necker. When Ludwig, of Bavaria, had conceived the idea of the Walhalla, Tieck was selected to make several of the busts of the great men there to be exhibited. These also were made in the solitude of the little town of Carrara, where Tieck and Rauch worked together, the former at the fine candelabrum with the dancing Horus, placed in the Mausoleum of Charlottenburg, near Berlin. From his return to Berlin in 1819, up to his late demise, a vast number of sculptures have been executed, both by Tieck himself, as well as from his models—among which we may mention the sculptures of the concert-hall of the great theatre, and the large reliefs of the pediment made after antique patterns; the colossal angels before the Cathedral (Dom) of Berlin; the horse-tamer on the projecture of the Royal Museum; the bronze-door of the Werder church, &c. Having been named, in 1830, director of the sculpture-gallery of the Royal Museum, he continued the restoration of the antiques of that establishment. As one of the chief founders of the Society of Art-Friends of Prussia, he exerted a large influence over the whole artistic movement of the state; and died at the age of seventy-five, leaving many works behind him, awaiting their completion from those similarly gifted.

PRINCE ALBERT'S MODEL-HOUSES.—Messrs. Hullmandel and Walton, of Great Marlborough-street, we observe, have published a lithograph of the Prince's model building for artisans' dwellings, in Hyde-park.

Books.

The Steam Engine: a popular Account of its Construction, Action, and History, and a Description of its various Forms; with a Sketch of the Laws of Heat and Pneumatics, and a Critique on M. Arago's "Eloge of Watt." By HUGO REID, Member of the College of Preceptors, &c. Third edition. Groombridge and Sons, Paternoster-row, 1851.

The object of this little volume is to furnish to the general reader such an account of "the Great Machine" as may be easily understood by those who are previously unacquainted with the subject. Mr. Hugo Reid is both an experienced and skilful teacher of popular knowledge, and a faithful digester of the acquisitions of science for the popular behoof. This edition of his lessons on the steam engine is revised and improved; and the book is illustrated by 40 wood engravings. As a specimen of its style, and as there is some talk at present of erecting a monument to Newcomen at Dartmouth, we shall quote a few of the author's remarks on him:—

Newcomen was an ironmonger at Dartmouth, and Cawley a plumber there. They took out a patent in 1705, in which Savery was associated with them, having claimed a share in the invention on account of the principle of creating a vacuum by the condensation of steam, which formed a part of his patent engine. In 1713, they had made such progress as to have good working engines.

Newcomen and Cawley were the first who arranged the moving power of the engine in such a way that the steam did not act directly on the water to be raised, as in Savery's or in Papin's second engine. This, indeed, constituted the first distinct step in the application of steam as a general moving power. The water was raised by means of a common suction pump, which was worked by the engine, instead of by horses, as formerly. The engine consisted of three principal parts,—1st, the boiler, a separate vessel in which the steam was generated; 2nd, the cylinder, in which the steam was condensed; and 3rd, the beam, whose movements followed the alternate admission and condensation of the steam, and which communicated the motion to the rod of the pump.

The merit of Newcomen's engine lay, not in invention, but in the adoption and happy combination of contrivances already known, so as to produce an engine which, as a whole, might be regarded as entirely new. Tredgold, speaking of Newcomen's adjustments, says, "that they produce all the difference between an efficient and an inefficient engine." Newcomen's engine was the first really efficient steam-engine—that is, the first engine which could be applied *profitably and safely* to the more important purposes for which such machines were required at the time of its invention. It is still occasionally ordered for situations where fuel is cheap, the first cost being comparatively small. It is fitted with a condenser, separate from the cylinder, by which its action is much improved. In this form it has been recently re-introduced by Messrs. Seaward and Capel, in two steam-vessels, the *Sapphire* and *Wonder*.

Though now superseded by Watt's, Newcomen's engine ought not to be forgotten. Even had it never come into use, its value, as a great step in the progress of invention,—as the raw material out of which Watt constructed his admirable engine,—cannot be too highly estimated. But it was a machine of great practical utility. It came into operation about 1712, and continued to be used exclusively for about sixty-two years (till 1774); and for a considerable time afterwards was much employed. For nearly a hundred years it was the chief hydraulic machine in use for the important purposes of draining the mines, and raising water for cities; and was also used for impelling machinery.

The Process of Thought adapted to Words and Language: together with a Description of the relational and differential Machines. By ALFRED SMEE, F.R.S. Longman and Co. 1851.

IN the preface to this volume the author intimates his "inexpressible astonishment at reading, a short time since, that Mr. Smee had asserted that 'Life was Voltaism.'" Now, although probably Mr. Smee never "asserted this," assuredly it does not astonish us that others supposed he had. The volume before us "constitutes a further contribution to the electro-biological series of works which have

now occupied his attention for a long period." It treats of processes of thought, ideas, powers of mind, "the electro-biological view" of "sylogism," of "evidence and testimony," logic, quibbling, and much more. If life be not voltaism, what, then, is electro-biology? This term the author tells us "literally signifies neither more nor less than the relation of electricity to the vital functions"—that is, to the process of digestion by the stomach, and such like. So: we understand; and hence since the vital functions have a relation to voltaism, electricity, and electro-biology, it is quite correct to treat of those subtler "digestions" which go on "in the brain" as electro-biological processes too! This may be electro-biological logic, but it really appears to us to be much more like electro-biological quibbling.

"Electro-biology," he tells us, "teaches that MAN receives impressions from the external world through the medium of his organs of sensation, transmits [man transmits] those impressions to the brain, and there registers them in certain combinations, in such a manner as to render the sensorium one vast mechanism, in which everything which has been heard, or seen, or felt, or smelt, or touched, has produced an effect which modifies the action of any impression which may be subsequently received."

Notwithstanding many far-fetched fancies, dangerous when taught by so able a fencer with the materialistic, passive, doctrine of the soul as Mr. Smee, this volume contains matter for reflection, and many valuable thoughts. Mr. Smee may be on the verge of a great discovery: indeed, we almost thought he had made it when we saw the frontispiece to his book; but to realise it, he must change his views very considerably on some subjects.

Tables for the Use of Architects, Engineers, Builders, &c. By JAMES WALE, Surveyor. London: Mozley. The Author, Derby.

THE title is a little too comprehensive, as the tables simply relate to pricing deals, battens, and other timber. To this extent, however, these tables will be found useful. The table of deals and battens, gives at sight the prices per foot run, superficial inch, per load, per standard hundred, per 120, or vice versa, as follows:—

	£	s.	d.
If 14'0" x 3'9" Deals are at 33	6	0	per 120,
3'11 do. will be	16	10	0 per standard hundred.
2' x 7 Battens	10	10	0 do. do.
Timber	5	0	0 per load.
Inch stuff	0	0	2 per foot superficial.
3' x 12	0	0	6 do. do.
3' x 11	0	0	6 5 do. run.
3' x 10	0	0	5 do. do.
3' x 9	0	0	4 75 do. do.
3' x 8	0	0	4 5 do. do.
2' x 7	0	0	2 92 do. do.

The table of freight, cartage and other contingent expenses, affords as follows:—

	£	s.	d.
If 3' x 11 Deals cost 12 15 4 per standard, it is			
If freight, &c., cost 2 13 6 do.	4	23	per foot.
	88		do.

511 prime cost.
The prices are affixed in pence and decimal parts of a penny, for correctness' sake, but a very little attention will enable any one, although he may not understand decimals, to make use of them.

The London Omnibus and Thames Steam-boat Guide. London: Thomas and Churchill. 1851.

STRANGERS in London (and residents, too, for the matter of that), will find this guide useful in their endeavours to make the most of their time and their money. The number of omnibuses in London is now enormous, and yet at certain hours they are unequal to the demand.

IMPROVED FILES.—Charles Cowper, of London, has taken out a patent for an improvement in the manufacture of files. The patentee claims as his invention the manufacture of files with two series of cuts, inclined towards the opposite ends of the file, as described; also, the mode or modes of forming the teeth of files by means of dies, in the manner described.

Miscellanea.

THE ROADS OF ENGLAND.—In an article on this subject, the *Economist*, after speaking of the British trackways and the Roman roads, goes on to describe the subsequent history of English roads, from which we condense the following particulars:—During the Saxon period, and down to the reign of Henry the Seventh, when trade began to increase, the state of the roads was very bad. During Henry the Eighth's reign several acts were passed for the safety and improvement of different district roads, and for making new roads. Increased attention was paid to this subject during the reigns of Elizabeth, James the First, and Charles the First; and in 1662 a general Highway Act was passed. In the following year, 1663, the first turnpike Act was passed, and a toll levied on passengers for repairs. Hitherto the road Acts had been supplementary to the common-law liability of the parishes to repair the highways. The first Turnpike Act, that of 15 Charles II. c. 1, was confined in its operation to the counties of Hertford, Cambridge, and Huntingdon, the chief object being to improve the post-road between London and York. Under that Act the tolls were levied at one place only in each county. Other Turnpike Acts were passed in the reign of William III.; but it was not until about the year 1770 that the turnpike road system was extensively adopted. During the subsequent reigns not only were local turnpike Acts passed for all parts of every district, but many general Acts were passed for the maintenance and amendment of the highways, and for the extension, regulation, and improvement of the turnpike system. In 1835 all the Acts relating to highways were repealed or consolidated; and that statute has been amended by subsequent Acts of the present Queen. The General Turnpike Acts, which were also numerous, were consolidated in 3 George IV. c. 126, which is the existing General Turnpike Act, some minor alteration having been made therein by subsequent statutes. Since 1831 general Acts have been passed from time to time to continue the terms of local Turnpike Acts, which, being only granted for defined periods, were about to expire. In the Turnpike Trusts Continuance Acts of 1849 and 1850, there are provisions requiring every turnpike trust to appropriate its surplus income to the formation of a sinking fund to liquidate its debt. This has been attended with beneficial results. An Act was also passed in 1849 to facilitate the union of trusts.

STATISTICS OF RENOWN AND CELEBRITY.—A German periodical states that a pretty near calculation of the celebrity of any person can be made, nowadays, from the exact number of times his name is struck off in books and periodicals, enjoying, of course, more or less circulation. If, says the German calculator, the name of a person has been struck off 100,000 times, his renown = one week's duration in the neighbourhood of the deed or work (of any sort) performed; this being a slight, temporary halo, spreading to a proportionate distance, &c. One million of name impressions = one year's renown, + a decreasing halo of 100 miles diameter. To make a name like Lessing, Dr. Johnson, Canova, &c., from fifty to sixty millions of press-strokes are required; and a world-name, like that of Byron, Goethe, Chateaubriand, Beethoven, &c., requires *astral* magnitudes of name-impressions. Napoleon and another name are the most renowned of all times, the number of times they have been printed exceeding all calculation. Strange vagaries our German friends indulge in.

ANTIQUITIES FROM NINEVEH.—Mr. Layard and Colonel Rawlinson have been recently superintending the reception of new arrivals from Nineveh, which Mr. Layard, we presume, had despatched before his return. They appear to consist chiefly of such articles as those said to have been found collected in a heap in the palace of the king, along with his throne, and marks of fire, which seemed to connect them with the funeral pile prepared by Sardanapalus, as happily suggested by a

gentleman in Mr. Sydney Smyrke's office. Amongst them are instruments and vessels of bronze and earthenware, the use of some of them quite inexplicable for the present; also bowls and vases, many richly chased; some dozens of earthenware studs, supposed to be for harness; a very perfect bronze wine strainer, similar to those in use at the present day; the hinges of the gates of the palace; legs and feet of chairs; a curious mask of iron or bronze; richly ornamented handles of various kinds; a large wheel, or the bronze casing of it, broken into many pieces; one or two small glass vases of very beautiful colours; a quantity of cylinders about an inch and a half in length, carved or inscribed, one or two of them of a substance resembling plumbago; statue of a priest in stone, much ornamented; and, lastly, several slabs of inscriptions.

OPENING THE NEW THOROUGHFARE IN WESTMINSTER.—Sir Edwin Pearson has published a circular calling upon the local authorities in Westminster to solicit the Queen to attend the opening of the new street. He says,—"It appears to have been the custom on similar occasions respectfully to invite the sovereigns of the country to mark by their presence the parental interest they feel in public enterprises connected with the general improvement and well being of their people. In accordance with this custom our two last kings were respectively solicited to honour with their presence the opening of the Waterloo and London Bridges,—to which solicitation they most kindly condescended; and on a later occasion the City of London petitioned for a like favour from our present beloved Queen on the opening of the Coal Exchange, which request was also graciously granted, although her Majesty's attendance was prevented by indisposition, to the great grief of her devoted subjects." The day proposed (Aug. 1) is memorable as being the same on which his Majesty William IV. opened London-bridge; but more especially so, as being the anniversary of the accession of her Majesty's house to the throne of these realms.

THE BRADFORD SURVEY.—One of the competitors, Mr. Edwin E. Merrill, complains that although his own tender was 460*l.*, the undertaking has been entrusted to another, who is to have 800*l.* for the job. As to the fact of his own experience and sufficiency, Mr. Merrill states that he has "been for nearly twenty years actively engaged in the practice of every branch of surveying, engineering, &c., and frequently employed upon large works under the most eminent men in the kingdom, without having ever once failed to give complete satisfaction;"—that he was prepared "to have the entire work properly and efficiently performed;" and that, "with the present dearth of employment of surveyors and engineers, there are doubtless many others equally competent fully prepared to do the same." He cannot understand, therefore, why 400*l.* of the Bradford people's money should be uselessly thrown away on any one, and thinks that not to accept of the lowest tender, *without some sufficient reason*, destroys the very essence and spirit of competition, frustrates its intention, and reduces it to "a mockery, a delusion, and a snare."

YORKSHIRE ARCHITECTURAL SOCIETY.—The quarterly committee meeting of this society was held on Thursday in last week at York. The secretary mentioned that on the occasion of the late meeting of the Yorkshire and Lincolnshire Architectural Societies at Ripon, a memorial had been drawn up at the suggestion of Sir Charles Anderson, to be presented to Col. Wood, the proprietor of Middleham Castle, with reference to the dangerous state of a considerable portion of the ruins of that noble pile. The memorial had been entrusted to the Rev. R. E. Batty, of Ackworth, and the secretary read a communication from that gentleman, mentioning that Col. Wood had at once promised to re-inspect the ruins, and expressed his willingness to receive any suggestion from the societies with which they might favour him. Mr. Batty also gave some account of the historical associations connected with Middleham Castle.

COMPETITION AT COPENHAGEN.—About a twelvemonth ago, the magistracy of Copenhagen offered prizes of 200*l.* each for the best plans for water supply, for drainage and for gas lighting for the city of Copenhagen, and intimated that, if necessary, the prizes would be divided. They received, by the 1st of January last, somewhat over a dozen sets of plans, and which were referred to Col. Schlegel, Professor Torrchamma, and Mr. Lunde for selection. They have now made their report. No whole prize has been given; but the three prizes have been divided between Mr. Masilling, of England; English and Hansen, of England and Copenhagen; Kühnell, of Berlin; and Colding and Lindberg, of Copenhagen. It is believed that the first and fourth have the drainage; the second and fourth the water; and the second and third the gas. As to the execution, nothing is yet decided.

A HINT TO ENGINEERS.—One of the inventions most important to a class of highly-skilled workmen (engineers) would be a small motive power—ranging, perhaps, from the force of half-a-man to that of two horses, which might commence as well as cease its action at a moment's notice, require no expense of time for its management, and be of moderate price both in original cost and in daily expense. A small steam-engine does not fulfil these conditions. In a town where water is supplied at high pressure, a cylinder and a portion of apparatus similar to that of a high-pressure engine would fully answer the conditions, if the water could be supplied at a moderate price. Such a source of power would, in many cases, be invaluable to men just rising from the class of journeymen to that of master. It might also be of great use to many small masters in various trades. If the cost per day were even somewhat greater than that of steam for an equal extent of power, it would yet be on the whole much cheaper, because it would *never consume power without doing work*. It might be applied to small planing and drilling machines, to lathes, to grindstones, grinding mills, mangling, and to a great variety of other purposes. In all large workshops a separate tool, or rather machine, is used for each process, and this contributes to the economy of the produce. But many masters in a small way are unable to afford such an expense, not having sufficient work for the full employment of any one machine. Of this class are many jobbing masters, who live by repairing machines.—*Babbage.*

DESTRUCTION OF PROPERTY AT CHIPPING.—A flood on Wednesday week did a good deal of mischief at Chipping, washing away walls, embankments, and battlements of bridges, and undermining houses. A cotton mill in the vicinity appears to have been most injured.

THE ORDNANCE SURVEY OF SCOTLAND.—We understand that the committee on the Ordnance Survey of Scotland have decided in favour of a map on a scale of one inch to the mile, as preferable to the six-inch scale adopted in Ireland. We shall be thankful for a workable map in either form. This, we understand, is promised in ten or fifteen years at the most. If the Ordnance promise this, and show that they are able to keep to their time, we may probably be content to wait so long. But if not, we trust that the feeling of Scotland, now aroused on the matter, will not be permitted again to fall asleep.—*Scotsman.*

SUSSEX MEMORIAL.—The subscribers to the fund for erecting a memorial to the memory of the late Duke of Sussex, have determined that the money subscribed shall be applied to the purpose of building an additional wing to the Royal Free Hospital, to be called the "Sussex" wing, to contain not less than 100 beds, with the addition of a marble statue, not to exceed 1,000 guineas, with a suitable inscription.

ARCHANGEL is reported to have been recently destroyed by fire. This Russian city, as our professional readers will most of them be well aware, has long been celebrated mainly for its tar, which has formed a very extensive article of export, and must doubtless have had something to do with so extensive a fatality, if literally true.

Also, a TERRA-COTTA FIGURE of TIME in the Transept.—
Drawings and prices, on application, at the Manufactories, Lam-
b.

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Hooping, &c. Wholesale, retail and for export.
An allowance to the trade.
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LONDON OFFICE, A, MANHORN-HOUSE PLACE.

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GALVANIZING AND CORRUGATING IRON COMPANY.
JOHN STIMON & CO., Managers.
The Company have made considerable improvements in the
mode of working CRAUFORD'S Patents, and as their arrangements
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ticable, they are in a position to execute orders to any extent, in a
manner hitherto unequalled, and they respectfully solicit the
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ON HAND, sheets, plain or corrugated, for iron houses, sheds,
railway stations, &c. and fixed to order, if required.
Wire, piping, guttering, &c. for home use and exporting.
N.B.—Goods to be calculated, sent for and returned free of
charge, within three miles of the Tower; and all light goods re-
turned by 9 a.m. will be returned the same day, if required.
(Office)—19, Circus, Minorities.
Works—Glass-house-yard, opposite the London Dock.
—A DISCOUNT ALLOWED TO THE TRADE.

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WORKS,
BIRMINGHAM, late of Southwark.
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Manufacturer of the Corrugated and other kinds of Iron Roofing
for railway stations, carriage sheds, farm buildings, gas-work,
warehouses, &c. &c.
Of the Corrugated Iron Bars, Orders, and Fire-proof Floors.

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which, consistently with good workmanship, are extremely low.
Models of the patent iron roof, corrugated or not, and of PATENT
FLOORING, of which J. W. is the sole licensee and manufacturer.
Drawings of the iron lighthouse spoken of in the Times and
other papers (see the Exporter for February 5th), may be seen by
application.
References to firms of the highest class can be given.

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The Builder.

No. CCCCXLII.

SATURDAY, JULY 26, 1851.

ANOTHER attempt has been made to frame a satisfactory Act to regulate the construction and the use of buildings in the metropolis; but we do not augur for it a more satisfactory fate than that of the last. It would be wasting time and space to enter now into the discussion of it at any length, but we must briefly communicate to our London readers some of the leading features of it, so that they may know what is going on, and be prepared to express their opinions on the matter when the proper time comes. The Bill was brought in by Lord Seymour and Mr. Cornewall Lewis, and was ordered to be printed on the 11th instant. It contains 148 clauses (the dropped Bill had 145), and, with the schedules, occupies 84 pages. It omits reference in the preamble to the necessity of provisions respecting "the health of persons residing" in the metropolis (in accordance with the suggestion that this demands a distinct Act), and some of the clauses in the dropped Bill to which we most strongly objected immediately on its appearance, have been withdrawn. Thus the attempt that was made to force parties to employ a barrister or an attorney, who knew nothing about their case, in lieu of their architect or surveyor who did, is not repeated: and the clause now stands:—

"No person shall be entitled to appear for any other party to any proceeding in the said Court, unless he be a barrister-at-law or an attorney of one of her Majesty's Superior Courts of Record, or an architect or surveyor acting on behalf of the party, or, by leave of the judge, any other person allowed by the judge to appear instead of such party."

In the main, however, it is the same Bill, and has for its principal purpose the creation of a law court, with all its technical and costly obstructions to justice. The judge is still to be that omnipresent spectre in all modern legislation—"a barrister of not less than seven years' standing"—that wonderful, all-knowing class of men, whom Parliament delighteth to honour. It has always been a cause of astonishment to us that ministers, when they had to select a sculptor to execute the national memorial to Peel, did not appoint "a barrister of seven years' standing:" the Bar will never forgive them for so shamefully overlooking them.

All the extraordinary and absolute powers with which it was proposed to invest the judge of the Court of Metropolitan Buildings are continued: he may hear and rehear cases, rescind or alter any order previously made by him, refer matters to arbitration (irrevocable by any without his consent), and may set aside the award when it is made if he think fit.

The Bill, strange to say, continues to admit the possibility that questions "may arise" in some cases "of a technical nature, requiring the skill and knowledge of a practical surveyor or architect," and proposes to appoint an Architectural Referee, to whom the

judge, when he pleases, but with great emphasis in the Bill, "not otherwise," may appeal for information. It is properly put as if it were almost an insult to that extraordinary class, the "barristers of seven years' standing," to suppose it possible that they could want information and advice on such trifling matters as appertain to the science and profession of an architect and surveyor.

To this formation of a technical law court, —at the very moment, too, when other professions are properly calling out to be released from law trammels and injustice,—we objected at the time, object now, and will continue to object. The builders of the metropolis have but one opinion upon the question (and that is ours), and we hope Lord Seymour will not be misled by the suicidal vote of the very small majority of the very small and unimportant meeting at the Institute of Architects, into fancying that the opinion of the profession is with him.

According to the new Bill, the election of district surveyors is still to rest with the justices of the peace.

The table of the rates of buildings is changed: all buildings are declared to come under one of five rates: the "extra first rate" is made the first, the present "first rate" the second, and so on, but a considerably larger area is allowed to each, excepting the fifth rate,—synonymous with the present fourth. In the dropped Bill buildings of *four and a half squares* in area were to be considered fourth rate, and we were grateful, for the sake of the poor, for the additional half square, as compared with the existing Act. In the new Bill, however, the old standard (which has led to the erection of thousands of habitations woefully insufficient for the comfort and health of the occupants) is unwisely re-adopted.

The area of every attached building whose height exceeds the height of the ground story is to be taken as part of the area of the building.

The directions as to the thickness of walls are given differently from heretofore: instead of being measured by floors, specific proportions of the height of the wall are taken. Thus, the party-walls of the third-rate (synonymous with the present second-rate) "shall not be less in thickness at the top thereof than $13\frac{1}{2}$ inches, and shall be of such thickness for not more than *one half of their whole height*, and thence downwards to the top of the footings shall not be less than $17\frac{1}{2}$ inches."

Without examining these generally, we would say that the directions as to the fourth-rate (present third-rate) require a very unnecessary thickness of wall, namely, that they "shall not be less in thickness at the top thereof than $8\frac{1}{2}$ inches, and shall be of such thickness downwards for not more than *one-third of their whole height*, and thence downwards to the top of the footings shall not be less than *seventeen and a half inches*!"

The external walls are to have the same thickness in all cases as the party-walls.

It is most desirable, as we have always said, that private interests should be distinguished, in any Act touching the buildings of the metropolis, from public interests, and be interfered with as little as possible. This principle has not been kept in mind in the new Bill, as the following most objectionable clause will show:—

"Rules concerning the Safe Construction and

Maintenance of Buildings.—Every building, and every part and appendage of every building, must be built, constructed, made, or fixed in a safe and secure manner, so that the same do not become dangerous to the inmates of such building, or to the lives or property of any persons not having control over such building.

Every building, and every part or appendage of every building, must be kept and maintained in a safe and secure condition, so that the same do not become dangerous to the inmates of such building, or to the lives or property of any person not having control over such building."

This would lead to much annoying and unnecessary interference.

Once more for ourselves, for the profession, and for the trade, we protest against the proposed law court for regulating the construction and the use of buildings in the metropolis.

ON THE ANCIENT ROMAN ROADS AND MODERN BRITISH RAILWAYS.*

I SHALL hardly cite as works of human labour the wonder of the Phlegrean fields, in the Bay of Baia; for there the earth has been cut and slashed by the power of volcanic action, and the ground tunnelled in various directions without the intervention of the iron instrument. The poets in these regions made an easy descent to Avernus. Even the grotto of Posilipo is half formed by nature, and it must be confessed, wonderful as the passages are which are perforated in this alluring region, that the Box Tunnel would swallow them all, and a single company of railway directors digest them at a sitting. But we have not seen all the magnificence or the industry of the Romans. In the Itineraries, published by Wesseling, Gale, and Stukeley, for Britain, and M. Danville, for Gaul and Italy, we may acquire some idea of this branch of Roman economy. From the wall of Antoninus to Rome, and from thence to Jerusalem, that is, from the north-west to the south-east point of the empire, was measured a distance of 3,740 English miles: of this distance 85 miles only were sea passages: the rest was the road of polished silex, such as I have described. Posts were established along these mighty lines of high-road, so that a hundred miles a day might be with ease accomplished. In the time of Theodosius (as the historian Gibbon quotes from Libanius) a magistrate went post from Antioch to Constantinople: he began his journey at night; was in Cappadocia, 165 miles from Antioch, the ensuing evening, and arrived at Constantinople the sixth day about noon—the distance being 685 miles. This, however, is not equal to the speed with which the Tartar couriers go from Constantinople to Belgrade, often accomplishing that distance of 800 miles in five or six days. It is right to mention a fact related by Pliny, as affording an example of the quickest travelling in a carriage I am aware of in ancient times. Tiberius Nero, with three carriages, accomplished a journey of 200 miles in twenty-four hours, when he went to see his brother Drusus, who was sick in Germany.

We shall now turn to a single province of the Roman Empire, and see with wonder and admiration how its resources of wealth and genius have surpassed all the glory of the then known world. The distance between the two extremities of the dominions of the Antonines, exclusive of sea passages, was 3,655 miles. I am willing to suppose that this great line of road was laid down with polished stone, and might have cost as much per mile as the Via Appia. If we suppose our numerous turnpike-roads (some of which were made at a great cost) to be a set-off against the branch roads of the Roman Empire, which were often inferior in construction, then have we about 5,000 miles of railway in Great Britain alone, to compare with the great line which joined Jerusalem with the Firth of Forth. We have no means of estimating the cost of a mile of Roman road by any audited account of expenses, and it is not easy to make a comparison of labour. The following may help us to

* See p. 444, ante.

form some idea rather than any estimate. In the high level bridge of Newcastle, the quantity of masonry, in piers and in land arches, approaches, &c. is 681,609 cubic feet, and the cost of that masonry was 120,000*l*. I find this to be about 3*s*. 6*d*., let us say 3*s*. 6*d*., per cubic foot, and if estimated by the cost of labour, and the greater difficulty in the transport of material, I doubt whether the old Romans could do it for less. In those magnificent substructions of the Via Appia near Ariccia, we have found by measurement (taking the whole mass) about 234,000 cubic feet. Now the internal mass in all cases was, to use a Vitruvian term, *ad emptionem*, or as we might call it, rubble: making all due allowance for this, I should not have in the Valley of Ariccia, reckoning the stone-work 5 feet on each flank, more than 100,000 cubic feet, i.e. reckoning at 3*s*. 6*d*. per cubic foot, about 17,000*l*. worth of real masonry; and this in the tenth part of a mile. In the whole length of the 142 miles to Capua, we do not find more than two other extra works, viz. at Terracina and at Fondi; so that the cost of the Via Appia would not probably exceed 32,000*l*. (the average price of a mile of our railway) above the ordinary expenditure of making a common road. I confess this is a vague calculation, if even it can be called one; but if it should be raised to the utmost stretch of imagination, it would be insignificant as to pounds sterling, by the side of our leviathan railroads. The following I have on good authority, as the average cost of a mile of railway throughout Great Britain; the cost being of course very unequal in different places:—

Land	50,000
Earth Work	5,000
Tunnelling	3,000
Masonry	3,000 ordinary line
Viaduct and Large Bridges ..	3,000
Permanent Iron Road	5,000
Stations	4,000
Law Expenses, Engineering, Surveying, &c.	3,000
	£32,000

If this be multiplied by 5,000, which is the aggregate distance of British railways, we have the almost fabulous amount of 160 millions, a sum fully equal to ten times the revenue of all the Roman provinces in the time of Augustus. I have spoken of 234,000 cubic feet of masonry and rubble as contained in one of the great works of the Via Appia: the high level bridge at Newcastle alone, as we have seen, contains of masonry 681,609; of rubble, 116,396; of concrete, 46,224; total, 844,229; besides 5,050 tons of iron, of which the Romans knew nothing. The whole cost of this undertaking was 234,450*l*. The cubic feet of masonry in the Britannia-bridge, which we must consider as a viaduct, and the wonder of the present age, is 1,500,000; and the cost, approximately calculated by Mr. Edwin Clarke, was 601,865*l*. The cost of the Conway-bridge, with 38,500*l*. worth of masonry, was 145,190*l*. And, finally, the Tweed Viaduct is said to contain two million cubic feet of masonry. We have, then, in these four great works alone—the Britannia and Conway Bridges, the Newcastle and Berwick Viaducts or bridges—near four millions and a half of cubic feet of masonry; the whole costing not less than 1,280,000*l*. That is to say, if we could find in the Roman empire one hundred such works as the celebrated substruction of the Via Appia, they would hardly equal in masonry or stone-work these four productions of the “*ultimi Britanni*!” this is independent of such material as the ancient Romans could not procure, and for which we must not charge them—9,420 tons of iron were employed in the Britannia-bridge, and 5,050, as I have said, in the high level bridge of Newcastle. It is probable that whole armies worked at the Roman roads, bridges, and viaducts, and it would not be fair to compare their mechanical apparatus with the scientific inventions of modern times; but it may be doubted whether they ever presented such a union of physical power as was seen one day on the Menai Straits, when 650 men were employed in raising the second tube of the great bridge, of whom 386 were sailors; and although, as I have said, we have but little or no data to go upon for making a comparison

of expenditure and labour, yet we may gather enough to maintain the proposition, that all the great works of the Roman Empire connected with their lines of communication did not equal the works of a similar kind which now exist in the Island of Britannia. Another thing which hinders us from making comparisons as to cost: we have in every line of railway 6,000*l*. per mile for land; Appius Claudius cut through the country of the Volsci without asking the price, and dispensed with all juries for assessing damages. The “*mutationes*” (hovels where they changed horses) were all the stations that occurred on their line: the comforts of law expenses were not known; and I doubt much if the surveyors and engineers got 1,200*l*. a mile. I wish I could have found how many *sestertia* Trajan paid for his restoration of the Via Appia, but all the data I have to guide me in the calculation of that expenditure are, that Trajan paved the road out of his own money, *de sua pecuniâ stravit*: this, however, is more than can be said for many of the projectors of our modern railways, *de aliend pecuniâ ferro straverunt*, i.e. they laid down the iron with other people's money,* might be a more appropriate inscription. When Augustus remade the Flaminian way to Rimini, he was the sole shareholder, and gave no scrip. Julius Cæsar and Marc Antony raised great works, but they knew nothing about raising dividends; but that which would have astounded them more than irruption of barbarians, would have been a bill of 1,800*l*. for every mile of road for parliamentary and law expenses: if this be a true average, and I have authority for stating that it is, then we may deduct from the cost of 3,740 miles of Roman road, which led from Scotland to Jerusalem, the sum of 6,732,000*l*.; and if these worthies of old time had been called upon to make 5,000 miles of road in the province of Britain, they might have economised thirty millions of our money by paying nothing for land. In estimating the value of a Roman road, therefore, we have to deduct 7,800*l*. a mile for land and law, and 4,000*l*. for stations, and 5,000*l*. for iron, before we come to the materials they were enabled to use: in other words, the materials of the Roman road and labour would not be more than half the cost of our railways, from the mere fact of certain expenses being absent which they could not understand; but, although inferior to the Britons of the nineteenth century in the art of spending money, if judged by the present state of the science, they could not be despicable engineers: their levels were chosen on different principles, but their lines of road passed through the same countries, and generally in the same direction as our railways. There is a diagram in an article in the *Quarterly Review*, written seven years ago, which exhibits a general view of the direction of the principal Roman roads in England: comparing one or two of our principal lines, we shall find that the Great Western, *e. g.*, supplies the place, with a little deviation near Reading, of the Roman iter from London to Bath and Bristol: the Liverpool and Manchester, and on to Leeds and York, replace the Northern Watling-street: the Eastern Counties follows a Roman way, and so of the rest.

In boasting of the gigantic steps which the art of road-making has taken in our time, we cannot afford to depreciate either the genius, or the magnificence of the ancient Romans in this matter. If we have our railway under the cliffs of Dover, Trajan had his road under 2,000 feet of perpendicular cliff along the Ister: if we have our 5,000 miles of rails, the Romans had their 4,000 miles of chosen road, reaching from one extremity of the empire to the other: if we have our leviathan bridges and viaducts, the Romans had theirs over greater rivers and wider vales than we have to deal with; and finally, if we have our glass bazaar, one-third of a mile long in the park, they had a golden palace, which reached a whole mile on the Esqueline hill. If we rise superior and look down upon the works of the Romans, it is not so much that we have gained

* Or, “they laid down the iron with other people's tin.”
—PRINT. DEV.

in unskilful labour, as in science. Without the iron and the science, their works would be as great as ours: it is in mental rather than in any physical energies, that we have the pre-eminence: it is what our last great poet has called the “*divine particle*,” which has been dilated by Him who gave it to man, that has enabled us to cope with the very elements, and wing our way against wind and tide over oceans and seas unknown to the ancients: the spirit of a man which is in him is capable of knowing the things of a man, and this capability it is the business of all associated bodies to foster and draw out. It is not, perhaps, yet known of what the human thought is still capable, but the blessing of every discovery in art or science which procures fresh enjoyment for man is, that it brings brute force to a discount, and teaches to mankind the lesson of fraternity and peace; and it is not, perhaps, too much to say, that this question of roads, by which all nations of the earth are brought within the possibility of meeting again on some plain of Shinar, is calculated more than any other human instrument to renew the face of the earth. I fear, gentlemen, that this dissertation is wide of the mark for a paper that is read in an Institute of Architects, and did I not know that this Institute shelters all collateral branches of the art, and encourages amateurs to make experiments, I should be apprehensive that, whatever I may have said upon roads new and roads old, I have not hit upon the road to preferment in your estimation. I can only say, by way of connecting my subject with your impressive and beautiful art, that whenever you are called upon to erect an edifice, say a church, in architectural beauty, forget not to consider well the approaches: then you will not regret to have known of my *rudus*, and *fistulationes*, and *opus stratum*, especially if you work in clayey soils; all which you will find necessary in constructing a road which shall lead up and not down to the temple you have erected. Finally, I never feel out of my element when I am contributing to promote those studies which refine the mind, and which, by increasing the comforts and rational enjoyments of our fellow-creatures, cannot fail of directing every well-regulated mind to the great Author and Giver of all good things, and of glorifying Him who hath given such power unto man.

RICHARD BURGESS, B.D.

THE NEW HOUSE OF COMMONS.

THE House of Commons has been remodelled, and is now completed, ready for occupation. The acoustic effect of the changes has been but partially tried as yet. We sincerely hope that a fair chance will be given to it, and that it will prove satisfactory. The ceiling has been brought down 5 or 6 feet in the centre, and instead of being flat over the whole expanse, as before, is sloped down on all sides. The upper half of the windows, which formerly had a central transom, is thereby put out of sight, and as this lessened the light considerably, the cills have been cut down about a foot.

The side galleries have been made wider, and are covered beneath, to throw out the sound (we should not advise speakers to stand under them, nevertheless). A very considerable increase of accommodation has been gained in the division lobbies by the addition of one large and two small oriels. The gallery for the public has been enlarged, and accommodation is now afforded for about 450 members. Retiring rooms, too, have been provided above the division rooms. The reporters' gallery, at the Speaker's end, is so arranged, temporarily, that each reporter has a separate stall, with a door at his back; so that he is able to come and go rapidly, and without disturbing any other. They have a private staircase and two retiring rooms, with desks, where they may arrange their notes or refer to books and papers. The ceiling of the House is wholly of oak; and the panels have slight coloured decorations. The small shields in the wainscoting and in the front of the gallery are left plain, with the exception of three or four, which are emblazoned with arms of towns, as specimens of what Mr.

Barry desired. We cannot imagine that the House will refuse to let the intention be carried out: these shields will give, at small expense, two lines of colour all round the House, "repeats" of the windows (so to speak), and infuse life into the whole.

The windows are filled with the arms of cities and boroughs in stained glass, by Hardman, good in colour and effect, but unsatisfactory in design and drawing.

The ventilation and warming of the House of Commons is, as our readers know, under the direction of Dr. Reid. Fresh air will be brought in through innumerable holes in the metal floor, and is to be taken out through spaces left round every panel in the ceiling, whence it is gathered into a flue. The same arrangement is made in the lobbies. The Speaker has a private hot-water plate in the House for his feet, and so have the Ministers and the leaders of the Opposition.

Minton's men are busily at work laying the tile pavements throughout the buildings.

Much work has been done since we were last in the new Houses, and of which the public as yet know nothing. The members' private staircase shows a very elegant piece of groining. The restoration of the old cloisters (the best specimen of their period remaining) is rapidly advancing, and above them a series of upper cloisters have been formed, new, similarly elaborate in character. This court, when finished, will present the richest exterior on the ground. The approach to the Houses from the end of Westminster Hall, is completed, and forms, as we have always stated it would, the grandest feature of the design: the height of the porch is about 80 feet to the vaulting, and it opens into St. Stephen's Hall, which will present a rich array of frescoes,—one day. The roof of Westminster Hall has been strengthened.

ON THE INSTITUTION OF FREE-MASONRY.

AN impression is gaining ground that the modern Freemasons might spend their time and their money more profitably than they do now: and we have been often asked, at intervals, to furnish some account of the early history of the institution. As a contribution towards this, we are led to print, with all its imperfections, the following paper, read several years ago by the conductor of this journal at the Institute of Architects.

"Hail to the craft! at whose serene command,
The gentle arts in glad obedience stand:
Hail sacred masonry! of source divine,
Unerring sov'reign of th' unerring line;
Who rears vast structures from the womb of Earth,
And gives imperial cities glorious birth!"

Antem of the Craft.

There are few persons who have attentively examined the cathedral churches of Germany, France, and England, those gorgeous monuments of the daring ingenuity and persevering industry of man, but have inquired of themselves, in what state of civilisation was the great mass of the people, how far advanced were the sister sciences and arts, when these stupendous buildings, displaying the most delicate workmanship, the richest fancy, and profound mathematical skill, were raised? The feathery fairy-like spires, towering into heaven, and seeming, so beautifully figurative, to connect therewith the dull earth; the slender and graceful columns holding up, as it were in sport, the tracered roof; so easy, yet so confident; the problem which requires the maximum of strength with the minimum of materials, everywhere so admirably solved; all bespeak an advancement in civilisation equal, at the least, to that of which we boast, even at this period. How great, then, must be the astonishment of every inquirer when he finds that, at this very time, Ignorance, with Superstition, her eldest-born, usurped the land; that few could even read; to be able to write entitled one to the appellation of scholar; and the knowledge of a few elementary principles in physics often proved but a passport to the stake.*

* Frederick Barbarossa could not read, nor could John, King of Bohemia (middle of the fourteenth century), nor Philip the Hardy, King of France.—*Hollan.*

By what men then, by what set of men, differing so from their fellows, were these proud and indubitable evidences of superiority imagined and constructed? And by what strange chain of circumstances was the knowledge here displayed gained by, and confined to, them alone? A little further inquiry leads to the belief that these buildings were mostly executed by a heterogeneous band of men, Greeks, Italians, French, Flemings, and Germans, who were religiously bound to certain observances, kept up a peculiar system of discipline, and, possessing (as is asserted) various protecting bulls from the Church of Rome, maintained a perfect independence of the states in which they sojourned. This was the fraternity of Free and Master Masons: To their talents and industry, it need, then, hardly be said, architecture owes much; but, accustomed to regard them only in the light of a body of men associated for convivial and charitable purposes, we have long since ceased to connect them in any way with the original results of their combination; and it may not be uninteresting to give a brief view of some points connected with their history and progress.

Were I to adopt the opinion set forth, and, with probability, sincerely entertained by some of the chroniclers of the craft, this account should commence with Ham, the second son of Noah; and should attempt to show that their first undertaking was the building of the Tower of Babel. The Israelites are by them proved to be a band of Freemasons, having Moses for grand master; and the pyramids, with the other mighty works remaining in Egypt, are triumphantly pointed at as the results of their labours. Others, however, more modest, commence with the building of the Temple by Solomon, about 1012 years before Christ; and contend that Hiram, the widow's son, of the tribe of Naphthali, was a master of the craft, sent by Hiram, or Huram, king of Tyre, with others of his fellows, to assist Solomon in his great undertaking. From what evidence such a conclusion was satisfactorily arrived at does not appear; but, finding this opinion is constantly and confidently repeated by the older writers upon the subject, we are compelled to suppose, either that they have all blindly followed a hastily made assertion, or that the fraternity themselves are in the possession of traditions or records inaccessible to the uninitiated: I must, however, believe the former.

That in Egypt there was an associated body of men, to whom all scientific knowledge was confined, who preserved strict secrecy upon all matters connected with their ordinances, and used symbols familiar only to themselves, appears nearly as certain as that, among the Greeks, the initiated in the Eleusinian mysteries, so far as regarded their government and the lessons inculcated, also closely resembled the freemasons; but this is all that we know. At these last-mentioned and celebrated festivals, viz. those of Eleusis, the neophyte about to be admitted underwent, as among the masons, an ordeal of no common severity: the principles of probity, charity, and humanity were impressed upon his mind, and the secrets of the mysteries were sworn by him to be held sacred. The tenets of the initiate we find, too, were not confined to Eleusis; for, about 1300 years before our era, says one (Laurie's *Hist. of Freemasonry*), they reached Athens, and, ultimately, France, and probably, Britain; but in the records of this association we can discover no evidence of that which appears to have been the one great object of the fraternity of masons, namely, the study and practice of geometry and architecture; terms which, as they say, were with them synonymous, and comprehended the basis of all their proceedings. With the initiated of Eleusis it is not possible, therefore, to connect freemasons. Coming on to rather later times, we see that the disciples of the Dionysian mysteries, instituted in honour of Bacchus, and the due celebration of whose festival we owe the invention of theatres, were men intimately connected with science: they were termed the Dionysiac artificers; and, as a body, possessed the exclusive privilege of erecting temples and theatres in Asia Minor. These artificers were

incorporated at Teos by the kings of Pergamus, where they built a magnificent temple to Bacchus; sufficient of which even yet remains to attest its grandeur, and to justify the terms in which Vitruvius speaks of its splendour. (See the Introduction to 'Wilkins' *Vitruvius*.) They used symbols known only to themselves; at certain periods met for convivial purposes; and, according to some accounts, were actually divided into lodges, governed by chief officers; thus agreeing, in many respects, with the fraternity under notice; so much so, in fact, that even Robison, the most vigorous modern enemy that freemasonry has had, and who would not, therefore, yield to it a greater degree of antiquity than he felt himself compelled to concede, admits that in this association it had, at all events, its prototype. (See Chandler's *Travels in Asia Minor*, and Robison's *Proofs*, &c.)

Whether members of the same body or not, it is certain that, in later times, at Rome, the artificers were bound together in a somewhat similar manner; having colleges or lodges, where they held their meetings and studied the principles and practice of architecture: it does not, however, appear quite clear to me whether these colleges were part and parcel of a general body acknowledging one supreme head, or whether they were not independent associations of men organised for the study of their art; sometimes by the authority of the reigning emperor, and sometimes by private individuals. A passage from Pliny (as quoted by Dallaway), wherein he requests Trajan to establish a college of artificers (*collegium fabrorum*), in order to effect the rebuilding of Nicomedia, just then destroyed by fire, and in which passage no reference is made to any association actually existing of which this was to form a part, seems to express that such a proceeding was not uncommon, and to justify in some degree the doubt.

There is a passage in Gibbon which appears to me to bear a little upon the subject of associated artificers, and, perhaps, deserves mention. He says, when Probus commanded in Egypt, A.D. 280, he executed many considerable works for the splendour and benefit of that rich country. The navigation of the Nile, so important to Rome itself, was improved, and temples, bridges, porticoes, and palaces were constructed by the hands of the soldiers, who acted by turns as architects, engineers, and husbandmen." (*Decline and Fall*, &c., vol. ii. p. 89.)

Rome fell! Torn by internal faction, and enervated alike morally and physically by her very triumphs, the mother of many nations slowly succumbed to the innumerable barbarian hordes which the North, at that time, poured forth upon the world. All art was long stagnated. When Constantine, at the commencement of the fourth century, removed the seat of empire to Byzantium, or Constantinople as it was afterwards termed (the last blow which severed prosperity and Rome), he employed the whole energy of the nation to beautify and adorn his new city: 2,500,000. were set apart by him for the construction of the walls, porticoes, and aqueducts; and, says Gibbon, "a multitude of labourers and artificers urged the conclusion of the work with incessant toil. The impatience of Constantine, however," he continues, "soon discovered that, in the decline of the arts, the skill as well as numbers of his architects bore a very unequal proportion to the greatness of his designs; and the authorities of the most distant provinces were therefore directed to institute schools, to appoint professors, and, by the hopes of rewards and privileges, to engage in the study and practice of architecture a sufficient number of ingenious youths, who had received a liberal education." This law is dated A.D. 334, and was addressed to the prefect of all Italy, whose jurisdiction extended even to Africa; so that its results, we may suppose, must have been great. Here, then, it may be said, we obtain a starting point, presenting fewer difficulties than any we have yet seen; and, without going into the question as to whether the professors appointed to superintend and organise these colleges were not actually remnants of the more ancient

associations previously mentioned, and who initiated the students into their own mysteries, thus accounting for the coincidences already pointed out, many are contented to believe that in the members of these we have the ancestors of that body of men more immediately under consideration, the Free-Masons of the middle ages. In Constantinople, as we know, a vast change was effected in architecture. Unfettered by the restraints which, at Rome, paganism and want of space had put upon them, the Christian architects determined upon an entire change of forms in their religious edifices, and the cross of equal sides, surmounted at the junction by a majestic cupola borne on arches, became the most striking characteristic of their style. In Constantinople, the sciences flourished for some time, in a greater degree than elsewhere: her men of learning were sought by European as well as Asiatic nations, and her architecture was copied on all sides. Many of its characteristic features came even beyond the Alps, and were taken up by the Lombards; so much so, indeed, that Hope declares, that when, upon entering the ancient city of Cologne, he saw the east end of the Apostle's Church, he almost thought himself again at Constantinople. (*Hist. of Architecture*.) Its minor details may be found in nearly all the various states of Italy.

Let us now turn for a brief space to England, where, according to the chroniclers, free-masons were early to be found. One writer has ventured the opinion that the Druids had a somewhat similar association, using like symbols, and practising architecture, into which they had been initiated by disciples of Pythagoras; and Preston, in his *Illustrations of Masonry* (though it appears, from his enthusiasm on the subject, he might easily have been deceived himself, even if not desirous to deceive others), mentions an old MS., which said that St. Alban, who was beheaded A.D. 303, 'loved masons well, and cherished them much'; and that he used his influence to obtain a charter from the king enabling them to hold an assembly. Of these, and many other assertions, we have no proof; the authentic records, in most cases, having been destroyed. Benedict Biscop, founder of the Abbey of Weremouth, several times journeyed to Rome at the end of the seventh century to persuade artificers to come to England; but I find nothing to identify these workmen with the fraternity under consideration.

Alfred, so truly termed the Great, among other admirable endeavours to ameliorate the condition of his people (endeavours which, had the people been sufficiently advanced to co-operate with him, would have placed England a hundred years forward on her progress towards civilisation), strove to improve the domestic architecture of the country. At that time use was made of hardly anything for building but timber; a house of stone being regarded as a singularity. Alfred, however, invited the most noted architects from foreign countries to repair to Britain, with workmen eminent in the arts, and raised his palaces of stone and brick; an example which, by degrees, was followed by the nobility. (*Rapin's Hist. of England*.) At the commencement of this same century, Charlemagne, in like manner, on the Continent, had summoned men of all nations to build his celebrated church at Aix la Chapelle; after which events the existence of the fraternity of free-masons, under that title, is no longer doubtful; and the results of that existence are seen in a multiplicity of splendid structures, erected with amazing rapidity, and displaying the origin, progress, and perfection of an entirely new and exquisite style of architecture, viz., the Pointed. It is, most probably, from the strict secrecy under which all their proceedings were conducted, that so much doubt exists respecting the first introduction of this style. It appears clear, however, that, although the Pointed style appeared nearly simultaneously in Germany, France, and England, it is in the first of these three, viz., in Germany, that we must look for the earliest examples. This, however, is not a subject now to be entered upon.

In the states of Lombardy, as we know,

commerce, the offspring of industry, first gradually threw off the weight under which prosperity had been pressed to the earth by anarchy and barbarism since the overthrow of the Roman empire; and architecture and masonry, with the other sciences and arts, were again studied. This being the case, and the Lombardians, having before them the experience, and among them some of the descendants, of the modern Greek or Constantinopolitan school, which, as we have seen, had attained a certain degree of perfection under the fostering hand of Constantine and his successors, they soon became, as a natural consequence, not only the merchants of the world, but its builders; being eagerly sought for, when their own market was overstocked and they appeared disposed to travel in search of employment, by all the potentates of adjoining nations, who were at that time universally employed in raising religious edifices.

Wherever and whenever a missionary was despatched from the Pope to preach the Christian doctrine (and these were every day departing), to that place speedily resorted a band of these wandering artizans, under the special direction of the most expert craftsmen among them, whom they denominated the *Master*, to raise a fitting temple to the Deity. So numerous, however, were the demands for their services, that their numbers were found to be inadequate to the purposes of religion; and the Church of Rome, which must fully have felt how important a part of its machinery they at that time were, saw that some measures were necessary in order to swell their ranks, and protect them in the undisturbed exercise of their duties. Bulls, it is said, were accordingly issued endowing them with various rights and immunities: exemption was granted them from the laws of all local authorities; and those who opposed or interfered with their purpose were loudly threatened with excommunication. This proceeding speedily had the desired effect: Greek, Flemish, Italian, and German artists joined the main body, and were initiated into their mysteries; and, some have supposed, from this exemption from all local enactments, and the right to roam from place to place as they might feel inclined, or their interest lead them, they entitled themselves Freemasons.

That the Pope did really confer upon them these privileges has been questioned, and with some reason; for it appears that, upon searching the Vatican for the purpose of discovering the bulls stated to have been published, none were to be found: the many and clearly apparent reasons, however, which should have induced the Pope so to do; the constant reiteration of the circumstance by the chroniclers of the craft; and the fact that they did so quietly and independently pursue their labours in various countries, and in no very settled times, strongly induce me to put confidence in the assertion. Again, although not wholly in point, we find it recorded in Dodsworth's *Account of Salisbury*, as quoted by Britton, that, even in later times (1244), the Archbishop of Canterbury granted an indulgence of forty days to such as aided the new and wonderful structure of the Church of Sarum; which, the proclamation went on to say, could not be completed with the same grandeur without the assistance of the faithful.

This quotation may serve in some degree to explain to us the means which were used, builders being now provided, to raise sufficient sums for the construction of the magnificent edifices left for our admiration.

The Church of Rome has ever perceived the more speedy influence that is to be gained over men by appealing to their senses than to their reason; and the continual use made in her rites of striking and mystic ceremonies clearly shows how fully and systematically she has acted upon this knowledge. A sublime and lofty structure, then, dimly though richly lighted through glass of many colours, by which was cast an artificial glow on the magnificent paintings, sculptured monuments, and gilded decorations with which its interior teemed, was found to be no trifling adjunct in the process; and the whole power of the

Church was employed, as I have already said, in erecting such edifices, and inciting a spirit to 'go and do likewise' throughout the world. Bulls were published dispensing with a portion of all penances for sin to those who contributed to raise a church; and eloquent monks were despatched all over the world to inflame the ardour of the pious, and persuade or frighten, as the case might be, those who yet remained undecided.

Great indeed were the results: the land was as one workshop, and a man feared he had lived in vain had he not contributed to erect or adorn a religious house. (*William of Malmesbury*.) So profusely generous, indeed, were the grants made alike by prince, peer, and peasant, that it has been shown, to speak of England alone, that, at the death of Edward the Confessor, more than one-third of all the land was in possession of the clergy, exempt from all taxes, and, for the most part, even from military service. (*Henry's Hist. of Great Britain*.)

The freemasons, as we have seen, were the instruments employed to effect these purposes of the Church; and nobly they fulfilled their duty. Passing their earlier works in Lombardy and Germany, in which are to be discovered the germ of the Pointed style and its first development, I would direct attention to the cathedrals of Strasburg, Friburg, Cologne, Antwerp, St. Ouen in Normandy, and that *orbis miraculum*, as Leland calls it, Henry the Seventh's Chapel in England. To mention all the works of the freemasons were to speak of nearly all the edifices constructed during several centuries of that period, and would fill a volume; but the above may serve for instances of their wondrous genius as designers, and of their mathematical skill as constructors; astonishing us alike by the boldness of the outline and the grandeur of the masses, as by the lightness of the parts and the elegance of the execution.

In England, although I do not find that any additional privileges were extended to them by special enactment, few buildings were erected during the twelfth and the three following centuries without the assistance of members of the craft: in fact, the requisite skill appears to the last to have been confined to them; and some idea may be formed of their numbers, when we see that, during the thirteenth century, no less than ten cathedrals were in progress simultaneously. (*Dibdin's Tour*.)

Having thus briefly spoken of the origin and object of the fraternity of freemasons; traced, in some degree, their progress; and mentioned the results of their labours, I shall next attempt to bring together some few points of information regarding their internal government. As a consequence naturally resulting from the mystery with which they enshrouded all their proceedings, the authorities on this head are very few: collecting and collating, however, all that can be found, it would appear that a regular system of science, handed down to them from early times, and added to by almost each possessor, was taught in their lodges; and that of this system geometry (considered by them the first and noblest of the sciences) was the basis. The strictest morality was inculcated at their meetings; and the ancient charges by which they were governed display an uprightness of conduct much to be admired. 'Let no master,' says one, 'take on him no Lord's worke, nor any other man's, unless he know himself well able to perform that worke, so that the craft have no slander;' a caution seen by no means to be disregarded, when we find in Dugdale and in Rymer the freemason stipulating in his contracts, 'to yield up hys body to prison at my Lord's wyl' in case of non-performance. Another enjoins, not to supersede a brother mason, or to work for less than the established rate; and a third impresses the necessity of humility of behaviour and general kindness to all men.

When a band departed on an undertaking, a charge provided that the most expert craftsman should be appointed *master of the works*; under whom, when they reached their destination, every tenth man was appointed warden over his nine fellows; a camp near the spot was erected, and a lodge built in which to hold

their meetings and regulate their prices: here, also, the apprentices resorted at certain periods to hear discourses upon the sciences and lectures on morality; for at this period, I should have said, it is supposed that none could become a free and accepted mason without serving and studying under a master, as an apprentice, for seven years: during which time he was gradually initiated into the mysteries, and was ultimately accepted as a brother.

With respect to the mechanical aids employed by the fraternity, it has been supposed, from the fact that nearly all their buildings are constructed of small stones, that, although they possessed and understood the windlass and other contrivances, they never used them, each stone being taken up the ladder by a man. This, however, has been disproved. Some little time since I met with an old picture, I think of the fourteenth century, in the University at Brussels, in which is represented a body of freemasons who are employed in erecting a church, and who are attacked by Lucifer and his fiends, with a view to prevent the consummation of their purpose; and here the men are seen employed in raising the stones to the top of the building by means of pulleys and windlasses, while others are moving the larger blocks with levers and rollers. The instruments used by the men who are mixing the mortar and raising it into a heap are precisely similar to those at present employed, as are the tools seen in the hands of the masons who are carving the ornamental portions.

From all that can be gathered, the freemasons appear to have worked with the most persevering industry, applying their whole energy and skill to the task in hand; and Wren, who, in after-times, was himself a member of the craft, says, 'Those who have seen the accounts in records of the charge of some of our old cathedrals, near 400 years old, cannot but have a great esteem for their economy, and admire how soon they erected such lofty structures.' (*Parentalia*, p. 306.) From various circumstances, many have supposed that the use of detailed drawings, for the guidance of the workman in the construction of a building, is of comparatively recent origin; or, at all events, that it was not common among the freemasons of the middle ages: the general design was described by him from whom the idea emanated; and the filling up, the nature of the ornaments, &c., were left, they have supposed, to the skill and caprice of the various artificers employed; whence, say they, the infinite variety to be found in their buildings. This, however, was not always the case, as there are many documents remaining to attest. Even so early as the building of the Temple, we find David giving to Solomon, his son, a pattern for the porch, and others for the treasuries, the upper chambers, and inner parlours. (1 *Chronicles*, c. 28.) Carter, in his *Architecture of England*, says there is a basso relievo of high antiquity in the Cathedral of Worcester, in which is represented an architect presenting his plan, marked on a tablet, to the superior of a monastery; and we find in Henry the Seventh's will, as quoted by Britton (*Architectural Antiquities*, vol. v.), that the Prior of St. Bartholomew is expressly called 'master of the works,' with reference to his chapel; and mention is made of the designs for images in picture delivered. To crown all, however, there is to be seen, among the archives at Darmstadt, the original drawing for that splendid promise, Cologne Cathedral, in which every ornament, however minute, is scrupulously delineated to a scale. This drawing, which is 12 feet or 14 feet long, was discovered in a somewhat singular manner by the learned author of the *Memorials of German Gothic Architecture*, Hof-Bau-Director Moller; by whom, having first made a copy, it was deposited in the library of his patron the Duke of Darmstadt. That many similar documents have not been found is not because they have never existed, but that, from various causes, they have been since destroyed. The thick veil under which the freemasons have ever desired to conceal their proceedings has naturally led them, whenever attacks made by reigning authorities on the power of the craft

induced them to fear an attempt to wrench from them their secrets, to destroy all documents in any way connected with their art; among which, of course, would be included the various details and calculations with regard to construction; the chief results of a knowledge so superior to that possessed by the general body, and as such, therefore, zealously guarded by them. These occasions, too, have not been seldom; for, although, for some time, when their skill was most wanted, they were protected by the pope, met with encouragement on all sides, and were able to sing—

'High honour to masons the craft daily brings;
We're brothers of princes, and fellows of kings,'

the pressing need for their services gradually was lessened; the pope withdrew his countenance; and, as an associated body of men bound together by certain and secret ties, and acting, therefore, in concert, they were soon looked upon with suspicious eyes by the various despotic governors of the time; and were often persecuted with extreme rigour, under the pretence that their secret meetings were used to cover treachery. Even in the time of the Romans, Trajan, in answer to Pliny's epistle, already quoted, in which he advises him to establish a college of artificers, consisting only of 150 men, and assures him he will take care none but artificers are admitted, declines doing so, on the ground that the secrecy which attends their proceedings, and the consequent facility for plotting, would always render them dangerous.

In England the freemasons have been seldom interfered with by the authorities, except on account of their disregard for those ordinances which regulated the wages of labourers; holding themselves, as we have seen, perfectly independent on that head, on the presumed authority of the pope's bull; but we find, in consequence of this, that in the reign of Henry VI., although the king, four years afterwards, became a mason himself, a statute was passed, enacting, that persons calling or holding chapters should be declared felons; and all other masons assembling '*soient punis par emprisonnement de le corps, et soient fyn et ranceon à la volonté du roi.*' (Pownall's *Essay Archaeologia*, vol. ix.) To go into this portion of their history, however (which does not immediately concern our purpose), would too widely extend the limits of this paper.

Masonry, in the sixteenth century, had passed its meridian, but continued to remain, the shadow of itself, until the end of the seventeenth; when, a proposition having passed that its privileges should no longer be confined to operative masons, but extend to men of all professions, it became immediately changed in its essential points, and is now hardly remembered other than as a convivial association. Here, then, I must conclude this present notice. There are, as it appears to me, few points in the history of the middle ages more pleasing to look back upon than the existence of the associated masons: they are the bright spot in the general darkness of that period; the patch of verdure where all around is barren: we see the demand for a particular skill instantly creating a plentiful supply; and watch the fraternity toiling on resolutely and successfully in the perfecting of that skill, just so long as the demand continued: it is, in fact, a subject so rife with matter for instructive contemplation, so full of important lessons, that no one can sit down to its investigation without advantage. In studying the works of the freemasons, they become additionally interesting if we have a knowledge of the men; and the men, in like manner, are invested with greater importance when we reflect upon their wonderful productions.

I need give no other reason for calling attention to the Free-Masons.

GEORGE GODWIN.

THE IRON TRADE.—The result of the quarterly meetings is, as usual, *nil*. The price of ironstone is said to have been of late reduced, and it is feared the working of some mines must shortly be discontinued.

THE SEVEN PERIODS OF ENGLISH CHURCH ARCHITECTURE.*

THE omissions I called upon "F. S. A.," in my first letter, to supply were,—1. The list of "one half of our finest and richest Norman buildings," which he asserted I had excluded from the Norman period; and, 2. The authority on which he asserted Ilfley Church to have been built "about 1160."

As regards the first, we look in vain in his reply for any attempt on his part to substantiate his assertion, by the production of the required examples. His pretext before was that "it would be tedious to enumerate" them: his present evasive plea is, that "it is useless to cite particular examples." It is at once manifest that to conduct a discussion with one who thus fences and trifles with a plain question, and exhibits so little concern to verify his own assertions, is impossible. The lesson deducible from the history of Peterborough Cathedral he is evidently unable to appreciate: of the west doorways of Lincoln Cathedral he is judiciously silent; but to the example of Ilfley Church he recurs with apparent satisfaction.

He tells us that his authority for asserting that it was built "about 1160" is Dugdale's "Warwickshire;" and the mode of reasoning by which he arrives at his conclusion is of so original a character, that it must be given in his own words: and in order that your readers may see how learned antiquaries sometimes differ from one another—as, indeed, for that matter, they sometimes differ from themselves—I will give in a parallel column another account of the supposed date of Ilfley Church, written by one who, as the compiler of the "Glossary of Architecture," usually signs himself "J. H. P." It was published in the "Companion to the Glossary," in 1941. I give it as it stands in the original text; taking the liberty, however, for the purpose of rendering it more apposite, of placing the last sentence first:—

ILFLEY CHURCH, OXFORDSHIRE.

F. S. A.

J. H. P.

"This Church was given by Juliana de S. Remigio to the priory of Kenilworth, by Juliana de S. Remigio, in the time of Henry II." The time when a parish church was given to a monastery is usually the only record we have of the date of its erection, and we always find it (!) to have been built or rebuilt either shortly before or shortly after that date. This Church is, therefore, clearly of the time of Henry II.—*The Builder*, vol. ix. p. 431.

I need scarcely say that the arguments, in both cases, upon which such different conclusions are come to, are equally worthless; and when I add, that in plate 35, vol. ii. of the "Glossary," the date 1150 is attached to a fragment from Ilfley Church; and in plate 72, the date 1140 to another; your readers will have an idea of the loose manner, and the slight grounds upon which antiquaries of this stamp are in the habit of attaching dates to their illustrations.

Until, therefore, "F. S. A." furnishes us with better evidence than he has yet given, of his assertion that Ilfley Church was built "about 1160," I shall continue to regard it as an example of late Norman work, erected anterior to A.D. 1145.

"F. S. A." partly anticipates my question relative to the buildings of the Transitional Period, given at page 20 of the "Seven Periods," by selecting five out of the twenty-four I have referred to in that list as possessing no marks of transition at all. They are the five earliest, namely, Malmesbury, St. Sepulchre's, Northampton, Fountains, Kirkstall, and Buildwas. Now, undoubtedly, for the reasons already given and so ably enlarged upon by Mr. Cox in his letter of last week, these are not the buildings in which that "increasing

* See p. 445, ante.

lightness of proportion" which is one characteristic of the Period, is likely to be so strongly marked as in buildings of later date and more advanced character; but that even these earlier buildings are devoid of such indications, is not correct: and to shut out the pointed arch, as one of the most influential and important of these features, because it is the earliest, is preposterous. It is my intention to enlarge upon this point hereafter: I will, therefore, for the present, content myself with again contrasting the opinions of "F. S. A." and "J. H. P." on the subject.

I take the passages from *THE BUILDER* of last week, and the "Companion to the Glossary."

MALMSBURY ABBEY CHURCH.

F. S. A.

J. H. P.

"Malmsbury Abbey does not show any lightness of proportion: the only mark of Transition is the pointed arch; and this alone is no mark at all: it is found in many buildings even of the eleventh century."—*The Builder*, vol. ix. p. 431.

"Mr. Britton is disposed to assign this building to the time of Henry I., but in the absence of any direct testimony, the pointed arches must be considered as conclusive against such a supposition. The pillars and arches are massive, but the character of the mouldings and ornaments is late Norman. Style, Transition."—*Companion to the Glossary*, p. 28.

That Simon, Earl of Southampton, built a church in that town, in imitation of the Holy Sepulchre at Jerusalem, before A.D. 1127, even if the documentary evidence, which "F. S. A." does not give, were unexceptionable, is no proof that the pointed arches in St. Sepulchre's, Northampton, are of that date; moreover, the corresponding arches in the church at Jerusalem, Earl Simon's "model," as "F. S. A." calls it, were not pointed, as he infers, but circular, and remain so to the present day.*

As regards Fountains Abbey Church, I find it called "Transition from Norman," by "J. H. P." in pl. 16 of the "Glossary," containing a fragment of the nave copied from a plate in the "Architectural Parallels;" and the other two buildings, Kirkstall and Buildwas, are decidedly more advanced than either Malmsbury or Fountains. I still require the answer of "F. S. A." in regard to the remaining nineteen examples.

"F. S. A." concludes his letter by stating that the question in dispute between himself and Mr. Sharpe is, "whether such buildings as Ilfley Church belong to the same style or period as Wells Cathedral and Ripon Minster or not." Now, this is not the question between us: "F. S. A." knows that it is not; he knows that we both agree in calling Ilfley Church Norman, and of a "style or period" distinct from that of the latter buildings; the real difference between us is, that whilst "F. S. A." asserts it to have been built "about 1160," and in the reign of Henry II., I, or rather "J. H. P." asserts it was built from ten to twenty years earlier, and in the reign of Stephen. It remains for "F. S. A." to repudiate the authority of "J. H. P." and to declare, which I hardly think he will, that it is not equal to his own.

To the compiler of the "Glossary" I will here venture to make a suggestion. Let him reconsider and re-arrange his book, and, as I have already done, let him take off the back, detach the plates, cut off the fictitious dates, and having re-assorted them under the heads of the Seven Periods, republish the work as a new edition. Much that is at present conflicting and confused in it will then disappear, and the whole arrangement become, what he half admits that it would appear to be, "easy," "obvious," "natural." That he will do this sooner or later, and that he will do it in the manner in which he has adopted the opinions and copied the designs of far abler men than myself, that is to say, without notice or acknowledgment, I have not the smallest doubt.

EDMUND SHARPE.

* Vide Willis's Church of the Holy Sepulchre.

MR. SHARPE has obviously this great advantage over any opponents. He has been for several years collecting examples to suit his theories, and ignoring all those that did not suit his purpose; and although the examples which tell the opposite way may be equally numerous, it would require as much time and labour to collect them, and no one is likely to be prepared off-hand to cite these instances. I never pledged myself to do any thing of the kind. I merely warned your readers against taking Mr. Sharpe's fanciful "Periods" for historical facts, as they would find themselves misled by them. Mr. Sharpe challenges my authority for the date of the Five Sisters at York. It is T. Stubbs, in his "Actus Pontificum Eboracensium," apud Twissen, decem scriptores æt. 1272, where he says: "Hujus pater Johannes genere Romanus Eboracensis ecclesie thesaurarius et canonicus partem crucis ecclesie beati Petri Eboraci boralem, quæ se extendit versus palatium archiepiscopi, et egregium campanile in medio crucis ejusdem ecclesie erectum sumptibus suis propriis construxit." This John le Romain, who was afterwards archbishop, and died in 1295, was treasurer under Archbishop Ludham from 1258 to 1264, according to Mr. Browne's history; and though the fact of his building this great work at his own expense may be doubtful, as Mr. Browne considers it, the date has not hitherto been considered doubtful. Stubbs is believed to have lived about a hundred years after the event which he records, and had access to documents not now in existence, or at least not known to be so.

Respecting Wymington, there is evidently a misprint of a 2 for a 3 in my first letter, which I had not observed until Mr. Sharpe pointed it out. I cited it as a well-known example of the use of curvilinear tracery after the date Mr. S. assigns to it, the date being ascertained by an inscription on the brass of the merchant who rebuilt it, and being twenty or thirty years after the end of Mr. Sharpe's "Period." I do not pretend to follow all Mr. Sharpe's fanciful vagaries, and find examples to contradict him in each instance. I consider the facts too notorious to render any such process necessary. I may, however, mention an instance of the use of lancet windows, considerably after Mr. Sharpe's "Period," which occurs to my memory. The ruins of Barnham Abbey, near Maidenhead, are still partly standing, and exhibit a series of lancet windows. This priory was founded by Richard, King of the Romans, in 1265, and the buildings must, therefore, be subsequent to that date. Respecting the transition from the Norman to the Early Gothic, the difference of opinion between Mr. Sharpe and myself evidently arises in this way: we differ as to what constitutes transition: he considers a building of heavy massive character, with plain Norman mouldings and details, as belonging to the same class or "Period" with Ripon Minster and the nave of Wells, merely because the arches are pointed, although every other feature is quite different. I consider this as a bad division in point of style, and not correct as a historical "period." Respecting the later divisions, if Mr. Sharpe had called them styles, or what they are more properly, subdivisions of styles, I should not have interfered; but when I saw his "Seven Periods" quoted in *THE BUILDER* as if they were historical, I thought it necessary to warn your readers that this is not the case. The exceptions are so numerous that no reliance can be placed upon this system as a guide to the age of a building: it is calculated rather to mislead than assist the student. The term Geometrical has been a term long in use for a particular kind of tracery, and as a subdivision of the Decorated style. Mr. Sharpe calls by the same name, and includes in his division, another class of tracery, which is always accompanied by mouldings and details of quite a different kind: his own example, Lichfield Cathedral, has the tooth-ornament, and other details of the Early English style: the Chapter-house at Salisbury is another example.

It can only lead to confusion to mix them up with such buildings as Exeter Cathedral,

Merton College Chapel, Oxford, &c. &c., in which all the details and mouldings are quite different, and evidently belonging to a late style, and not to the same "Period." The "Curvilinear Period" is equally ill defined: windows with tracery of geometrical patterns are continually recurring during this period. Elton, in Huntingdonshire, and Stoke Golding, in Leicestershire, occur to me as instances where these two forms of tracery are used in alternate windows of the same building. These are not rare exceptions, but common examples. The more the matter is investigated the more people will be satisfied that Mr. Sharpe's "Periods" are not real and natural divisions of our mediæval building, as a whole: they apply to windows only, and other parts do not agree with them. The names are calculated to mislead, and windows of this or that form do not indicate a particular date with sufficient accuracy to be taken as a guide.

As another instance of the vagueness of Mr. Sharpe's definition, and the fallacy of his division as a guide to the age of a building, I may mention the large round window in the north transept of Lincoln Cathedral. This agrees with every one of Mr. Sharpe's definitions of the "Geometrical Period," and therefore the student, relying on Mr. Sharpe's guidance, must consider it as built between 1245 and 1315;—the fact being, that it is part of the work of St. Hugh, who died in 1200, and is copied from a similar window at Blois, of which city the architect was a native, and therefore belongs to the very commencement of Mr. Sharpe's "Lancet Period," or about half a century before the time his system would assign to it.

F. S. A.

RAILWAY JOTTINGS.

WE have got an able coadjutor in our continued endeavours to promote the establishment and extension of cheap excursion and other fares for the million. Mr. Dickens, in his *Household Words*, agrees with us in thinking that the excursion system has by no means reached either its minimum of expense or its maximum of extension. He even goes beyond us in the conviction that the companies will raise their profits by lowering their fares. The wants of the great bulk of the people, as he very truly remarks, yet remain in fact unprovided for, "and this can only be accomplished by a further reduction in the present scale of transit. The progress of cheapness has by no means found its terminus. It has been prognosticated by those thoroughly acquainted with railways, and equally so with arithmetic, that a railway Rowland Hill will yet arise, and organise periodical trains to run similar distances as the mileage between London and Brighton (say, for simplicity, fifty miles), for the small sum of sixpence. If omnibuses can 'rattle over the stones' for two hours for sixpence each passenger, and after deducting the expense of coachman, conductor, horses, the wear and tear of the vehicle itself, still yield a good profit to the proprietor, a railway train occupying only the same time in the journey, stuffed full of sixpenny passengers, would yield a handsome profit. It must be remembered, too, that the omnibus pays a tax of three-halfpence a mile, while the Government has very properly remitted an impost on excursion trains." We are no indiscriminate advocate for cheapness in all things. The desperate competition of too many middlemen, all deriving their livelihoods out of goods which they merely hand over from producer to consumer, and that through a useless multiplicity of handings over, which, if engaged as manual operation in the production of valuables, would enrich this "country of shopkeepers" instead of impoverishing it in the support of a host of drones; the underselling system begotten by this savage competition for a share of the good things passing through their hands; the adulterations practised in this perpetual endeavour to undersell; the rabid desire of the consumers themselves to buy in the cheapest markets, and to share in delusive "sacrifices" where they are themselves the victims sacrificed on the altar of adulteration; all these causes combine to make the universal

outcry for cheapness an unmitigated evil; but there are a few great public essentials which constitute an obvious exception to this rule; and amongst these essentials of the present stirring age is locomotion, more especially excursive locomotion, as a brief relief and respite from toil and care to the million ever struggling for life in a sea of troubles and anxieties. We shall not cease, therefore, to use our influence in the obtaining of this great good to the utmost possible extent; and that too all the more determinedly that we are assured it will be for the immense advantage of the railway companies themselves, to have full and frequent trains at the lowest possible price, in place of few and empty ones at fares pitched on present principles. Meantime the excursion system, under the peculiar attractions of the metropolis at the present time, is now immensely increasing the traffic returns of the several companies throughout the country; and doubtless, fast and furious as the onset already is, the throng is only beginning to set in; and will probably be incessant during the remainder of the season. The *Railway Record* gives the following, amongst other returns, of the amount of increase in traffic receipts in week before last, beyond those of the corresponding week of last year:—Great Western, 8,200*l.*; London and North-Western, 14,725*l.*; London and South-Western, 5,000*l.*; London and Blackwall, 480*l.*; Lancashire and Yorkshire, 2,000*l.*; Bristol and Exeter, 650*l.*; Chester and Holyhead, 530*l.*; South-Eastern, 3,540*l.*; York, Newcastle, and Berwick, 420*l.*; York and North Midland, 600*l.*; Lancaster and Carlisle, 950*l.*; Manchester, Sheffield, and Lincolnshire, 990*l.*; Great Northern, 9,400*l.*; Birkenhead, Lancashire, and Cheshire Junction, 500*l.*; East Lancashire, 650*l.*; North Staffordshire, 600*l.*; Caledonian, 200*l.*; Aberdeen, 340*l.*; Glasgow and South-Western, 1,270*l.*; Scottish Central, 380*l.*; North British, 660*l.* Of the Irish lines the Great Southern and Western exhibited an increase of 320*l.*; Dublin and Belfast Junction, 280*l.*; Belfast and Ballymena, 240*l.*; Midland Great Western, 240*l.*—Strange doings are reported to have been taking place of late near Chipping Campden. There, it is said, Mr. Brunel, the engineer of the Oxford, Worcester, and Wolverhampton Company, at the head of an army of 500 navvies, stood opposed to a strong force also assembled at the Mickleton tunnel contract under the leadership of the contractors, Messrs. Williams and Marchant, the one party being determined to take forcible possession of the plant and works there, and the other being equally determined to resist and to retain possession. Prior to the anticipated conflict, two of the local magistrates entered into a negotiation with the contending parties, or at least with Mr. Brunel, to suspend hostilities till the arrival of the "Clerk of the Peace," who obtained a further truce till an array of constables could be collected "to quell any riot that might ensue." Accordingly, not only a body of constables, but a strong force of armed police assembled under the orders of the magistrates, "and soon afterwards," says the *Cheltenham Journal*, "Mr. Brunel approached the works followed by a large number of sub-contractors and navvies. The magistrates met this body and read the Riot Act, but Mr. Brunel appeared determined to proceed. On being warned of the consequences, however, he wavered, and the men halted. The Riot Act was then read to Mr. Marchant's men, who immediately obeyed the command to disperse, and went in proper troops to their usual employment on the works. A great gathering of men were then seen to approach from another quarter to take possession of the works. The Riot Act being read to them, they hesitated to advance, and eventually left the ground. In a short time all the Company's men retired; but it is beyond doubt that, if the magistrates had not acted with much firmness, many lives would have been lost. The chief constable of the county was present during the day."—At length the great allotment question which has agitated so many minds, and carried dread and apprehension into so many homes, is settled. The

Judges, whom the Lords called to assist them in their decision upon the allotments of shares in bubble railway schemes, have given it as their unanimous opinion, that individuals who had not accepted letters of allotment, and that those who had accepted but had not signed the parliamentary and other deeds, are not to be held liable for any share whatever in the preliminary expenses of such companies.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

A "*Nibelungen*" Monument.—The place where the hero of this Indo-German poem has been murdered, is near a spring, and has been ascertained, after much research, by the Councillor of State, Dr. Knapp. It is situated near Gräselnabach, $\frac{1}{3}$ league distant from Fürth, in the Odenwald—a woody slope, whence a charming prospect displays itself before our eyes. A modest, but impressive stone monument has been erected on this oldest of German historical localities.

Excavations, Rome.—The annual excavations of the old subterranean cemeteries of Rome have been concluded this year, those of Trasoni and Saturnio under the Via Solaria Nuova, that of Pretestato to the right of the Via Appia having yielded most results, although previously known from the works of Bosio, Boldetti, and Marangoni. The crypt or subterranean church of SS. Marcellino and Pietro is composed of three apartments, lighted and aired by the same *luminera*, which has been properly cleared and restored. The paintings which adorn this crypt are not of later date than the fourth century. In one of the southern ends of the Cimitero di Pretestato were discovered two sepulchral cells, whose paintings represent a very fortuitous allegory of the four principal sacraments of the Christian Church. The number of sepulchral stones, mostly sculptured and with inscriptions, found during this season amounts to nearly two hundred. These, as well as four sarcophagi found in the same crypt of the Cimitero Sisto, have been brought to the Lateran Palace, where Pius IX. intends to establish a museum of Christian antiquities of the earliest date.

Public Granaries in Germany.—The construction of stores, whence corn may be sold to the workers at reduced prices in times of scarcity, has been mooted with some energy, of late, in Germany. It is the Steam-tugging Company of Frankfurt which is at the head of the undertaking, and the extensive locality of the so-called *Mainlust* is chosen for the site of the building. As corn, however, is subject both to internal (physiological) deterioration, and the ravages of several species of insects, experiments are making at Augsburg with an English malt-drying machine, on which corn is exposed for ten to twelve hours to a temperature of 50 or 60 deg. Reau., by which it is hoped that it will be made fit for ulterior keeping.

A Prize founded by an Art-Pupil.—A young artist, M. Müller Soehne, who went to Alexandria for the sake of study, and died there, has left the sum of 10,000 francs for founding an annual prize of architecture—not to be awarded, however, but for study and work made abroad.

Ultior Work at Notre Dame, Paris.—The first plan for the restoration of the Cathedral of Notre Dame comprised the following categories:—1. The flying buttresses of the choir, and the flat roofs of the side aisles. 2. The principal façade and the towers. 3. The two figures of the transepts (south and north portal), and especially the great *rosace* of the north. 4. The flying buttresses and the chapels of the nave. 5. The vaults.—For these, a credit of two millions of francs had been voted in 1845. It seems, however, that only a minor part of these renovations has been hitherto effected, and a new credit of six millions of francs is now demanded. Objected to especially, are the lowering of the porch by the digging after thirteen (imaginary) steps—thus arriving suddenly on Roman foundations; the rebuilding of the south portion of the nave, &c. General assent, on the other side, is given to the con-

solidation of the six flying buttresses of the choir, the repairing of the two galleries of the principal façade, and the general substitution of substantial new stones for those salt-peterised (*saltpêtrées*) by the action of many centuries, &c. As things stand, it is urgent now to restore the two (north and south) portals and *rosace*, to cleanse the gutters, to prevent the stagnation of rain water, and to remove those old parasitic plants, which luxuriate in every fissure of the monument. The thing mainly wanted (say our Paris contemporaries) is to consolidate quickly, and to restore with caution and according to the *genius loci*. Other parties, however (unnecessary to name), wish for a complete re-edification, exterior and interior, of this huge edifice, and an exact restoration as it had been in the thirteenth and fourteenth centuries, according to the designs and relations of those times. This will make necessary the rebuilding of the two sides and the two façades, north and south, and the whole circumference of the choir and the vault. It will require the reconstruction of the spire, the great flat roofs, and the lead roofing.

GLAZED AND UNGLAZED SEWER PIPES.

We have received a number of letters on this subject, mostly from interested parties, but are unable to print them. We give a portion of one in reply to "H. D.":—

"H. D." speaking of unglazed earthen pipes, condemns them all as porous, and therefore unfit for public drainage, as being very liable to rot from the incessant saturation of sewage matter. But unglazed earthenware is a very wide term! And, doubtless, "H. D." will feel compelled to admit, that even were he to fire his pipes harder than he at present does, and to neglect salting them, even his glazed imperishables would degenerate into the *perishable, porous, unglazed class*.

Being a manufacturer myself of all kinds of earthen, glazed stoneware included, I have no interest in speaking partially. "H. D." asserts that earthen pipes (*i.e.* unglazed stoneware) will not endure the intensity of heat in firing sufficient thoroughly to vitrify the body and fuse it into a brittle compact mass, *imporous and metal-like*. Now in this he is quite abroad, as my blue sewer-pipes are fired with and endure the same heat, salting included, as my stone glazed pipes, which are generally as fully fired as any goods in the kingdom.

Nextly, he says, stone pipes will not take the glaze till they have undergone an *immense pitch* of fire. Very true. Nor will my unglazed pipes fuse on their surfaces, and turn gradually of a deep blue shade of colour, till they are fired to a certain extreme pitch, salt-glaze heat, as my burning stoneware and earthenware together abundantly proves. And why? Because the metallic particles in the clay will no more fuse and flux the surfaces with the blue colour desired, before salting-heat, than will "H. D.'s" stoneware pipes glaze with salt before they have attained that heat.

W. G.

Another correspondent says:—Perfectly cylindrical pipes may now be had of red ware, compressed by steam power, nearly an inch thick, and burned for many days. They are very superior to the common red ware, which are only a few hours in the fire. They will also bear a much greater hydraulic pressure than glazed-ware pipes, which, "from the greater value of the material and intensity of fire" are made so thin and brittle that they are constantly broken by the mere pressure of the earth filled in upon them, as may be seen in various parts of town, the pipes being constantly relaid. Glazing is therefore unnecessary, and it is prejudicial, because of its rendering the material brittle, and occasioning those constant fissures in pipes which make impermeability mere moonshine; also the sockets are too smooth to admit of tight joints; indeed, the latter seems of so little importance, that pipes laid in the city of Westminster may be seen by wholesale with nothing more cementitious than loose clay—the contractors, doubtless, finding it too difficult a job to proceed with them in any other way. FIDELIS.

WALTHAM ABBEY CHURCH, ESSEX.

SUGGESTED RESTORATION OF
WALTHAM ABBEY CHURCH, ESSEX.

WE are glad to hear that steps are about to be taken to form a committee for the restoration of this interesting building, and we cordially wish the promoters success. Among the many remains of a magnificent architecture once employed to mark the temples of the God of heaven and earth, those at Waltham Abbey are not least in beauty and interest. Some of our readers will remember a notice we gave of them not long ago. The monastery of Waltham was founded by Harold in the year 1062; and according to tradition became the resting-place of the body of that unfortunate monarch after the battle of Hastings.

Of this once extensive monastery little else remains except the church, now the parish church of Waltham Holy Cross, of which we give a view: and this, through the indifference of past generations, is in a sad state. It has been grievously injured and disfigured. Old windows of fine proportions and considerable beauty have been stopped up; and modern windows which would disgrace any private house have been put in to supply their place; a flagrant example of which is the present east window. The whole building is defaced by plaster and whitewash, by which the architecture of the noble arches and massive pillars is covered over and hidden from view. Now, when it is remembered that this church is the parish church; that its main walls are understood to be good and strong, capable of lasting yet as many years as they have already stood; that it contains fine specimens of our most ancient architecture; that in spite of all the injuries it has suffered, it still stands out in the midst of its desolation a noble ruin, telling of its former greatness, and as it were imploring a little aid; when all this is con-

sidered, surely it must be confessed that something *should* be done towards its restoration. If the parish is of itself unable to meet the expense of such restoration, the public should give their aid to preserve a public structure.

MARYLEBONE DISTRICT SURVEYOR.
SHIP.

THE Marylebone district has been divided into two, and new surveyors appointed. Mr. White, son of the late surveyor, was elected, without opposition, to the northern division; and Mr. Jennings, by 64 votes, to the southern. Mr. Cantwell had 33 votes, and Mr. Little 25. The other candidates were Mr. Eales, Mr. Christian, and Mr. Roberts. Mr. Mozeley was nominated as a candidate, but withdrew his name from the list.

ENTRANCE TO ST. PATRICK'S ROMAN
CATHOLIC CHURCH, DUNDALK.

THE new entrance has been designed to correspond with the style of architecture of the church, which is Gothic, of the Perpendicular period. It has a frontage of about 95 feet. The church, which is erected in granite, is at a distance of 60 feet in the rear. At each extremity of the new front is an open porch, about 11 feet by 6 feet, having octagonal piers, 4 feet 4 inches wide, at each side. These piers have sunk panels, and above each rises an octagonal turret, with panels, having a series of quatrefoils sunk in them; and surmounted by a crocketed pinnacle, terminated by a cross. Around the caps of the piers are raised letters, forming the sentences, "Diligat Dominus portas Zion;" "Aperite mihi portas justitie;" "Ingressus in eas confitebor Domino;" "Hæc porta Domini justi intrabunt in eam." A

parapet is continued over the arches between the piers, which parapet is cut through; and in the centre stand upon pedestals the figures of St. Patrick and St. Malachi, the patron saint, one over each entrance, with the names raised upon ribands below; under which are carved monograms of Christ's name, encircled with a crown of thorns. Over the inner arches, on back elevation, panels with mitres, pectoral cross, and pastoral staves, carved therein, are recessed in the stonework. At each extremity and adjoining the porches is an office for the accommodation of the sexton: between the porches are five open arches, 9 feet 6 inches wide, having a cut stone base supporting a twisted wrought-iron railing, and having a rule joint gates, of the same pattern, are fixed in each of the porches. Circular quatre-foile openings, filled with plate glass, light the offices at the extremities. The entrance is built of Scotch freestone, and cost about 900l. Mr. Thomas Turner, of Belfast, was the architect; and Messrs. Robinson and Kelly, also of Belfast, the contractors.

Our artist has introduced a few trees in the court enclosed by the gateway, not there at present.

The scale of the drawing is 4 feet to an inch.

NORFOLK AND NORWICH A-ÆO-LOGICAL SOCIETY.—The quarterly meeting of this society was held on Thursday week before last. A number of ancient curious articles were exhibited; and the chairman, Rev. J. Gunn, addressed the meeting. A communication from Mr. J. Repton, on archaeological remains near As of Norwich by Mr. Harrod, on the earth some remarks made on other subjects.



ENTRANCE TO ST. PATRICK'S (R. C.) CHURCH, DUNDALK.—MR. THOMAS TURNER, ARCHITECT.

CHANCELS AND SCREENS.

It will doubtless be in the recollection of your readers that in your magazine for March last, Mr. Pugin wrote to decline my challenge to discuss the point I had raised, that screens and mediæval arrangement and use of chancels were all of comparatively modern origin, standing in direct opposition to all really ancient Christian churches, alleging, as a reason for declining, want of time, and adding that his forthcoming work on screens would contain a refutation of my views. That book I have just read, and if there had been a fraction of doubt in my own mind as to the truth being on my side, Mr. Pugin's work would certainly have annihilated every shadow of a leaning to his side of the question. He begins by stating that this subject is one "of far more importance than the generality of men may be willing to admit: it involves great principles connected with discipline and even faith." So far, I cordially agree with him, but his words do not convey in language half strong enough the real importance and significance of this great question,—one, too, doubly interesting to an architect, since it not only relates to his faith, but to his practice; calling on him at once for an opinion from his religious knowledge and his antiquarian lore.

As between Protestant and Papist the case stands thus; the former say that Christianity is a social system, that its members, by faith in Christ, are restored to the dignity of sons of a Common Father; that all are, therefore, brethren in Christ, the Church being the common meeting-house, within whose walls all worldly distinctions cease, the clergy being merely the officers, elected and set apart to preside, and read, and preach to the rest, that all things may be done decently and in order.

According to the Protestant view, all material sacrifices, and all material sacrificing priests, were abrogated by the one great sacrifice.

Papists, on the other hand, affirm that a material sacrifice and a sacerdotal order as distinct from the people as the ancient Levites were, are constituent elements of Christianity, and that consequently churches are temples, containing holy places, into which it is profanation for the common herd to enter, and from which, therefore, they are to be carefully secluded by impenetrable screens.

Here, then, are two great systems, both called Christian, but standing in direct opposition to each other, and each calling on architects to design for them places of public worship adapted for their several requirements.

If uncontrolled by precedents, every architect with a grain of sense, having the Protestant conditions laid before him, must see that an open hall or room is the only way of meeting such a case. On the contrary, with the Papal requirement staring him in the face, nothing, it is evident to him, could be more unsuitable than such a hall. To the Papal view, therefore, it is of vital importance to show that the primitive Christians did not erect halls for churches; and it is almost as important to the Protestant side, to be able to justify their notions of Christianity as a system, by showing how the ideas entertained of that system, by its first professors, influenced them in the arrangement of their churches.

The enduring nature of life-long habits and opinions in religious matters, are too well known to leave room for doubt, that the primitive Christians, having, previously to their conversion, no other conception of religion than as connected with a visible sacrifice and priesthood, officiating in buildings arranged expressly for the accommodation of such views, would never have dreamed of making a total change in the ideal of the structures for their new religion, unless this new system had imperatively demanded this complete sacrifice of all ancient structural precedents.

Mr. Pugin and his school of writers are too well aware of the sinking hole in their case, not to endeavour to tinker it up at every opportunity. The word ancient is a very comprehensive, pliant, many-meaning one, conveying no meaning by itself,—always a comparative term, requiring, when used, the

sentence, "in relation to some other period," to be understood. The ambiguity of the expression suits those who write to conceal the truth: thus, when Papal writers dilate on the antiquity of their churches, they mean those which are very modern in relation to the churches of the third and fourth centuries: of these they fight very shy; but Mr. Pugin, with more zeal than discretion, in his recent work on screens, has absolutely undertaken the task of attempting to prove, first, that Christianity utterly repudiates rooms for churches; and, secondly, that the primitive Christians did not erect rooms, but that regular Papal screens and Papal temple arrangements are really ancient. Knowing the dangerous ground he is on, he treads very gingerly: you can see at every step he is afraid of being caught trespassing where he has no possible business: the consciousness of this has induced him to try a little sleight of hand: thus, he quotes authors who speak of *cancelli*, which were mere low open railings, and translates them to say screens, which are totally different things,—the one being used, not to conceal the president from the people, but solely to prevent him from tumbling off his platform; the other employed to shut out the profane vulgar from the assumed holy place, which occupied, in after ages, the position of this primitive platform or chancel. But Mr. Pugin is not satisfied with false translation of the Latin,—he tries his hand at Italian with equal success, and gravely tells us that "*balustrata*" does not mean a balustrade,—that is, a low rail, hand high,—but "a screen;" the fact being, that the thing and the word are both of Italian origin: they introduced this peculiar kind of low railing and invented the term for it, which is improperly applied in any other sense.

Mistranslations, however, are not enough for Mr. Pugin's purpose: he must find a clincher somewhere, for ever to destroy "the general delusion that screens formed no part of the fittings of a Roman church." "As an overwhelming contradiction to this often-repeated error," he adds, "I produce a representation of the great screen in old St. Peter's, from the most irrefragable authority." "The altar stood within the screen: the back of the altar is turned towards the nave, and must have effectually concealed the celebrant from the people: behind all this is seen the great apse, with the cathedra for the Pope." "This is the most important authority for the use of screens in the ancient Roman church; and the dignity and sanctity of the old basilica of St. Peter was so great, that it would naturally be considered as the type for other churches: moreover, if we except the details which belong to the early period of its erection, it is a perfect type of a Pointed screen." "The traditional arrangement has lasted from the reign of the Emperor Constantine down to our time."

I will not insult Mr. Pugin, by imagining for a moment that he is so ignorant of his profession as not to know, that in the example he has adduced, his own plan and view show the screen to be an addition to the original structure; while the style, as the veriest tyro must see, fixes its date as being of the 15th century; that is, after Pointed architecture had gone out of fashion. Mr. Pugin could scarcely hope to escape detection in this act of self-sacrificing zeal: he must have had his eye on the Romish calendar, and certainly deserves a niche therein, for this peculiarly ingenious way of proving Rome's beloved screens to be ancient.

But Mr. Pugin has yet another weapon in reserve: if unable to convince his adversaries he will frighten them: thus, at page 3, line 8, we have the following dreadful hair-on-end threat:—"If any man says he loves Pointed architecture and hates screens, I do not hesitate to denounce him as a liar." It is to be hoped the council of the Institute will forthwith have these words printed in letters one foot high, and hung up in the library, so that no un lucky architect in future, may run the risk of being called a liar by one who has such a happy way of showing his peculiar love of truth.

There are few facts in architectural know-

ledge more capable of demonstration than the simple one, that style has not been influenced by creed, in any age of the world, religious influence being wholly confined to arrangement. Nothing, therefore, can be more absurd than Mr. Pugin's constant practice of designating the Roman style of architecture as "Pagan," and assuming the appellation of "Christian" for the Gothic. The Italian Papists to a man hate the Gothic, and the Pope, in his recent appeal to Italians to aid him in his design of building a church for them in London, promises that it shall be "like the ancient Christian temple," that is, in what Mr. Pugin calls the Pagan style.

We have seen how Mr. Pugin mistranslates to serve his purpose, and the barefaced attempt he has made to prove the antiquity of screens, by giving representations of one erected in the fifteenth century, and calling it of the Constantine age. In your pages, some months since, I exposed the falsehood of which Cardinal Wiseman was guilty, in respect to the ancient presidents' seats; and now we have the Pope himself committed to an equally false statement, "keeping the word of promise to the ear," but never intending to keep it in fact; deluding his faithful lieges by stating in words, that the new London Papal church shall be "like an ancient Christian one," when such a resemblance is the furthest from his thoughts,—when in fact it would not be practicable to carry on the Papal system in a structure literally following such a model,—a model which was ever a room and nothing else,—in which there was no screen, no altar, nothing but a simple platform for the president's seat, and a simple wooden table in the centre of the people. That view of the matter I am ready to maintain, single-handed, if need be, against the world: I affirm that every church erected before the fourth century bears me out in this statement; and if any one can adduce a single ancient example in Italy containing anything in it now different from what I have stated, I will undertake to prove the cause of such difference to be a modern addition, as palpable and unmistakable as that by which Mr. Pugin, in his "Work on Screens," has attempted to gull the public.

Mr. Pugin lays it down that religious worship, according to his view of it, cannot be properly carried on in rooms, and that the early Christians did not worship in rooms: the latter point he has utterly failed in attempting to prove, every single existing example being dead against him: all, therefore, that he has proved by the terms of his proposition is, that Popery is not Christianity.

JOHN ELLIOTT.

THE BRITTON CLUB AT NORBURY PARK.

THIS social club, first brought together a few years ago on the occasion of the complimentary dinner given to Mr. Britton, at Richmond, have held their meetings during the present, now almost past season, at Mr. W. Cubitt's, at Mr. L. C. Humphrey's, at Mr. Charles Hill's, at Dr. Conolly's, at Mr. Gould's, at Mr. Tooke's, and the houses of other members, and have had amongst their visitors, the Chief Baron (much pleasanter to be before at table than on the bench), Mr. Warren, Q.C., Dr. Croly, Douglas Jerrold, Mr. W. Dilke, Mr. Thos. Cubitt, Mr. Pownall, and Mr. A. Poynter. Few dinners, in this season of good dinners, have been more pleasant. Last week the club met at Mr. Grissell's residence, Norbury park—Grissell, as Jerdan writes,—

— "Of whom all men speak well,
The hospitable owner of that park,
Of which Miss Burney had so much to tell,
When far below its present social mark."

How Hill told stories, and J. B. made a good speech; how Tooke knows more about the last century than anybody else; how all gazed wonderingly on the splendid views which this house commands; and how Peter Cunningham could not come,—it would be beyond our province to tell. It is more consistent with that province to say that with the aid of Mr. Barry, jun., Mr. Grissell has given architectural character to the house exter-

nally, and much increased comfort and elegance within: greenhouses, too, have been built and model farms constructed.

Mickleham Church adjacent has much to interest: part of it is Norman, and all of it curious. The estate known as "Denbies," hard by, has been bought by Mr. T. Cubitt, and was visited the morning after the meeting at Norbury by Prince Albert.

CONTRACTORS, SUB-CONTRACTORS, AND HIRING OF WORKMEN.

COLLINS AND BAKER V. FOX AND HENDERSON AND ROBSON.

THIS action at the Brompton County Court, the particulars of which have appeared in *THE BUILDER*, and which, it may be remembered, was adjourned for the men to sue Mr. Robson, the sub-contractor of the paint work to the Glass Palace, came on for hearing on Wednesday in last week. Messrs. Fox and Henderson were subpoenaed, but, not being able to attend, were represented by Mr. Hall, their cashier, a gentleman whose name should have appeared instead of Mr. Cochrane's, in our last report, the reporter being misinformed. The evidence of Collins was so confused and contradictory to what Baker said, respecting the terms on which they were engaged, and in many other particulars, that it is unnecessary to enter into it.

Mr. Herring (solicitor) in strong terms denounced the manner in which his clients had been treated. It was an insult to summon them at the Crystal Palace, when it was well known where the defendants' office was; and an annoyance to subpoena them from their business. He contended that no credence whatever should be placed in the evidence of the plaintiffs, and called Mr. Robson, who said that he never stated what wages were to be given to any man, for batches of thirty or more would come and ask for work, representing themselves as painters, whereas they had in many instances never handled a brush before. He therefore left it to his foreman to find out who were tradesmen, and report such to him, and they were paid tradesmen's wages. It was impossible for the plaintiffs, out of 600 men, who were tradesmen or not. He could not say whether the plaintiffs were tradesmen or not. Mr. Powell, foreman to Mr. Robson, said he had been instructed to make a return of any man worth more than four shillings. He had not returned the plaintiffs. Mr. Doyle corroborated the above. His Honour (Mr. Amos) said there was a great discrepancy in the plaintiffs' evidence, and Mr. Robson's testimony balanced the other evidence: he thought they were hired at four shillings per day, and therefore he must give a verdict for defendants, with costs.

NOTES IN THE PROVINCES.

Hastings.—A range of good houses, from the design of Messrs. Reeks and Humbert, is being erected on the Crown Estate at Hastings, and will add much to the improvement of the town.

Ipswich.—The foundation-stone of a new school-room was laid at Sproughton by the Bishop of Norwich, on Thursday in last week. The building will be 32 feet in length and 19 feet in breadth. There will be a cottage residence attached. Mr. Barnes is the architect employed. The funds have been collected by subscription, due chiefly to the exertions of the rector, Rev. Mr. Hasted.

Lincoln.—The state of St. Peter-at-Arches, and the necessity for some repairs and restorations have been energetically pointed out by the new rector, Rev. T. S. Nelson, in a discourse on 1 Chron. xvi. 29—"Worship the Lord in the beauty of holiness,"—in which he insisted that the house of prayer, the building itself, ought to be beautiful, and hoped that he should soon see this fine church made what it ought to be—"a glorious sanctuary." The preacher also referred to the state of the churchyard as a public disgrace.

North Elvington.—The foundation stone of a new church in this village was laid on Monday week. It is to be in the early English style, and

surmounted with a bell turret. The chancel is to be divided from the body of the church by a screen of Caen stone. The pulpit will also be of Caen stone. The walls are to be of stone from the Willingham quarries, a gift by Mr. A. Boucherett. Mr. S. S. Teulon, architect, furnished the design, and Mr. Roebuck, of Louth, will execute the works.

Chester.—Building operations have been commenced at the Queen's park, where a suburban district of villa residences has been designed and laid out by Mr. Harrison, architect. Plans and specifications are also in preparation for a suspension bridge by Mr. W. Low, C.E., in connection with the other improvements. There is said to be abundance of good spring water on the land, and river water can be conveyed to the park under the Dee, a tunnel across the river and running under the meadows being already made. An adjoining proprietor has offered to plant the whole of the meadows with ornamental trees and shrubs. The foundation stone of the first villa was laid on Monday in last week.

Doncaster.—The foundation stone of Christ Church National Schools was laid on Friday in week before last by the mayor. The architect is Mr. Moffat, and the contractors are Messrs. Anelay.

Sunderland.—The works of the south entrance to the docks are now in rapid progress. A railway has been laid by the contractors, along the sea-beach, to Ryhope Cliffs, for the purpose of conveying the limestone to build the piers, and ship-building has been commenced on the east quay of the dock, a slipway having been formed by the dock company for the use of builders.

Glasgow.—The foundation tier of the south abutment of Victoria-bridge has been laid. It consists of solid masses of masonry resting on heavy piles driven 14 feet into the ground, the heads 10 feet under low-water mark.

Miscellaneous.—The "Catholic Apostolic Church" in Victoria-street, Sheffield, was consecrated on Thursday in week before last. A new school-room at Leonard Stanley, Stroud, was opened on Tuesday week. The little church of Llandegai is being enlarged. The Roman Catholic Church at Southampton has been rebuilt on a larger scale than before, and was lately reopened.

DIAGONAL PAVING FOR STREETS.

IN the course of the discussion which followed the reading of Mr. Burgess's paper at the Institute, since printed in our columns,

Mr. Mayhew said he thought the question of diagonal paving one of considerable interest. On inquiry respecting the Oxford-street paving, he had found that one of the principal reasons for laying the stones diagonally was, that it was supposed to diminish the noise, and to substitute a more continuous roll for the jumping sound and the excessive vibration which arose from the other systems; whilst, there was no doubt, it gave also a firmer foothold to the horses.

Mr. Tarring explained that he was the first to suggest the diagonal mode of paving for Oxford-street. The proposition was at first laughed at, many of those who had attended to such matters for years arguing, that the horses would be guided by it across the street and into the shop windows. He was at length appointed as a member of a sub-committee to consider various propositions, and he had succeeded in having one portion of the experimental pavement in Oxford-street laid diagonally. That specimen had succeeded so well that it was now being very generally adopted. The next specimen to that in Oxford-street was one in Piccadilly. His reason for advocating the system referred to was, that the wheels passed over it considerably easier, and with much less action, because before they had passed over one stone they would just touch the other.

Mr. R. Bell, with reference to the plan of laying paving stones diagonally, pointed out the inconvenience of that method in narrow streets, and streets with gradients, or not being very nearly level. It had been found in the City, that in such streets the cogs of the

horses' hoofs did not hold to the pavement, so as to enable them to draw a heavy load up such an ascent as London Bridge. It had been also found that stones of about four inches wide were better adapted for pavements than those of six, eight, or ten inches wide.

Mr. C. H. Smith stated, in reference to road materials, that he had lately been employed to test four different substances; namely, Haytor, Aberdeen, and Guernsey granite, and whinstone from the north of England. These materials had been subjected to continuous friction, by sand and water; and by comparing the time required to wear away a thickness of three-eighths of an inch of each material (each stone being 10 in. long by 4 in. wide), it was found that the softest was the Haytor granite, the next the Aberdeen, then the Guernsey, and the strongest and most enduring was the whinstone; and in consequence of these experiments, the last-named material was now being used for the paving of roads in London.

ENGRAVINGS AND LITHOGRAPHS.

Pickersgill's Portrait of Peel.—Hering and Remington have just now published a mezzotint engraving, by Mr. G. Raphael Ward, from the full-length portrait of Sir Robert Peel, painted by Mr. Pickersgill, R.A., in 1847. Mr. Pickersgill's portrait is admitted by those who best knew the statesman, to be the best likeness of him that was made, and Mr. Ward has transferred it to the copperplate with much success. The expression of the eyes, the form of the head, and the weak, uncertain pose of the figure, are admirably characteristic of the man. Mr. Pickersgill has had the good fortune to have all the eminent men of his time for sitters: a collection of his portraits hereafter will form a historical gallery of extraordinary interest.

Barraud's Religious Subjects.—The extraordinary success of Mr. Barraud's "Chorister Boys" has led to the publication by him of a pair of prints of the same class, called "The First Sacrament," and "The Last Sacrament,"—Baptism, and the Communion on the Death-bed. These are engraved by Mr. Simon, and tell a true though sorrowful tale: the journey is a short one from the cradle to the grave, and it is well for us to be reminded of it.

Clock Tower, Norwich.—A lithograph has been made of the clock turret recently erected on the Guildhall, Norwich. It has been put on the stone by the architect himself, Mr. Kerr, and shows that he can draw as well as write.

Islington Cattle Market.—Mr. Grantham has issued an isometrical view of the Islington cattle-market, meat-market, and lairs, showing their connection with the "Docks and Birmingham Junction Railway." The total area is shown to be eighty-two acres. The market question seems to be as far from a settlement as ever.

AMERICAN NOTES.

Town doings, says the *New York Home Journal*, go by rages, and the rage just now is to make doors bigger and windows longer. "Be the house large or little, every third owner in Broadway is busy at tearing down his old front and putting up a new entrance that would answer for a livery-stable. If a stranger could see only the lower stories of New York houses, he would think it a grand architectural city; but if he chance to run his eye along the upper stories and roofs, he might think them a jumble of experiments at building, such as would be seen in a country where every man was his own mason and carpenter." It is to be hoped the rage will fly upwards when it is gone over the street floor.

—A New York telegraph to the Boston papers says, that a despatch from New Orleans states that the Europa's news, which was sent from this city over O'Reilly's line, at twenty minutes past two, p.m., reached that city at two o'clock precisely, thus beating time twenty minutes. But that is nothing to the fact that although the same news passed through Boston from Halifax, the New Orleans public had it two hours before the public of Boston, and the New York citizens four. The trick thus

played the Bostonians, however, appears to have been one not by him of the scythe and hour glass, but by the accomplished trickster of the winged caduceus—the wide-awake deity of commerce himself—whose message-delivering accomplishments, apart from his patronage of dishonest trickery, would so well entitle him to reign, with his winged feet, cap, and rod, over the telegraph itself, as its presiding deity—in America all the more especially that it would thus appear that not even his objectionable titles need be excepted.—An American paper announces a tree box or guard as a new application of cast-iron to a useful purpose as well as an ornamental where occasion may require it, as in lawns and parks.—The *Boston Traveller*, in sketching the Observatory at Cambridge in that vicinity, says the main tower is built of brick, on a foundation of granite, laid with cement. It is thirty-two feet square on the outside, while on the inside the corners are gradually brought to a circular form for the better support of the dome, forming a massive arch. This dome, covering the grand equatorial, is a hemisphere of thirty-two feet interior diameter, formed with stout ribs of plank, and covered externally with copper. There is an opening five feet wide, and extending a few degrees beyond the zenith, which is closed by means of weatherproof shutters, and worked by means of an endless chain and toothed wheels, geared to a series of toothed iron plates, fastened to its lower section. By means of this the whole dome, weighing about fourteen tons, can be turned through a whole revolution, by a single person, in *thirty-five seconds*. The "Grand Refractor" is said to be nearly three tons in weight, yet by means of wheels and counterpoises can be pointed to any quarter of the heavens by the finger of a child. One of the most ingenious contrivances connected with the Observatory is said to be the "observer's chair," by means of which the observer can transport himself to any part of the dome without moving from his seat.—The United States official charts prepared at the National Observatory, by the way, and published by authority of the Bureau of Ordnance and Hydrography at Washington, may be had, we find, in London, Parker, of West Strand, having been appointed agent for the sale of them.—The reason why the American papers are, "at this particular season of the year," so "stale, flat, and unprofitable," is, as a correspondent interested in such news informs us, "because it is 'cucumber time,'" when all the "electro-biological" energy, we presume, is concentrated on the tough "digestion" going on in the abdominal cavity, and United States men may be said, *pro tempore*, to walk about with their heads tucked under their waistbands, or into the pit of their stomachs, as did the saint of old with his'n under his armpit.

Books.

Knight's Cyclopædia of London. 1851. Charles Knight, Fleet-street.

[We have here a digested abridgment of the six large volumes of Knight's "London," with additions and corrections to the present year, comprising 600 pages, with numerous engravings, and forming a massive octavo volume, bound and lettered, all complete for £s. 1. As we have already remarked, such a phenomenon of *unadulterated* cheapness can only be possible in such a case as the present [where the expense has already been, to some extent at least, borne by the sale of a previous and extended edition of the same work.]

The style and title of a cyclopædia, however, scarcely do sufficient justice to either the matter or the manner of this pleasant and readable—we had almost said discursive, even though condensed and digested—abridgment of Knight's "London." Moreover, the scheme is not indical. The more natural arrangement is that of parks, gardens, palaces, churches, theatres, streets, and public offices, exhibitions, and so on, in relative and proper connection. We have an elaborate account of the Tower of London, which we lately visited" ourselves in a leading article.

Westminster Abbey, of course, with its no less interesting memorials of the past, shares an equally prominent place in its pages. Old and New St. Paul's; Guildhall, and Mansion House; the British Museum, and Exhibitions of Art; in short, everything of interest meets with its due share of attention, and all are profusely illustrated. Not the least pleasant portion of the volume is devoted to the parks and gardens. A description of Kew and its natural and artificial beauties is the next best substitute we know of to a ramble amongst its palmy and other tropical wonders, and enhances one's desire to have, a little nearer us, not exactly a repetition of what in it we have already, an artificial tropic in all its steaming heat and moisture, but a substitute for a moderate and healthful English spring time of perpetual verdure and ever-varying bloom. And such an opportunity as we now have, in the expanse of covered park, as we may merely call it, at Kensington, no one ever dreamt of this time two years. The suggestion at once, it seems to us, removes all reasonable objection to the existence of the palace of glass in the public park: it thereby becomes but part and portion of the park itself for the people's healthful recreation—their winter park—their Hyde Park of the rainy season, and even of the scorching summer heat. We did most grudgingly allow of an infringement on the people's privileges in the shape of building in the park: and the quiet hope of its being converted into an increase of privileges in place of an infringement alone reconciled us so far to it from the outset. We cannot now, therefore, allow of this compensatory hope being swept away with the expiry of the temporary purpose of the erection. As for those who object to the continuance of the palace of glass as a winter garden, it is an instructive fact that they are those chiefly who from the first protested against its erection mainly on the ground that it would constitute a breach of the people's privilege: yet now that it is designed to enhance that privilege as a compensation for its infringement, it is really so consistent as it appears to persist in such a protest? Is it not rather obvious that the public interest has never been the chief consideration even from the outset?

Though, as we have said, the palace of glass ought to be a mere protection from the incidental evils attributable to our variable climate, to be enjoyed in the midst of ornamental vegetation natural to that climate itself, but also protected from its extremes of heat and cold, we wish many of our readers would just refresh their memories, and increase their interest in the establishment of such a covered garden, by either a visit to Kew, or, next best, by a perusal of Mr. Knight's pictorial description of it, and of Chiswick, and our other gardens, and our parks. It will at once be seen from these pages, that we have all, in kind at least, if not in locality, that mortal can desire in these respects, with this great exception—a protected metropolitan park—a covered English garden.

Vieille Montagne Zinc.*

We have always had a good opinion of the zinc from those extensive mines—the Altenburg—Old Mountain—or Vieille Montagne Mines, near Liege. These mines have been long celebrated, and, indeed, were originally ancient workings for spelter even while the useful metal zinc was a mystery known only to the alchemists. Worked and unworked, they are said to be about 17,000 English acres in extent. The company is one of those *sociétés anonymes* which we so much require in this country. It may be said to have been itself established here, however, for some years, with numerous agencies in all the chief provincial towns. To its enterprise chiefly, we believe, is to be attributed various extensions of the use of zinc, as a cheap and durable substitute for copper sheathing for ships for instance, as well as for roofing to buildings, and more recently in the

* Zinc from the Mines, Foundries, and Works of the Vieille Montagne Company, situated in France and Belgium, applicable for all building purposes, and with a general description of its uses. Schmoll, Manchester-buildings, Westminster.

form of oxide as a substitute for white lead, and in the metallic form as an excellent substitute for bronze, capable of bringing the finest works in sculpture within the reach of very moderate incomes. Some of these various uses exhibited by this commercial association may be seen in the Belgian, French, and English departments of the International Exhibition. The great scale on which sculptures, pedestals and all, can be rendered in zinc may be seen from their large statue of the Queen in the foreign nave, as well as from Kiss's splendid work the Amazon, and others near it. It is in building works and architectural details and ornaments, however, that the Belgian zinc is chiefly employed as yet in this country, and for these it is well adapted from its freedom from sulphur—an abiding mischief in the zinc from some of our own mines.

Miscellaneous.

CHURCH TILES.—With reference to a letter from Mr. Minton, that appeared in your pages, in which he refers to some remarks of mine on the expensiveness of his encaustic tiles, I stated in the article to which he alludes, that the cost of the plain black or red tiles was 1s. 4d. per foot; and I further expressed my opinion that this was a very heavy charge for so simple an article, because any tile-maker could make tiles for sixpence. Mr. Minton says that the price of his tiles is not 1s. 4d., but 1s. per square foot; and that I must have been unacquainted with the manufacture to imagine that they could be made for less. In justification of my original statement, I have to say that I obtained the prices of Mr. Minton's various tiles from his own establishment at Blackfriars; and, by the notes which I made at the time, I find that I correctly asserted the price per foot to be 1s. 4d., and not 1s. Still I should consider myself mistaken (though, having gone to Blackfriars for the purpose of purchasing tiles for the church to which I was attached, this is not very likely), if I did not find my assertion corroborated by a writer in the *Ecclesiologist* for Oct. 1848. I transcribe his words:—"We may divide all tiles into four classes:—1. Plain black; 2. Plain red; 3. Plain white; 4. Flowered and patterned. The three former kinds are 6 inches square, and 4d. a-piece, or 1s. 4d. the square foot. There is, also, a smaller sort of red and black at the same price the square foot; and an inferior and thinner kind, which costs 1s. These prices we consider extravagant." The following passage is also to the point: "We would call the attention of the two great tile manufacturers [i. e., Messrs. Minton and Chamberlain. Mr. Chamberlain, I believe, has given up the manufacture] to the extravagant price of their plain tiles. The usual cost is, when 6 inches square, 12. 13s. 4d. per hundred," or 1s. 4d. per square foot; "whereas tiles, certainly by no means so good, but still passable, are procurable at 7s. 6d. per hundred," or 4d. per square foot. Mr. Minton's certainly are very beautiful tiles, especially the coloured tiles. No other manufacturer has equalled his blues. Still he charges too much for them; and the above extracts will show that I am not singular in this opinion. As Mr. Minton's remarks appeared in your valuable columns, I trust you will have the goodness to insert this rejoinder.—THE WRITER OF THE ARTICLE IN "FELIX FARLEY."

SCHOOL TABLETS.—A series of large tablets of specific gravities, temperatures, and thermometric diagrams, arranged by Mr. W. B. Tegetmeier, has been recently published.* They appear to be useful and practically instructive tablets, well adapted for general view, as in national and other elementary schools. In the sheet of specific gravities, the absolute weight, both approximative and exact, of the standards of comparison—water and air,—and the rules for reducing such tables to common terms, are all given. The third in the series contains diagrams of both Fahrenheit's and the centigrade thermometer.

* Groombridge and Sons, 5, Paternoster-row; and at the depositories of the principal Educational Societies.

improving their Black Lead, that they are now manufacturing PLUMBAGO or BLACK LEAD, PENCIL, and all the fine grades of PENCILS, and are enabled to supply the market with a superior pressure, it possesses great brilliancy and depth of colour, and will maintain a firm point. They have obtained so great a perfection in their manufacture, that they are enabled to produce the same strength and colour when used to be a table, as when used for any particular purpose, and have produced a pencil fully equal to those used in former years, and the great advantage is, that they can be obtained sufficiently pure for the best pencils. The following are the degrees:—No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. For writing and common uses—No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. For drawing and fine work—No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. For the most delicate work—No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

LIST OF FOUNTAINS

EXECUTED IN ARTIFICIAL LIME STONE,

BY JOHN SEELEY,

Nos. 1—4, KÉPPELL ROW, NEW ROAD, REGENT'S PARK.



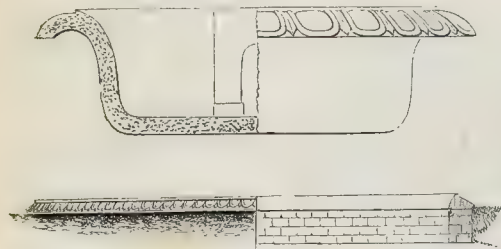
*. The material of which all these works are composed being *waterproof*, is safer to use for fountains than any stone, excepting granite, and has now been tried for many years in Scotland. The only precaution necessary is to keep the pipes empty during hard frost,—probably from October 1st to March 1st.

GRECIAN DESIGNS:—

A set of four enriched Tazzas, the largest being 6 ft. diameter, and a corresponding ground basin 18 ft. diameter, the entire height being 11 ft.

A similar design, but the Tazzas of a flatter shape, and the largest being 8 ft. diameter, with a suitable ground basin 20 ft. diameter (as erected for the Marquis of Ailesbury, at Tottenham Park)

N.B. When required for any place more than twenty miles from London, the carriage of the ground basin is expensive, as will be obvious from the annexed section print. It is, therefore, economical in such cases to construct the basin of brick, by the country workmen, and to procure only a rim, or coping, as also shown by the second engraving.



An enriched Tazza, 5 ft. diameter, with lotus flower entwined by a snake to jet, with a rim like the above, 17 ft. 6 in. diameter; the whole fountain 7 ft. 6 in. high

The fountain as erected in the dairy at Blenheim

A splendid Tazza, 7 ft. diameter, with large centre flower entwined by snakes, as executed from the design of Sidney Smirke, Esq., for the late Marquis of Hertford (exclusive of ground basin); height, 9 ft. ...

The fountain as designed by Mr. Barry for the Queen's park, Brighton, viz., a pair of Grecian Tazzas resting on the tails of three entwined dolphins, and a plain ground basin 16 ft. diameter; entire height, 8 ft.

A magnificent design by Mr. Papworth for the Steyne, Brighton, as follows: a Tazza 15 ft. diameter, supported by four sitting lions and festooned scrolls, surmounted by a cluster of shells, leaf vase, and finial, the whole height about 25 ft., and requiring a ground basin 32 ft. diameter

A design for a public fountain, consisting of a base with four steps flanked by pedestals, with figures of the Florence Boar, on which an enriched octagon plinth supports a basin 10 ft. diameter, and superstructure of vases, dolphins, shells, &c.

An enriched Ground Basin 12 ft. diameter, with a tripod of three couchant lions supporting a bowl 6 ft. diameter, in the centre of which is a flower entwined by snakes; entire height, 8 ft.

A small but pretty Fountain, consisting of a highly enriched Tazza and flower, set in a ground basin, 12 ft. diameter; height, 6 ft. 3 in. ..

£. s.

65 0

95 0

55 0

200 0

56 0

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The figure above depicted is copied from a fountain in the Barberini Palace; the height is 7 ft. 9 in., and requires a cistern about 20 ft. high to produce a good jet.

The same figure and several others may be had of a smaller size.

A Grecian Tazza, 6 ft. diameter, with a centre flower and enriched rim for ground basin; 17 ft. 6 in.

A large lotus flower and side florets, on tripod of lion's legs, in an irregular ground basin

An enriched Ground Basin, 8 ft. diameter, with a centre flower; 4 ft. high

A very neat design, viz., a plain ground basin 8 ft. diameter, in which is an enriched Tazza, 3 ft. 10 in. diameter, surmounted by a small flower; height, 5 ft.

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THE BUILDER.

MR. SEELEY'S FOUNTAINS CONTINUED:—

ITALIAN DESIGNS:—

A plain ground basin of this plan; in the circular portions are set three boys with fish on their heads, jetting water into a vase in the centre about 56 0



The fountain as erected for the late Lord Montagu at Ditton-park, a Roman vase with Tritons and plain ground basin; 16 ft. diameter.. 50 0

An elaborate design for a PUBLIC FOUNTAIN, as follows: a ground basin 40 ft. diameter, surrounded by a terrace of four steps, on the piers of which are four couchant lions, 6 ft. long. The centre piece consisting of three tazzas supported by figures of boys, crocodiles, and mermaids; entire height about 40 ft. 300 0

A centre piece consisting of a Tazza, 7 ft. diameter, supported by four Herons, and an upper vase and flower; height 9 ft. (exclusive of ground basin) 60 0

A massive design, consisting of a plain bowl 12 ft. diameter, from which the water is discharged through four Lions' heads. In the Tazza rise two others of a similar form 7 ft. diameter, and 4 ft. 6 in. diameter 70 0

An enriched Ground Basin, 18 ft. diameter, as executed for the dairy garden, Arundel Castle, with a centre group as follows: a cluster of bulrushes and three full-sized storks supporting a leaf Tazza, 5 ft. diameter, in which is set a centre flower with side florets; entire height, 9 ft. 6 in. 85 0

Two Tazzas (Medici pattern), supported on the tails of three entwined griffins, in a ground basin 7 ft. diameter; height, 5 ft. 4 in. 28 0

A Leaf Tazza, 5 ft. diameter, supported by a round fluted pedestal, and surmounted by a vase and flower; height, 5 ft. 9 in. 18 0

A Ground Basin, 8 ft. diameter, and two Tazzas, 3 ft. and 1 ft. 10 in. diameter; the whole perfectly plain 20 0

An enriched Ground Basin 8 ft. diameter, in the centre of which rises a twisted cable as a pillar supporting a shell, and boy with dolphin; height, 6 ft. 18 0

A plain Ground Basin, 10 ft. diameter, and in the centre an octagonal shaft supporting a shell; around the shaft are set four separate dolphins made to jet 27 0

An enriched Ground Basin 12 ft. diameter, in the centre a large figure of a heron holding a fish in his mouth. 28 0

* * * This design requires very little water.

A set of plain Tazzas, the several diameters being 8 ft., 5 ft., 3 ft., 1 ft. 10 in.; height, 11 ft. 36 0

Plain Tripod Pedestal, on which stand three figures of Atlas supporting a flat bottomed basin, enriched with sculpture of dolphins, &c., and in the centre a tulip vase (to suit a ground basin about 10 ft. wide) 36 0

A plain Ground Basin, 12 ft. diameter, 2 ft. deep, with a plain Tazza for the centre, supported by storks. 30 0

* * * Sometimes a small fountain is required for a garden, where the usual space cannot be afforded for a ground basin. In such a case the following design may be appropriate, viz:—

A round molded Pedestal, about 2 ft. diameter, supporting a scalloped basin 6 ft. wide, in the centre of which is placed a lotus flower entwined by a snake, the whole standing on gravel, and about 6 ft. high 25 0

ELIZABETHAN:—

A design by Mr. Papworth, erected at Wilton Castle, consisting of a Tazza and Pedestal supported by dolphin trusses, the ground basin being 13 ft. 6 in. diameter, the sides enriched by characteristic panelling, and each pier surmounted by a rampant lion. The whole height of the fountain 12 ft. 6 in. 90 0

A similar design erected at Arundel Castle, the ground basin being 20 ft. diameter. 110 0



A pair of Tazzas supported by festooned legs, the larger 6 ft. diameter, and the upper one 3 ft. 10 in., and a plain ground basin 15 feet diameter 60 0



A similar design, the Tazzas being 4 ft. 6 in., and 2 ft. 9 in. diameter (exclusive of ground basin) 14 0

SHELL PATTERNS:—

An elaborate design, consisting of a ground basin of a shell pattern 18 ft. diameter, and centre piece as follows:—a plain base, around which are arranged shells to receive the jets from four dolphins connected with a pedestal, on which a circular shell 6 ft. diameter, and supported by boys, stands. In the shell is a Triton jetting from his shell. 200 0

A Tier of Three Shells, each supported by rockwork and dolphins. This design can be executed of several sizes £ s.

Three entwined Dolphins, supporting on their tails a cluster of shells, and surmounted by a cornucopia, from which the water jets: with a plain ground basin rim, 16 ft. diameter 56 0

A circular Shell 12 ft. diameter; in the centre of which rises a column of rockwork supporting a round shell 5 ft. 2 in. diameter, and Triton figure. 80 0

A plain Ground Basin 8 ft. diameter, and shell 3 ft. wide, on an enriched pedestal; 4 ft. high 18 0

A Cluster of Three Shells, each 3 ft. wide, rested on rockwork 10 0



A Flower emerging from a cluster of bulrushes, surrounded by three storks, and placed in a circular shell 5 ft. 2 in. diameter, with a ground basin of shell pattern 14 ft. diameter. The whole height 7 ft. (executed for Newby Park) 54 0

Three entwined Dolphins, supporting a shell 3 ft. 8 in. diameter, in which a lotus flower jets (no ground basin); height 5 ft. 8 in. 25 0

Three larger Dolphins and proportionate shells, in which is a Triton figure, with a plain rim for ground basin 18 ft. diameter; height, 9 ft. 6 in. 76 0

GOTHIC:—

A design executed for H.R.H. the Prince of Prussia, consisting of a Gothic Pinnacle, and three tiers of jets. 40 0

A plain Gothic Tazza suitable for a dairy, 3 ft. diameter 4 0

A Battlemented Hexagon Pier, with six canopied niches, from which lions' heads discharge the water which falls within the battlements at the top; height, 6 ft. 30 0

A design similar to that at Fonthill; vase in Tazza, in ground basin 16 ft. diameter, surrounded by a Gothic balustrade. 50 0

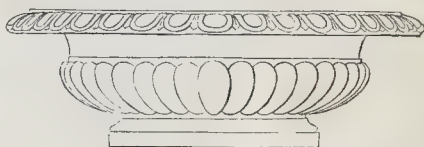
A set of Three Octagon Tazzas with figures to jet at each angle, and enlaid at the top in ground basin 13 feet diameter 54 0

A Gothic Pinnacle, 16 feet high, in ground basin, 20 feet wide 110 0

RUSTIC:—

The Neptune Fountain, with Triton and Sea-horses 120 0

SUITABLE FOR CONSERVATORIES:—



A Bowl like the print, 6 ft. diameter; and pair of Tazzas for the centre. The whole to stand 6 ft. high from the floor. 15 0

N.B.—If 6 ft. is too large, a similar design can be executed on a smaller scale.

A Tazza in the Elizabethan style, 3 ft. 6 in. diameter, on a suitable pedestal; height, 4 ft. 6 in. 9 0

An enriched Pan or Ground Basin, 4 ft. 6 in. diameter, to be used for aquatic plants. In the centre a stone basket of wicker pattern, from which rises a cluster of white lilies, executed in copper, and painted like nature. The lilies support a glass fish basin, in the centre of which is a quiet jet of water: executed for the late Sir F. Sykes. 30 0

A Ground Basin, 10 ft. diameter, with moulded base and Tazza for the centre, 3 ft. 7 in. diameter, and small centre flower; 6 ft. 8 in. high 28 0

A Grecian Tazza, 3 ft. diameter, on a round pedestal (this basin is deep enough for gold fish) 6 0

A Ground Basin with enriched rim, 7 ft. diameter, and a centre flower with florets; height, 4 ft. 21 0

A Bowl with scalloped rim, 6 ft. diameter, in the centre three entwined griffins, supporting a cluster of shells; height, 5 ft. 6 in. 26 0

A Ground Basin, enriched with sculpture in the Roman style, 4 ft. diameter, on lion's claws (iron). In the centre a small leaf Tazza elevated on a stalk and lotus flower. 12 0

The Pantheon Fountain, designed by S. Smirke, Esq. 36 0

A Roman Ground Basin enriched with leaves, and wreathed torus, 5 ft. 6 in. diameter, with lotus flower for the centre; the whole 4 ft. 4 in. from the ground. 28 0

THE BUILDER.

TO ARCHITECTS, BUILDERS, CONTRACTORS, &c.

HARTLEY'S PATENT ROUGH PLATE GLASS,

One-eighth of an inch thick, weighing two pounds to the foot, for
RIDGE AND FURROW ROOFS, GREENHOUSES, RAILWAY STATIONS, ENGINE SHEDS, MILLS, MARKET HALLS, AND
PUBLIC BUILDINGS GENERALLY.

SPECIMENS TO BE SEEN AT THE EXHIBITION, in the extreme south-eastern end of the building, adjoining the United States department.

It being universally admitted that Glass in Roofs of a permanent character should not be less than one-eighth of an inch thick, weighing two pounds to the foot, whilst any greater thickness or weight is unnecessary, leading only to additional expense, Messrs. JAMES HARTLEY and CO. have directed their attention to the manufacture of a description of

ROUGH PLATE GLASS THAT COMBINES SIZE AND STRENGTH WITH ECONOMY OF COST.

The PATENT ROUGH PLATE, one-eighth of an inch thick, or two pounds to the foot, is manufactured in sizes expressly for Ridge and Furrow Roofs 66 by 18 inches, thus giving a span of 10 feet at a price not exceeding weight for weight that of common Crown Glass.

Not being transparent, it is not in any way liable to breakage, and when used in its proper position, it is perfectly safe for all purposes, and is not liable to any of the defects of ordinary glass. It is also perfectly adapted for use in the manufacture of Greenhouses, and for all other purposes where a rough plate of glass is required. For further information apply to any respectable Glass Merchant in London or the Country, or to the Manufacturers, Messrs. JAMES HARTLEY and CO., Wear Works, Sunderland N.B.—The Patent Rough Plate is also manufactured 5-16ths and 1-4 inch thick, and can be supplied at a much lower cost than the common 4-8th Plate—May 1, 1881.

GLASS.—JAMES PHILLIPS and CO.'s
FOREIGN SHEET GLASS, of very superior quality, packed in cases containing 200 feet, and of sizes varying from 28 in. by 26 in. to 44 in. by 24 in. at 40s. per case. Smaller sizes, from 14 in. per foot upwards. Glass Tiles and Slates. Slates primed and glazed, and sent home free of cartage, at 3s. per foot. N.B. Depot for Hartley's Patent Rough Plate Glass—116, Bishopsgate-street, Without.

THE ST. HELEN'S CROWN, SHEET, and PLATE-GLASS COMPANY, ST. HELEN'S, LANCASHIRE, manufacturers of all kinds of Crown window Glass, patent plate, glass shades and ornamental glass; also, of church, mansion, and other windows, in the modern and antique styles, and methods, or upon simple plates of glass, which may be best for domestic use, as exhibited at the present Exposition. Particulars may be obtained from all respectable glass dealers.

CHEAP ORNAMENTAL GLASS.—I beg to inform my friends and the public, that I have now completed a new ENGINE, and owing to the facility with which I can execute orders, I am enabled to reduce the prices of my various articles. My prices are now **ONE SHILLING PER FOOT SUP.** and borders from **SIXPENCE PER FOOT RUN.** A large quantity of the above mentioned glass, in various colors, and painted work on the most modern taste.—**CHARLES LONG, No. 1, King-street, Baker-street.**

E. and W. H. JACKSON beg to call the attention of Builders and the public to the **LOW PRICES** of their PATENT PLATE GLASS, BRITISH PLATE, silvered and for glazing, of unrivalled quality and finish; **ROUGH PLATE, CROWN, SHEET, COLOURED, and ORNAMENTAL GLASS,** in every variety, of the best manufacture, at the lowest rates. Designs and estimates furnished for ornamental glass, whether for house or church decoration. All applications for estimates and list of prices to be made at their warehouse, 35, OXFORD-STREET.

SOHO GLASS WAREHOUSE, 26, SOHO SQUARE, ALFRED GOSSET beg to inform Architects, Builders, and the trade generally, that he is prepared to forward contracts for the following descriptions of Glass upon application:—**BRITISH PLATE GLASS,** of the finest color and finish; **PATENT PLATE GLASS;** **ORNAMENTAL GLASS,** of all descriptions, **COLOURED GLASS,** in various colors, and in 3, 4, 5, and 6 inch thick; **PATENT ROLLED ROUGH PLATE,** 3, 4, 5, and 6 inch thick; **CROWN, SHEET, and HORTICULTURAL GLASS,** cut to size and glazed, or in crates, as manufactured; **BRITISH SHEET GLASS,** in cases containing 200 feet each case, including at 2s. 6d. per case.

THOMAS MILLINGTON begs to inform BUILDERS and the Trade that he can supply them with **FOREIGN and ENGLISH WINDOW GLASS** Plate and Coloured, of every description. **BRITISH PLATE GLASS,** in 3, 4, 5, and 6 inch thick. **Glass Painted Slates,** of all colors, White Lead, Colours, Oil, Varnishes, Brushes, &c.; **Milled and Sheet Lead,** Lead Pipe from 1 inch to 4 inches; **Solders,** in various colors; **Baths, Planters, and Brass Work** of every description, and upon the very best terms. **Glass and Sheet Lead** in quantities, at Wholesale and Retail Prices.—**Address, 87, Bishopsgate-street Without.** See Advertisements, Saturday, June 28, 1881.

JOHN GIBSON, STAINED GLASS WORKS, 83, Clayton-street West, Newcastle-on-Tyne. Ornamental Windows from 2s. 6d. per foot. Pictures in decorated niches and canopies at 18s. to 28s. per foot. Historical subjects at 20s. to 30s. per foot. Richly enameled Windows in Brackets, Anglo-Norman, Early English, Decorated, Perpendicular, Greek, and Italian styles carefully executed.

GLASS WATER PIPES.—Messrs. CHATFIELD and CO., Crown and Sheet Glass Manufacturers, Valence, near Bristol, beg to inform Builders and the Trade that they are supplying Glass Pipes, with their joints, from 1 to 4 inches bore, capable of sustaining a pressure of 100 lbs. per square inch, in lengths from 3 to 7 feet, the lengths being less as the diameter increases. These pipes may be seen at the Exhibition, with their various forms and modes of jointing, in the Crystal Palace, and references can be given of their great utility in numerous localities where they have been successfully employed. The great advantage of glass pipes for the conveyance of pure water over all metallic substances, has been too largely dwelt upon by medical and scientific authorities to require any further comment in this paper.

PAPER-HANGINGS, the cheapest in London, at CROSS'S Wholesale and Retail Warehouse, 23, Great Portland-street, where buyers in the trade can select from a stock of 50,000 pieces, at the following reduced prices:—Good Bell-cord Papers, from 1s. 6d. per yard. Painted Marble, Granite, and Oak Papers, from 1s. 6d. per yard. Superior Dining and Drawing-room Papers from 1s. 6d. per yard. Balins and Floor, from 1s. 6d. per yard.

PAPER HANGINGS, by E. T. ARCHER'S patented Machine, Blocks, Cylinders, and Artificial Labour, at his Manufactory, are well adapted for interior and exterior decorations. **PANELLED DECORATIONS** fitted up in the walls of the extensive Saloon Rooms, in every known style, and for all purposes, in the most perfect manner. Always on hand a **CHOICE and EXTENSIVE SELECTION** of FRENCH PAPERS, in almost unnumbered varieties. Attached to the paper-hanging factory there is the choicest assortment of **CAMBRIC FURNITURE** in London, of the best make, and upholstery made of the first fabric. Brussels carpet, 2s. 6d. per yard, floor cloths, the best that can be made, cut in any dimensions, 3s. 6d. per yard. Engraved and decorated, of the finest fabric, 5 feet wide, 1s. 6d. per yard.

PAPER HANGINGS, by R. HORNE, PAPER-HANGING MANUFACTURER, 41, Gracechurch-street, City, invites builders and the trade to inspect his extensive stock of NEW DESIGNS in PAPER-HANGINGS, which, by the aid of powerful machinery, he is enabled to offer at the following prices, in stock quantities, in small quantities, viz:—
Best lining paper, 6d. per roll.
Superior 12 1/2, 8d. and 9d. per roll.
Bedroom paper, in great variety, 7d. at 8d. per roll.
An excellent silk paper, 7d. at 8d. per roll.
Sitting room dits, on blue ground, 7d. at 8d. per roll.
Hand-made marbles, 10d. to 1s. 6d. per roll.
Good main paper, 1s. 6d. to 2s. 6d. per roll.
Floor paper, 2s. 6d. to 3s. 6d. per roll.
Hand-made granite, 3d. to 4s. 6d. per roll.
Every novelty in English and Continental decoration always on hand; also excellent imitation of fancy woods.
N.B. Patterns sent into the country, by post, showing the style and quality of the above, on receipt of two stamps, and the goods despatched with promptitude on receipt of a remittance to the amount of the order given.

CROGGON'S PATENT ASPHALTE ROOFING FELT has been extensively used and pronounced efficient, and particularly applicable for warm climates. 1st. It is a non-conductor. 2nd. It is portable, being packed in rolls, and not liable to damage in carriage. 3rd. It effects a saving of half the timber usually required. 4th. It can be easily applied by an unskilled person. 5th. From its lightness, it is easily carried about by the laborer. 6th. It is not liable to rot, and is not affected by fire. 7th. It is a perfect non-conductor. 8th. It is a perfect non-conductor. 9th. It is a perfect non-conductor. 10th. It is a perfect non-conductor. 11th. It is a perfect non-conductor. 12th. It is a perfect non-conductor. 13th. It is a perfect non-conductor. 14th. It is a perfect non-conductor. 15th. It is a perfect non-conductor. 16th. It is a perfect non-conductor. 17th. It is a perfect non-conductor. 18th. It is a perfect non-conductor. 19th. It is a perfect non-conductor. 20th. 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The Builder.

No. CCCCXLIII.

SATURDAY, AUGUST 2, 1851.



THE meeting of the Archæological Institute, in the ancient city of Bristol, commenced satisfactorily (if we say nothing about the rain), on Tuesday, the 29th, when Lord Talbot de Malahide, in the Guildhall, resigned the president's chair to John Scandrott Harford, Esq. In doing so, Lord Talbot referred to the part played by Bristol in early times, and reminded the Society of the loss they had sustained by the death of Lord Northampton. Mr. Harford made an excellent address, in the course of which he said,—

"Probably many present, who are not members of the Institute, may be led to regard us as scions of the very ancient but somewhat crochety family of the Dryasdusts. Gentlemen, I positively repudiate the alliance. The true archæologist, I may go on to say, has no superstitious veneration for ancient forms or objects merely because they are ancient: he is neither a puerile worshipper of the green rust of classical coins and old armour, nor has he a voracious and indiscriminating taste for collecting all sorts of curiosities within the precincts of a museum. Far higher: the archæologist surveys the objects of each museum with the eye of curiosity and of taste like other people, but he chiefly values them as links between the Past and the Present, and he looks through them and by them, to the prosecution of objects philanthropic, useful, and important. Archæology interpreted, justly interpreted, interpreted as it is by the principles and practice of the learned society I now address, is the handmaid and purveyor of history,—the sage commentator on ancient customs and ancient art,—the right and acute interpreter of the records and memorials of the Past, whether oral, written, or monumental. The artist visits Greece, Italy, or Egypt, to fascinate the eye, to charm with the magic tints of his pencil, and to bring away with him striking reminiscences of scenes and objects famous in history or in song. The mere traveller gratifies a laudable curiosity or adds to his store of knowledge; but the learned archæologist pauses where the artist paints, and the passing traveller takes only a brief survey, to extract from the objects he inspects means and instruments for uplifting the veil from the past, and for helping to solve one and another great problem in the history of man, religious, moral, social, and political. Thus it is that a Young and Champollion astonished all Europe by discovering the key which unlocks the hidden meaning of the hieroglyphic language of Egypt. Thus it is that Layard and Rawlinson and others have succeeded, not only in extracting from the bowels of the earth the sculptures of Nineveh, but have successfully deciphered the uniform character and picture language which cover many portions of their surface. From both these quarters we may venture to hope that much important additional historical information will be afforded. In the same way, by the collation and the comparison of the monuments of Asia Minor, Greece, and Sicily, the history of Grecian sculpture has, during the last half century, been traced from its first condition of almost Egyptian insipidity to its next stage of a rude imitation of nature, until, step by step, we arrive at the lofty grandeur and ideal perfection of the age of Pericles. And let me add that, much in the same way, the history of Christian Art is in course of illustration, from its first feeble germ, as displayed in the fresco paintings of the catacombs

of Rome and Naples, through the various phases of its progress and decline, whether at Rome or Byzantium, till it sunk into the imbecility of the dark ages, and at length, under the impulse of reviving literature, broke forth again into being, with poetic fervour and vigour in the school of Giotto and his followers, and finally attained its acmé of perfection in the sublime works of a Da Vinci, Michelangelo, and Raffælle. Thus, also, a Mr. Collingwood Bruce, a Mr. Roach Smith, and others, by their elaborate and accurate researches, have recently thrown new and important light upon the Roman occupation of Britain, and have verified many curious facts illustrative of the habits, luxuries, and superstitions of the Roman settlers, by monumental evidence the most convincing. The range of archæological investigation is, however, so vast, and the expense of pursuing it in foreign lands so costly, that in many respects it mocks the efforts of individuals, and especially invites the co-operation of learned societies like our own, and the effectual interference and pecuniary aid of enlightened governments. Of the great value and efficiency of such co-operation we have many proofs. How little, for instance, did the British conquerors of India duly comprehend its wild mythology, its remarkable traditions, its native poetry and literature, or the complication of its various sects and social distinctions, till the Asiatic Society, under the auspices of Sir William Jones, and aided by his profound learning and philosophical intellect, poured a flood of light upon these and other important particulars. The history of the celebrated French expedition to Egypt, under Napoleon, forcibly proves how much Government may effect in aid of archæological researches. The military triumphs of that army were but momentary, but the train of learned men, who, through the enlightened policy of the French Government, were attached to it, have acquired for France a durable reputation, by their extensive researches, by their splendid publications, and, above all, by the ardent spirit of inquiry which these researches stirred up in their native country and also in our own. Denon and his coadjutors first broke up the ground, which has since been so successfully cultivated by a succession of eminent archæologists, artists, and travellers, among whom, in addition to the two distinguished names already adverted to, I may be allowed to mention those of Wilkinson and Roberts, and still more recently that of his excellency Chevalier Bunsen. A similar light has been thrown, by the researches of the last thirty years, upon a people more refined but less intelligible than the Egyptians. I allude to the ancient Etruscans. They had long been known to us by name, and by the possession of many of those beautiful and tasteful vases, the discovery of which, in the recesses of their tombs, formed a new epoch in the principles of artistic shape and decoration. But I must not forget, while glancing in this way at the rich materials of foreign archæology, that there is a branch of our subject, nearer home, which has peculiar claims upon our patriotic feelings, as well as upon our high admiration. I allude to British archæology in all its parts, but especially to that branch of it which is connected with our ancient ecclesiastical architecture, of which we possess so many splendid monuments. I will venture to say that more has been done during the last half century to preserve, to illustrate, and to restore these glorious fabrics of past times, than was effected during the three centuries which have elapsed since the Reformation. They were centuries characterised, not merely by inexcusable neglect of these venerable edifices, but by the most barbarous inroads upon their proper style and character. Think of that perverted taste which could mix up with their chaste and harmonising features the incongruity of screens, altar-pieces, and portals, in a paltry style, half Roman, half Arabesque. Think of the glaring whitewash which overlaid the pensive tones of their clustering columns and swelling arches and fretted roof. Think of the same vile material mer-

cilessly applied to the rich glossy tints of their venerable oak-work. Think of their fine tracery and antique tombs, often buried in a mass of raw plaster, and their massive walls torn down to erect, hard by, some mean and paltry edifice. Let it not, however, be supposed that this species of barbarism is peculiar to England or to Protestantism. There is no country where it has reigned and revelled so much as in Italy. There is no country where it still retains so strong a hold. Witness, among innumerable other instances, the interior of the church of St. Maria Novella, at Florence, originally a beautiful example of Italian Gothic, and which Michelangelo used to call, in fondness, his bride, but now so utterly disguised by meretricious ornaments and innovations, that I feel sure, could that great man speak, he would divorce himself from her. Happily, this æra of perverted taste has passed away: we now jealously watch over our ancient edifices, and aided by the accurate researches of various able and enlightened archæologists: and architects, among whom let me particularly mention a Hope, a Whewell, a Britton, and a Willis, we are become familiar with the successive styles and epochs of English ecclesiastical architecture, and also with the distinctive features of the corresponding styles and epochs of the ancient Church Architecture of France and Germany, and we are further able to trace them all back in their essential features, amidst many varieties of detail, to one common type, pervading the early Christian structure erected under the auspices of Constantine, Theodosius, and Justinian."

The Chevalier Bunsen, who followed, related an interesting conversation with the late Lord Northampton, in which he had shown the intimate connection of the arts and antiquities of all countries.

Dr. Whewell and Mr. Heywood Markland spoke; and a paper by an officer of the corporation, whose name was not given, was then read, descriptive of the plate, seals, and papers in the council-house. The meeting afterwards adjourned to inspect these, which are all in excellent condition, very creditable to the custodians.

In the evening papers were read in the Architectural Section, to which we shall refer hereafter. On Wednesday morning Professor Willis (who, by taking this day instead of Friday, as originally settled, had somewhat thrown out the arrangements), led the members to Wells, and discoursed on the fine cathedral there.

Mr. Willis first gave in a room adjoining (according to his custom), such dates and evidence as an examination of the Cathedral books afforded him, and then took his audience round the buildings, and identified those parts he had been describing. The principal new point suggested was this, that the west front, although of the early English period, was later than the nave, which ranges from 1216 to 1242.

Professor Cockerell then read a very ingenious paper on the nine ranges of extraordinary sculpture which adorn the west front of the Cathedral:—namely, 1. Preachers; 2. Angels; 3. History of the New and Old Testament; 4. and 5. Saxon and early Norman Kings; 6. Illustrations of the Resurrection; 7. The Nine Angels; 8. The Twelve Apostles; and 9. Our Saviour.

On Thursday, after papers at the various sections, came the celebration of the Canynges' Society, an illustration of the Church of St. Mary, Redcliffe, and the joint banquet of the Canynges' Society and the Institute. We give a view of the interior of Redcliffe Church, and

append the substance of the paper: we give also a view of an ancient doorway on the Welsh Back.*

The Bristol architects were kindly anxious to receive at a dinner the London architects who were attending the meeting, and had fixed Saturday for the purpose: so few of the latter, however, were able to remain over that day, that the intention will probably be abandoned.

AN ACCOUNT OF THE CHURCH OF ST. MARY, REDCLIFFE, BRISTOL.

I REGRET very much that continued occupations of an absorbing character have prevented me from investigating the early history of this time-honoured monument, St. Mary Redcliffe Church, as it deserves. Piety, science, art, literature, and mystery have jointly and severally put their mark on this structure, and have made it an object of interest to so many classes of minds, that there are few buildings in the country which have so wide a fame. Founded, completed, and re-edified by Bristol merchants, as I have elsewhere remarked, the Christian (even if careless of material beauty) may view it as a noble monument of the stintless devotion of men in early times,—of men who thought not of the “nicely calculated less or more,” and considered no expenditure short of the utmost of their power sufficient offering in the cause of God,—a spirit, I may say in passing, which is not extinct in our day. The antiquary, the architect, and the man of taste find in it an exhibition of skill and inventive power of the highest character, producing, as a result, extraordinary beauty: it is, to them, too, the autograph of a past time, speaking loudly and not unconstructively to the present. Further, there are models for the draughtsman, an involved history to exercise the ingenuity of the investigator, and a peculiarity in the arrangement of the work of different periods at the west end, which increase the difficulty of the disentanglement. Then for the poet, the student of mind in all its strange and startling phases, the biographer, and the lover of romance, its connection with the “wondrous by who perished in his pride,”—the unhappy Chatterton, who, wanting so little, lost so much—a pure renown,—has made it a shrine demanding a pilgrimage.

The accessible materials for tracing the history of the church are scanty, but might doubtless be now increased by a diligent investigator. I must here remind you that Mr. Britton has brought together a variety of scattered notices in his interesting published “Account of Redcliffe Church.”

Redcliffe appears to have been wholly distinct from Bristol till the bridge was built, and special charters were given to the men of Redcliffe,—one, for example, from Henry III. in 1247.

Grants for the erection of a church here as early as 1207 are mentioned by Barrett in “The History and Antiquities of the City of Bristol.” Others are dated 1229, 1232, &c. There is an indulgence excusing ten days’ penance to all who contributed to the repair of St. Mary’s, Redcliffe, dated 1246. Going on, chronicles mention that a church was built here by Sir Simon de Burton and others, about 1294: he was mayor of Bristol six times between 1291 and 1304.

In 1376, the first William Canynge, according to Barrett, built the body of Redcliffe Church “from the cross aisle downwards.” In 1380 the work was still going on. This William Canynge was mayor six times: his will is dated 1396.

The spire was thrown down by lightning in 1445-6, and did great harm to the church; but the building was re-edified by the second William Canynge, aided, perhaps, by other inhabitants of the district.

Doubts have been expressed as to the extent to which Burton and the first Canynge contributed; but there seems to be no question about the fact, that to the second William

Canynge, whose “worthy deeds declare a worthy wight,” the church was greatly indebted; so much so, that he is popularly known as the founder. He was the grandson of the first-named Canynge, was born about 1400, was mayor five times, and died 1475. William Wyrcestre calls him “the richest and the wisest merchant” (*dittissimus et sapientissimus mercator*). George Canning, the statesman, was one of his descendants. Dallaway, who has given a sketch of William Canynge’s life, describes the residence that he built for himself in Small-street. After the death of his wife, in 1460, he determined on dedicating himself to the Church; and ultimately became dean of the College of Westbury. He died in 1474 or 1475; and by his will he left his residuary property in trust for public works in the city of Bristol.

And now let us see what we find left of the various structures which have occupied the site. The church consists of an outer and inner north porch, a tower, nave with aisles, south porch, transepts with aisles (a rare occurrence), residences, and lady chapel.

The inner north porch and lower part of the tower are Early English in style, and might be earlier than Simon de Burton: they certainly are not later. The north porch and the upper part of tower are of the Decorated period, and may have been part of Burton’s church. The south transept, the south porch, and much of the interior, are very little later, and may be attributed to the first William Canynge. The remainder of the church is Perpendicular, and belongs to the time of the second William Canynge.

We found corroborative evidence of the existence of a church of the same date as the inner porch (Early English), in taking down the clerestory of chancel (or “Overstorey,” as William Wyrcestre calls it); some of the old stonework being worked up in the walls.

William Wyrcestre, already quoted, called also William Bottoner (his mother’s maiden name), and who lived in the fifteenth century, has left in his “Itinerary, or Book of Memorable Things,” many curious memoranda and details respecting St. Mary’s, Redcliffe; but it will be unnecessary for me on this occasion to do more than refer to a few of them. Bottoner was born (according to Dallaway) in 1415, and died about 1484, so that he was contemporary with the second William Canynge, to whom Redcliffe was much indebted.

The “Itinerary” is written in a very desultory manner, in bad Latin, with a curious mixture of the vernacular; and the dimensions are given in steps, &c., not very precisely. Still it is not without value. We learn from him that Norton was master of the works there (“magistri operum”) at the time he wrote,—perhaps the architect. He takes one of his dimensions from the house of the workers in freestone, “*pro fundacione ecclesie de Radcliff*,” and speaks of the residence for the chantry priests erected in the churchyard by Canynge. We learn from him that there was a fair cross in the middle of the churchyard,* and the detailed description he has left of the mouldings in the western door (from the description of Norton) the “freemason work” as he calls it, has served Professor Willis as the basis of his work on the “Architectural Nomenclature of the Middle Ages.”

Camden, in his “Britannia,” speaking of the growth of the city, and that there were hospitals built for the poor, and “neat churches for the glory of God,” says,—“Amongst the rest the most beautiful is St. Mary’s of Radcliffe without the walls, into which is a stately ascent by a great many stairs. So large is it, the workmanship so exquisite, and the roof so high, that in my opinion it goes much beyond all the parish churches in England I have yet seen. In it the founder,† William Canninges, has two honorary monuments: the one is his image in the habit of a magistrate, for he was five times mayor of this city; the other an image of the same person in clergyman’s habit, for in his latter days he took orders, and was

* “*Orux pulcherrima artificione operata est in medio dicti claustrarii.*”

† This term is erroneous, as we have seen.

dean of the college which himself founded at Westbury.” This second monument, I may mention, was originally at Westbury, but when that building was destroyed in 1643, the monument was removed to Redcliffe.

The books and papers belonging to the church, of which there are many, are for the most part in a good state, and would doubtless afford some interesting particulars, if properly examined. In the course of a very hasty inspection, I observed a deed as to the lands for the endowment of Canynge’s Chantries of St. Catherine and St. George, dated 1468. These lands were sold at the Dissolution by the commissioners of King Henry VIII.

A chantry was an endowment to provide for the chanting of masses for the souls of the testators or others. The bequest usually directed the erection of a chapel, in which the service was to be performed, and the term has come to be applied to the building. Many of our cathedrals and minsters contain specimens of these chantry chapels.

The most interesting document that I saw was the inventory of the furniture for the “Easter Sepulchre,” given to the church by Canynge. As you know, it was the practice before the Reformation to set up in the churches, on the north side of the chancel, near the altar, a representation of the Entombment of Christ. A recess for the purpose, sometimes ornamented with sculptured decorations, may be seen in many of our churches. The crucifix was placed in the sepulchre on Good Friday, and watched till Easter Day, when it was taken out. The document in question, which has been several times printed, but not quite correctly, is as follows:—

“Me4. That Mayster Canynge hath delivred the iiij (4) day of Jule, in the yere of our Lorde 1470, to Maist^r Nicholas Pytes, Vicar of Redclif, Moyes Contern, Philip Berthemew, and John Browne, procurators (?) of St. Mary Redclif byforesaid, a new sepulchre well gylt with fyne golde, and a cever thereto.

“Item an ymage of God Almighty rysing oute of the same sepulchre, with all the ordynance that longeth thereto, that is to say, a lath made of tymbl^r and the yron worke thereto, &c.

“Item thereto ’longeth Hevyn, made of tymbl^r and steyned clothes.

“Item, Hell made of tymbl^r and yron worke, with devells the number of xij (12).

“Item iiij (4) knyghtes armed kepynge the sepulchre with their wepyns in their hands, that is to say, ij (2) speres with ij (2) payves.

“Item iiij (4) peyr of angels’ whynges for iiij (4) angels made of tymbl^r and well paynted.

“Item the flader the crowne and visage the ball with a crosse upon, well gylt with fyne golde.

“Item the Holy Goste comyng oute of Hevyn into the sepulchre.

“Item longyng to the iiij (4) angells iiij (4) chevelers.”

“The Booke of the Accompte,” dated 1548 to 1580, was the earliest I saw: from that date the series seems complete.

In the first year of Mary there is a payment to the ringers, at the proclamation of the “Queene,” also entry of the sum paid for a “masse booke.” In the first year of Elizabeth mass and processions were still going on, and there are payments for the bearing of the cross, large candles, and frankincense; but in the second year of her reign we find payments for taking out the image and for painting Scripture in its place, also for taking down the high altar.

There is an agreement dated in the reign of Charles I. (1636) made with a carpenter for a new loft and frame for the bells. There is also a bond, dated 1768, from Thomas Bilbie for casting four bells.

The iron gates in the church are excellent pieces of workmanship: these were made by William Edney, smith. In the books I find a payment to him, in the year 1710, of 60*l*. for iron gates to chancel; and another of 50*l*. for two pair of gates at side of chancel, and two pair of hatches into middle chancel.

In this year, by the way, bricks in Bristol

* Gibson’s edition, 1695.

were 16s. per thousand; free-stone 11d. per foot cube.

In the previous year, 1709, considerable repairs were made; the authorities buying the materials and employing their own workmen.* The church was paved in this year at the cost, according to Barrett, of 784l. 13s.

Continuing our brief examination of the accounts, I may mention that two windows on the south side, namely, the second from the west end, and the third "from the churchyard in the cross isle and fronting towards the west," were restored by W. Harrison, mason, in 1792, at the cost of 147l. 7s., James Allen being the architect employed.

In going round the interior you will notice especially the beauty and variety of the vaultings; the wonderful play of light and shade, and the effect of extent given by the plan; the beauty of the arches and their mouldings; the loftiness of the columns;† and I think you will all express an anxious wish that the present cumbrous and obscuring pews and fittings may speedily be removed; and that this noble church may be seated in a manner consistent with the style of the building and calculated to display to advantage its beautiful proportions. The doorway to the residence attached to the chancel aisle, the window at the end of each transept, and the carved bosses in the groinings, all demand examination. Of these latter, there are in the church no less than 1,117, displaying wonderful variety in design, and most beautiful drawing. The organ, too, should take a different shape.

You will notice both on Canynges' monument and in the stained glass (of which there are many interesting remnants), Canynges' mark.‡

[A further description of the interior, some mention of the monuments, and various comments, we are forced to omit.]

The whole length of the church and Lady Chapel inside I find to be 239 feet, and the width 52 feet. The transept, from north to south, is 117 feet 6 inches, and the width 47 feet. The chancel and aisles form nearly a square. The length of the nave up to the organ gallery is the same as that of the chancel, namely, 60 feet. The height of the chancel, from pavement to crown of vaulting, is 53 feet.

The inside of the north porch, a hexagon in plan, presents many peculiarities, and much to admire. The bosses of the vaulted roof are all of foliage of very elegant design, and were originally, like the vaultings of the rest of the church, painted and gilded. Midway up the walls there is a passage all round the porch in the thickness of the walls, and some curiously carved corbels will be noticed there. In one of these two men reclining are each holding up a leg to form the support. You will notice, too, the beautiful carving of the ornaments in the cornice of the arcade,—busts, and animals and men amongst foliage: in one a goat and boy; in another a man and monkey; and in a third a cripple, with a cat, and a dog barking at it. In the spandrels of the west door inside there are four singularly interesting figures: two of them seem to be intended to represent Samson in his adventure with the lion.

The form of the windows is very peculiar, produced by the series of niches outside. How the spaces beneath them were originally decorated internally is a question.

In the south-western side of the hexagon is a small apartment formed in the thickness of the wall, which may have been a penitential cell, or a place for the exposition of relics. The door was originally in the centre, and there was a grated opening on each side. In the inner porch, and near the last-mentioned recess, there is another small apartment which we shall be able to examine on the spot. The north face of the outer porch is occupied by the principal doorway, a singularly elegant and peculiar design. In the south-east face there is a second doorway,

and, strange to say, in the north-west face (opposite to the last) there was originally a third doorway (now blocked up) beautifully ornamented externally.

The reason for this singular arrangement is a matter for discussion. William Wyrcestre calls this porch the chapel of the blessed Mary, and describes the outside in his mixed language as being adorned with statues of kings curiously made in free-stone work:—"*Cum ymaginibus regum operatis subtiliter in opere de frestone.*" In this chapel there was formerly an "Image of our Lady decorated with a fyne cloth with frynge to cover her."*

The sculpture on the outside of the porch was executed with great skill: the spirit and vigour in the figures forming the upper range of corbels are especially noticeable. In the lower range figures of men or beasts alternate with foliage.

The external decoration of the north door is both singular and beautiful. It is cuspidated, "fretted in the hede" as William Wyrcestre says of the west door, and the carved enrichments of the head follow a similar line. In the principal member around the doorway entwining stems form a series of diamond-shaped compartments, which originally contained foliage, and a figure, alternately.†

It affords an example of the peculiarity in Gothic architecture that whatever decoration may be overlaid, the geometric form of the moulding is observable.

The Inner Porch is a very elegant specimen of Early English Gothic: you will especially notice the crisply curling leaves of the capitals of the Purbeck marble shafts in the arcade which surrounds the walls. This crisp foliage, rising with stiff stems from the neck-moulding, is an unmistakable characteristic of the style. In the Decorated, which succeeded it, the foliage is usually carried round the bell, more wreathlike, and exhibits a closer imitation of nature and much greater freedom.

The vaulting of the Inner Porch, too, is here much simpler. This porch was the external entrance to the church, and the doorway presented a rich cluster of shafts and arch mouldings. When the new porch was joined on to it, these were cut away very ruthlessly, in order to admit of the introduction of a canopied niche on either side at the junction,—showing very little concern on the part of the architect of the new porch for the works of his predecessors. We found pieces of the columns that were removed worked up in the walls of the outer porch.

There is an apartment over each porch, and both are remarkable; one,—namely, that over the earlier structure,—for its arrangement, having a fire-place and necessarium, or place for the discharge of refuse; and the second as being the depository of the old chests from which Chatterton took, as he asserted, the writings which led to so much controversy, and made his name world-famous. That he did find some here, though he forged others, I have not the slightest doubt.

Porches in all styles of Pointed architecture have, not unusually, a room over them: that over the inner porch at St. Mary's, Redcliffe, having a fireplace, may have been intended for the residence of an anchorite, or the Sacristan. A room in this position is sometimes called *A Parvise*, but the designation would seem to be erroneous. The "*Paradise*," or Parvise, is the name that was of old time applied to an open space or court next a church.

In "*A Description of the Form, and Manner how, and by what Orders or Customs, the State of the Fellowship of the Middle Temple is maintained*," written in the time of King Henry VIII., reference is made to the Temple Church, London, as having during term times "no more quietnesse than the *percyse* of Paul's."

At Chichester, the area enclosed by the cloisters is still called "*Paradise*;" and on the houses which surround the open area about the church of Notre Dame, in Paris, is written up *Le Parvise*.

* Quoted by Barrett.
† Over the west doorway in the porch there are a boy and goat amongst the foliage; over the east door two men, probably trying hunting and hawking: one has a bird, the other a animal.

The room over the north porch of Hawkhurst Church, Kent, was anciently called "*The Treasury*,"* and still contains, in a chest, old writings. The same name, according to Barrett, was given to the room over the outer porch at Redcliffe: he quotes a deed of Canynges' which describes a chest as being "*in domo thesauraria Ecclesie Beate Marie de Redcliffe.*"

I shall be pardoned, I hope, if I digress for a few minutes to remind you of the extraordinary boy whose memory is inseparably connected with this muniment room; of whom even Walpole, in a letter to the editor of "*Chatterton's Miscellanies*," in reply to an insinuation that he was the cause of the poet's distress and consequent death, says of him,—"*I do not believe that there ever existed so masterly a genius, except that of Psalmisaazur, who, before twenty-two, could create a language, that all the learned of Europe, though they suspected, could not detect.*" The literary imposition that Chatterton successfully attempted is well known; the high poetic feeling and the powers of imagination shown in the compositions themselves are less so. They cannot be read now without regret, apart from the feeling which arises against violation of truth, that he should have wasted ingenuity and industry to lock them up in an obscure and obsolete phraseology. In a state of extreme destitution, as you will remember, he unhappily destroyed himself before he was eighteen, and was interred in the burial-ground of Shoe-lane Workhouse, now the site of Farringdon-market, Holborn. In the register of burials in the parish of St. Andrew, Holborn, under the date August 28, 1770, I found this entry:—"*William Chatterton, Brookstreet*;"—to which has been added at another time "*The Poet*;"—correctly, notwithstanding that his Christian name was Thomas, not William; but such mistakes in registers were more common then than now.

Some time ago a monument in commemoration of Chatterton was raised by public subscription, in the angle formed by the north porch and the tower of St. Mary's, Redcliffe. In consequence of the works now going on, it was taken down, and is at present in the crypt of the church: the committee will doubtless re-erect it where it may be seen to greater advantage than it was there.

Amongst the church papers to which I have alluded, is the humble petition to the vestry of St. Mary's, Redcliffe, of William Chatterton, setting forth that he was then a ticket-porter at the Tolzey, and praying to be appointed sexton in the place of his brother-in-law. It sets forth that John Chatterton, his father, was sexton there for thirty years. This is dated January 22, 1772, seventeen months after the untimely death of the poet, and serves to give an idea of the condition of the family.

Returning to the building,—the church is founded on the living rock, the colour of which gives its name to the locality, and this rock shelving greatly from south to north, the floor of the church is at a considerable height from the ground on the latter side. A crypt is formed here beneath the north transept and the priest's residence; and there is a vaulted passage-way from one side of the church to the other under the east end of the Lady Chapel. In going round you will be sure to observe the boldness and beauty of the mouldings in this basement. You will notice, too, the peculiarity of the bulb-shaped covering (scale-covered), on the north turret of the Lady Chapel.

The priest's residence, attached to the north side of the chancel, is singularly interesting as an example of ancient domestic architecture. The large coarse heads on the turret of this part show a late style of art.

The Tower is exceedingly beautiful, especially the upper part of it. I know no building which is more so. The Early English work reaches as high as the string of quatrefoils above the series of niches. The basement may be even earlier than this: at all events the masonry is of a ruder description. Above the quatrefoils, the whole is of the Decorated period, contemporary with the outer porch,

* Oxford Glossary.

* The weekly expenses are recorded.

† See the view given in our present number, p. 489.

‡ First, in "*Exemplars of Tudor Architecture*," quotes an ancient system of heraldry in the British Museum, which says as to a shield of this sort,—"*They be none armys, but a marke as marchants use, for every mane may take lymne a marke, but not armys without an herawde or purveyaunce.*"

and with its buttresses, turrets, and richly ornamented panelling, is unrivalled. Two of the statues, which formerly filled niches in the lower part of the tower, remain, and these seem not to have been made for their position. One is a bearded male figure; the other a female figure, crowned, holding something in each hand.

The portion of the spire which remains is 26 feet 4 inches in diameter at the bottom, and 36 feet high. The masonry composing it is 2 feet 3 inches thick at bottom, and tapers in the height of 19 feet to 8½ inches, of which thickness it continues to the top.

Bottoner, after describing the spire, says, "*quidem spera stat modo ultra 100 pedes*,"—"stands at the present time (1480) above 100 feet." Dallaway, in his edition of "The Itinerary," says—"Are we to conclude that the spire, after having been struck by lightning, was still 100 feet high?" and suggests, that, as it has not such an elevation now, it had been written "*stetit modo*—stood once, or not long since."

I am disposed to think, however, that Bottoner meant to give the height it then was, and that this height was greater than it is now, and was very probably the 100 feet he speaks of. For, in another place, he says, the width of the parapet, or *Le Garland*, as he calls it, round the top of the broken spire, is 11 feet.† Whereas the present diameter of the top of the spire is about 20 feet; and, moreover, if the lines of the spire be carried out to the height of 100 feet, the width there will be found to be about 11 feet.

[An account of the labours of the committee, and the progress of the restoration, which followed here, together with the verbal description of the church, we are compelled to omit.]

The present deplorable condition of the building must distress every lover of our ancient architecture. Externally it is a crumbling ruin; the parapets falling, the walls splitting, and the spires on the tower so disrupted and decaying as to threaten at no distant period some serious catastrophe. On the question of "restoration" generally, none would oppose more earnestly than I would, the destruction of an ancient edifice, with all its associations and time tints, to substitute for it a new copy, however well executed, so long as it could be maintained fit for its purpose. And, indeed, in the case of a sepulchral monument, from which nothing is required but as a record, so long as one stone could be kept on another, so long would I retain the original memorial, a thousand times more interesting and suggestive than any imitation of it could possibly be. Most earnestly, therefore, should it be impressed on all authorities who have charge of our architectural glories and sepulchral memorials of departed great, to obtain for them such early and constant attention that they may be long preserved in their original condition. The "stitch in time" of the homely proverb applies as forcibly to a structure as to a stocking.

In the case of St. Mary's, Redcliffe, however, no question of this sort arises. If it be not renewed its character must utterly pass away. There is but little of the exterior of the church that can possibly be maintained; and if we would preserve the structure for its sacred purpose, and transmit to posterity the noble specimen of skill and piety which our forefathers gave to us in *trust*, there is no other course than restoration—conducted with a pains-taking and anxious desire to make the building what it originally was.

Chatterton, Dallaway, and others, spoke of the restoration of the north porch as a thing not likely to be attempted; yet we now see that by the unlooked-for interference of an earnest individual studiously concealing himself from praise,—one acting up to the opinion that

"Who builds a church to God and not to Fame
Will never mark the marble with his name,"—
this is now being done.

Pride of country, love of beauty, and duty to God, all prompt so strongly to the completion

of the restoration, that I have no doubt whatever as to the result. GEORGE GODWIN.

ON CLEOPATRA'S NEEDLE AT ALEXANDRIA.

*The Mode adopted by the ancient Egyptians in the removal of large Masses,—also by the French, of the Column of Luxor; and a Proposal to bring to England the Column called Cleopatra's Needle.**

ALEXANDER founded Alexandria 333 years B.C., consequently 2184 years since.

The Pharos was less than a mile from the shore, joined to the mainland by a causeway: upon the causeway stands the modern city; population near 25,000. After the French occupation, it is said to have been reduced to 7,000, from the above 25,000.

The ancient city was on the main land to the eastward, and as it now stands, it appears to have been built and rebuilt over and over again, on more ancient ruins; the whole soil, in fact, being "debris."

The two granite obelisks, called "Cleopatra's Needles," still remain; one standing, the other lying beside it, nearly buried in sand. They were cut from the red granite of Syene, 1,200 miles higher up the Nile, at the first cataracts; and were originally erected at Heliopolis, and brought to Alexandria by one of the Cæsars. From certain authorities, it would appear that both were standing at the close of the 12th century: the fallen one is said to have a corner broken, and its face not so perfect as that at Luxor. Their present position is at the bottom of the bay of the new port, just inside the old wall, at the Roman Tower, and close to the beach. It was here that Mahomet Ali offered to build a pier for the embarkation of the prostrate obelisk, and to render every assistance to Captain Smyth, R.N., in 1822, towards its removal.

The water of the port deepens sufficiently quick for the floating of a flat-built vessel with such a cargo: the tide (influenced principally by the wind) does not rise more than from 7 to 14 inches. The elevation of ground may be from 12 to 20 feet above the level of the sea.

These obelisks are of 65 feet shaft, and between 7 and 8 feet square at the large end, each side covered with hieroglyphics.

Captain Smyth, R.N., says one is 63 feet 5 inches by 7 feet 3 inches at the base, and 5 feet at the apex. This corresponds very nearly with the Column of Luxor, now at Paris, and the Column at Constantinople, and with others at Rome. Of the removal of that at Constantinople, I do not remember to have seen any account, either of the time of, or the means used in, its transport. We have short notices of the removal of some of those at Rome by different emperors.

In 1801, a proposition was made by the British officers then in Egypt to remove the fallen pillar to this country; but their proceedings were stopped by the order of Lord Keith when the preparations gave anticipations of prosperous results; and on the 15th April, 1832, a similar proposition was made in the House of Commons. It was then stated that the stone weighed 284 tons, and would cost 15,000*l.* for its transport.

Captain Smyth supposed it to be 230 tons; and, in 1822, he was prepared with the consent of Mahomet Ali to have attempted its removal; but could not procure the authority of our Government, and so it remains on the sand.

On the mode of moving great masses of stone, anciently adopted in Egypt:—

It is said that there formerly stood at Saïs, in the Delta, a temple formed of a single block of granite, which had been floated down the Nile on a raft from the quarry in Elephantine.

Two thousand men are said to have been engaged for three years in the removal of this temple—being more than 30 feet in length, 20 feet in breadth, and 12 feet in height, and, on an average, 5 feet in thickness.

* The writer of the following memoir urges, with justice, that the feeling manifested with respect to the Great Exhibition shows, that the public would now appreciate the erection in London of the ancient obelisk belonging to them, and that the pecuniary success of the Exhibition offers the means of indulging the public taste, without calling on the Chancellor of the Exchequer.

The stone quarries of Egypt and Nubia show at this time, distinctly, the mode in which the stones were cut and prepared for removal.

At the present time, there is a cubical block lying in the road between the granite quarries and Syene, which from some cause has been stopped in transit.

In one of the quarries of "El Masara," the mode of transporting the stone is represented: it was drawn on a sledge by oxen to an inclined plane leading to the river.

It may be supposed that these large masses were transported in the rough to the spots where they were intended to be raised, and there cut into shape, engraved, and polished.

The obelisks, when cut, may be supposed to have been raised on to sledges and drawn to the river, then placed on a raft by a pier projecting to a certain distance over the raft, to let the weight down on to a proper bearing position.

More ponderous blocks, too, have been drawn by immense masses of men.

Between Antioch and El Bersneb, Captains Irby and Mangles discovered the representation of a colossus dragged by men with ropes—172 men in four rows of 43 each: the number may, however, be indefinite. Grease or oil, or some other material, was poured from a vase, as is done in Amsterdam at the present time, by a bag of grease thrown under the sleighs used for removing merchandise, or wheelless carriages.

The height of this statue appears to have been about 24 feet, formed from limestone—and bound to the sledge by double ropes—tightened by pegs twisted round—much as crooked timber is now fastened on trucks and braced.

Pliny describes a mode of transporting obelisks by lashing two flat-bottomed boats together side by side, and then admitting them into a trench or canal, cut from the Nile to where the stone lay; the boats being loaded with ballast, equal in weight to the object to be removed; which, so soon as the boats had been introduced beneath the block, was taken out, and the boats rising as they were lightened, floated away the obelisk, instead of the ballast.

At Constantinople is an obelisk similar to that from Luxor, now at Paris; though of the time and mode of its transportation we know nothing. It is 75 feet high, on a pedestal 15 feet, in all 90 feet; 7 feet wide at the bottom, and 5 feet at the apex; said to have been erected by Theodosius, though not imported by him. Constantine brought the finest from Heliopolis to adorn his new capital, but got it no further than Alexandria: his son Constance had it conveyed to Rome: it is that now standing before St. Jean de Lateran, thrown down and broken by the barbarians, but raised and repaired by Fontana. There are other notices of this having been brought from Thebes to Alexandria by Constantine, and from Alexandria to Rome by his son Constance:—another, the first brought, was by Augustus. Pliny's mode was probably adopted in the removal and transport of them all; of which twelve still remain; as well as some in three or four other cities of Italy: they were transported in enormous galleys, but of the mode by which they were taken down and embarked, we are not informed, so far at least as I know. Nor were Italy and Constantinople the only places embellished by Egyptian obelisks, during the age of the Cæsars. Arles, in the south of France, had been so embellished, though by whom brought, and at what period, is not ascertained: however, we know that this city was held in high favour by Julius Cæsar, and that he commenced an amphitheatre, the ruins of which remain.

The account from which this is taken gives the size of this Arles obelisk as 36 feet French in height, 7 feet wide at base. In Brewster's Encyclopædia it is given as 53 feet high, 7 feet wide.

Arles was the most magnificent city in Gaul at the time of the Cæsars, and most celebrated for commerce and ship building, and for the assistance it gave Cæsar in his Gallic wars and his invasion of England:

* Bristol Mirror office, 1834.

† Latitude de la Garland continet xi. pedes.

remains of Grecian temples are found there and a statue of Diana, which was carried to Versailles.

Julius Cæsar was indebted to Arles for many of his largest galleys.

This obelisk was found at the port of La Roquette buried in a garden. It was dug up and exhibited by order of Charles IX. and Catherine De Medicis, his mother, and subsequently erected at Arles to the honour of Louis le Grand, 20th March, 1676.

Captain Smyth, when intent on the removal of Cleopatra's Needle, proposed two modes for transporting it, viz.,—

One, by building a pier from the immediate vicinity of the obelisk, into the little harbour, to the end of which a north-country-built vessel could be brought, with her stern frame cut out; the obelisk to be conveyed along the pier on rollers, in such a manner that half of it should be in the vessel before the weight was felt.

His other plan was to excavate the ground on which it was lying, so as to form a dry dock beneath: then build under it a lighter, into which the monolith would be lowered, and then letting the water into a canal made to the port, float it away,—such vessel subsequently to be towed by a steamer; in either case the vessel to be properly damaged with bales of cotton and fascines, so that the needle being in midships would lie easy, and press equally on the vessel's frame. This method is very similar to that mentioned by Pliny.

It does, indeed, appear to be a disgrace to England, that she cannot, with her wonderful and matchless skill in mechanics, bring home trophies of her arms from all quarters; her nautical skill and her vessels being superior to all other nations.

How, may it not be asked, does it happen, that a somewhat similar column should be now standing "Caput Erectum," at Paris, having been brought from the interior of Egypt, above 500 miles beyond Alexandria, at the very time that our ministers were hesitating as to the attempt on that so much easier of acquirement?

Captain Smyth most nationally and correctly asked whether this famous pillar, in Trafalgar-square, would not most appropriately consort with Nelson's column; and whether, on one side of the base of the latter, "Nelson and the Nile," and "Abercrombie, and Alexandria," on the other, might not most fitly and appropriately be inscribed?

Of Nelson it has already been written,

"Tu Nilis es, Nilusque tuos implevit honores,
Est honor a Nilis, Nomen et omen idem."

Having some time since considered the matter of bringing the column of Luxor to Paris, having reached that city just before the preparations for its erection were finished, and again before the materials had been removed, I can give the following particulars:—

This monolith stood on the east bank of the Nile at Luxor, part of the territory or soil of Thebes—famous for its five hundred gates, the ancient and celebrated capital of Egypt.

It was executed about 1,600 years before the Christian era, and about the time of Moses and the Exodus of the Israelites, and is consequently about 3,500 years old, though some give it a thousand or twelve hundred years more. It is of reddish Sienné granite, beautifully polished, and sculptured with 1,600 figures. The inscription tells us that Pharaoh Rameses the Third erected the great northern palace of Luxor, in honour of his father Ammon, king of the gods, to which this was annexed, with others similar.

It was on a pedestal 3 feet 9 inches high, which was not brought to France.

England having obtained the fallen pillar (called Cleopatra's Needle) at Alexandria, France demanded and got the standing one; but those at Luxor being in a perfect state, whilst those at Alexandria had suffered from the climate, France requested and was allowed to give up that at Alexandria for that at Luxor.

Thebes is about 500 miles above Alexandria, and the distance it had to be brought to Paris, including the various detours, is estimated at 3,000 miles.

The height of the pillar from the pedestal to the summit, is 75 feet 10 inches.

The breadth on the widest face of its base, 8 feet 0½ inch.

The breadth at the top where the pyramid begins, 5 feet 8½ inches.

Its weight between 250 and 280 tons.

France had early in 1830 determined on its removal, and began preparations. A vessel was built of yellow pine strengthened with oak, of 140 feet by 28 feet, like a Dutch galliot, intended to draw only two feet of water. It had a complement of 136 men, including shipwrights, carpenters, masons, and smiths; twelve enormous beams, 75 feet by above 2 feet, called bigues; deals, blocks, pulleys, anchors, and 20,000 yards of the largest and best cordage, &c. &c.

This vessel, designed by the French Government to bring this trophy to France, was built at Toulon, and called the "Lusquor." It sailed in March, 1831; arrived at Alexandria in eighteen days, on the 3rd of May, when it entered the old port, and cast anchor under the walls of the Palace of Mehemet Ali. It drew nearly nine feet of water, and was a very bad sea-boat, showing the necessity of a steamer to tow it home.

It sailed from Alexandria for Rosetta on the 14th June: it left Cairo and proceeded up the Nile on the 19th July, and reached Luxor on the 15th August. At Alexandria the stores and machinery were taken out and sent forward to Thebes, with the carpenters, smiths, masons, and others.

The obelisk was dismounted from its pedestal on the 31st October, and safely got on board the vessel on the 19th December: 400 Arabs were employed with the crew. It required a month to run the obelisk to the ship, being a distance of 450 yards: the greatest difficulty was in keeping it straight on the causeway. It was there detained until the 1st October, 1832; arrived again at Alexandria on the 2nd January, 1833. The fall of the Nile is said to be no more than 20 feet in forty leagues; the rise of the inundation at Luxor about 7 feet. At Rosetta the ship was lightened as much as possible to cross the bay: she was brought down to 7 feet, and was in considerable danger: she had camels to assist her. She sailed for France on the 1st April, and once more reached Toulon on the 1st May, having been towed by the *Sphinx* steamer, and again sailed for Paris on the 22nd June. During her progress she arrived at Rhodes on the 6th April; reached Corfu the 23rd; 10th May reached Toulon, and was there repaired; 22nd June sailed; passed Gibraltar the 30th June; and reached Cherbourg on the 12th August.

At Cherbourg she was visited by King Louis Philippe on the 2nd September.

She put to sea on the 12th September, was taken in tow by the *Phœnix*, and reached Rouen on the 14th, and finally arrived at Paris on the 23rd December, 1833. On the 9th August, 1834, the monolith was dragged out of the vessel.

Thus, the "Lusquor" occupied above four years and a half from the commencement of its building to delivering the obelisk at Paris.

On its arrival at Paris, a wooden erection of similar size, covered with drawings copied from the original, was placed in various parts of the capital, that the best locality for effect might be selected; and the place where it now stands was finally fixed on. Of the propriety of its position there can be no doubt; and when it is considered that the *Barrière de l'Etoile* cost 400,000*l.*, the cost of the obelisk, at 35,000*l.*, will not appear too extravagant. It was raised on its pedestal on the 25th October, 1834.

The pedestal on which it now stands was cut from a beautiful black granite near Brest, where it is found in the form of large boulders, such boulders being of much finer colour than the black granite formation on which they lie. The property on which it was found belongs to M. Bazil, a friend of mine.

It was thus raised:—The column was first carried up an inclined plane to the level of the pedestal, securely placed, the base foremost, and then the Pyramid end was raised by an

extraordinary multiplication of pulleys; and thus was the column lifted into its place.*

And this plan has not improbably been the one adopted in ancient times,—perhaps by the Celts and Druids of our own island, who were exceedingly fond of monoliths, of which an astonishing number still remain.

The French Government has had the mode of erecting it beautifully engraved on the pedestal itself, which would assist the ideas of our own engineers, who might be employed to erect, in London, Cleopatra's Needle—so called, though as Captain Smyth says, it must have been erected nearly 2,000 years before she was born.

The present period appears peculiarly adapted to bring to England this grand pillar: there can be no doubt of its practicability, were the British Government to conciliate the present Pacha, who indeed is said to be ready to render assistance in the furtherance of this national object.

With this information which I have got together from public sources and private communications, I feel persuaded that the removal and transport of this large mass to London is both practicable and comparatively easy, and to be accomplished within one-fourth of the time expended on the same operation by the French, which was three years and a half from the sailing of the vessel to the erection of the column in Paris, and about four years and a half from the commencement of building the *Lusquor*; and I am prepared with a plan for its execution, and to enter into contract either on my own account or conjointly, for performing the same, within nearly one-fourth of the time, and at nearly one-fourth of the actual cost, of the removal of that of Luxor by the French; which could not have been less than from thirty-five to forty thousand pounds.

ON MOVING AND TRANSPORTING THE OBELISK, WITH CALCULATION OF MEANS AND EXPENSE.

The obelisk lies in the sand, almost close to the beach or shore, but within an old Roman wall, erected by Augustus Cæsar when he followed Anthony, who had taken refuge in Cleopatra's bosom.

We must presume that permission to take away the column has been acquired, and that; therefore, the wall may be breached.

The ground on which it lies is from twelve to twenty feet above the level of the sea. Several plans may be adopted for its removal and transportation: of these I will notice four:—

1st. By raising it on an inclined plane run out into the harbour; then to be transported in a large vessel: this plane or pier to be high enough at its termination in deep water to go into a ship sunk as low as possible, with either its bow or stern cut down for the purpose of admitting the obelisk.

2nd. By raising it, and carrying it out into the harbour as before, then running it into a large wooden-bulk (or, in preference, an iron-built) lighter, without masts, and brought by sea, towed by a steamer.

3rd. By making an excavation under the monument and there building the wooden or iron vessel, cutting a canal to the sea, and when all is ready, opening the dyke, and floating the mass—to be towed to England as before.

4th. By following the first plan; but instead of a large sailing vessel have a large screw-propelled lighter, without a mast, the machinery being as far ast as possible, and calling as frequently as practicable for coals on its passage. Such vessel would probably have to be built, either of wood or iron, especially for this purpose.

I shall consider these in their order. If No. 1 should be adopted, the column must be raised and placed on an inclined plane, built expressly for it, and running out into the sea far enough and high enough to be run far into a vessel, in water deep enough to float itself and the column.

The vessel, if an old one, would best be of colonial build, strengthened with sister keel-

* A detailed account of the operation, by the conductor of this journal, will be found in London's *Architectural Magazine*.

sons; and with a framing so built as to cause an equal pressure in the vessel from this 300 tons in small surface. It must be ballasted also, so as to bring it as low down as possible with safety. One or both (main and fore, or mizen) masts must be raised to admit the column, so as to place it amid-ships a little diagonally. The vessel must take out from England her framework and timbers, &c., moulded for the restoration of the parts cut down, whether it be the stern or the stem, as may, on consideration, be thought best.

A cargo of timber (besides the frame for bed and rebuilding) must be taken out, with jacks, hydraulic presses, some of Rogers's anchors to fix in the sand, wooden and iron levers and crowbars, spades and shovels, strong blocks, pulleys, tackles, hawsers, and cordage, because much power may be required that cannot be anticipated; and four or six of the largest masts, as they would be costly there; one or two handy forges, with a quantity of metal, and four iron cylinders for rollers, in case of need: an Italian truck (or more), such as may be seen in the Great Exhibition, might be useful: several ship-building carpenters, and a practical ship-builder, and working engineer from a railroad or the Britannia-bridge workmen, with a smith and mason, must also be sent out. No doubt the Pacha would lend workmen, or such could be procured: many have worked both in our own and in the French service who now reside at Alexandria.

If No. 2 is followed, either the vessel must be designed at home, and sent out in frame and plank, whether wood or iron, with all requisites to do this would require chartering either the whole or some part of a merchant vessel, or a steam-tug, of not more power than requisite, to wait there, and bring the lighter home. The vessel having no masts would materially ease the operation of getting in and properly stowing the obelisk. The vessel of iron to be made air-tight, if possible, or have all spare space filled with India-rubber, or gutta percha, or soldered tin tubes.

Should it be thought that this vessel should in part be navigated, a mode of fixing small masts, without stepping on the keel, might be copied or imitated from the mode adopted in the Chinese junk, now in the river.

Should No. 3 be preferred, everything required by No. 2 will also be required, with trenching tools.

Should No. 4 be thought best, possibly some vessel either fit at present, or readily made so, if not built for the purpose, would be required. But I have seen a large lighter with screw propeller in the Thames, which, though not long enough, appears to me to offer a fair model for the vessel required.

Under any circumstances (except that of building under the monument) the vessel will require a complement of easily moved ballast, equal, or more than equal, to the presumed weight of the column to be carried—to be thrown out as the obelisk is admitted.

In the case of either a timber-built or iron-built lighter to be towed, or an iron steamer; I would suggest a very large extent of air-tight chambers or caissons, to be of service in case of any untoward accident. Iron seems the material most fitting for such purpose: indeed, when the vessel was battened down with her load, having air-tight cases or India rubber tubes within, to as large an extent as possible, to be useful in case of water getting in, she might have also a covering, or two or three or more air-tight tubes or square cases along the deck, or one running along on each gunwale, or even two, so as not to care how much she rolled, or was washed over.

As to the expenses of these various modes, I have not pretended to go into any close detail of them, but I think that altogether it would be done within twelve months at the farthest, instead of four years; and though the entire expense of bringing the Luxor Monument to Paris has not been made public (so far as known), I am persuaded that on the whole it would be accomplished for nearly one-fourth the money that has been stated on the authority of St. Verenac St. Maur, Captain of the Luxor, at 28,000*l.* besides the cost of build-

ing the vessel, making on the aggregate 35,000*l.* or 40,000*l.*

The following must be taken simply as ROUGH ESTIMATES OF THE COST OF EACH OF THESE PLANS.

No. 1.	
Cost of a ship of 500 tons, colonial built, but strong and buoyant, say	£2,800
Framing and materials for rebuilding when the column is on board	800
Cutting down and rebuilding for the voyage home	600
Masts and timber, and materials and tools, crabs, presses, &c. &c., to assist in work to be done at Alexandria	800
Cost of getting the ship there and back	1,600
Extra skilled labour: hands to assist in all the varied operations	700
Work to be done in making the pier and moving the column	1,600
	£8,900
Ten per cent. for sundries	900
	£9,800

No. 2.	
Making pier and moving column as before	£1,600
Moulding and framing a vessel, 400 tons	2,400
Chartering to take out the same	1,500
Putting together there	800
The towing home by the chartered vessel	1,500
Skilled labour sent out	700
	£8,500
Ten per cent., say	900
	£9,400

No. 3.	
Making canal, basin, &c. would be substituted for the inclined plane at the same expense, say	£9,400

No. 4.	
If a screw steamer could be found applicable, no doubt the whole affair could be managed for less; but if to be built for the purpose, the expense would probably exceed that of No. 1. Add to this estimate, salary and expenses of a superintending engineer, &c. from one thousand to twelve hundred pounds.	

All these chance estimates are with the understanding that the column be delivered in the ship at any one of her Majesty's dock-yards; the vessel to be rebuilt after the column is taken out, or amount paid for the same as may be agreed upon.

ADDITIONAL MEMORANDA.

White pine or Baltic fir is the best material for the ship; a displacement of not less than 1,000 cubic feet required; as flat a bottom as consistent with safe sea navigation.

The entire obelisk must be strongly cased with thick plank strengthened with oak to preserve the polish and sculpture. It must have equal strain on raising it, by bands on various parts, to avoid breaking it. All the obelisks at Rome upset by the barbarians were broken by the fall.

The north port is bothering, the Channel difficult for a long vessel, which should not draw above 6 feet 6 inches or 7 feet of water. A steamer should always be in attendance.

NATHANIEL GOULD.

THE SEVEN PERIODS OF ENGLISH ARCHITECTURE.*

THE importance and interest of the subject, the discussion of which has lately occupied a place in your pages, renders it doubly to be wished that the advocates on either side would enter upon it with the calmness suited to a scientific inquiry, and with that absence of personal feeling which can alone insure a satisfactory issue. One would have imagined that between any two men who take an interest in such a subject, there would have been too much in common to have left room for personal animosities, and that if a friendly joint should now and then take place, the recognition of a gentle antagonist through the bars of his visor would rather lead to a loving embrace than a deadly conflict. I cannot but deeply regret the tone assumed by Mr. Sharpe, as to whether he was right or not as to the personality of his opponent: his guess was one which should have induced the respect due to an old and zealous fellow labourer, rather than the bitter and causeless sarcasms which have disturbed the subsequent controversy. It seems, however, that the introduction of a new

* See p. 468, ante.

system of nomenclature has a natural tendency to produce a bilious excitability, as has been exemplified in an attack made by the *Ecclesiologist* some time back upon Mr. Poole, who had had the temerity to doubt the eligibility of their system. It shows, however, satisfactorily that we are all really in earnest, and is, perhaps, to be hailed as a wholesome symptom of vitality.

My object in troubling you is not to become myself a combatant,—from what I have seen I should tremble at the thought,—but simply to point out the desirableness of clearing the controversy of extraneous matter, and of keeping it to the real questions at issue. The question is not whether Mr. Sharpe or "F. S. A." is the more accurate in his chronology, nor is it whether Mr. Sharpe has chosen the best dates as the boundaries of his "periods;" much less is it whether examples of his styles are to be found overtaking those boundaries: such a question as this is simply absurd, unless such extreme cases may be found as to stultify his divisions altogether: nor is it, again, a question as to the merits of his nomenclature; but it is simply, whether the architecture of England, from the Conquest to the Renaissance, is more properly divided into four periods or into six. If we were to keep ourselves to this question we should rid the subject of much of its perplexity.

Now I think both of your leading combatants have allowed themselves to be far too much excited about so simple a question. I think there is far too much flourish of trumpets on one side, as if a great discovery had been made; and most needless dismay on the other, as if the very foundations of our edifice were threatened. I confess myself unable to distinguish any great discovery on the one hand, or any great innovation on the other. I believe we all, for many years past, have practically adopted, and that we must of necessity in practice use, a system of division closely resembling, and often in words as well as in fact coinciding with, Mr. Sharpe's "Periods."

First, we all call the architecture from the Conquest a long way on into the 12th century, "Norman." Then, ask any one what is the style of St. Cross (the choir and transepts), or of Byland or Glastonbury, and he will, ten to one, answer "Transition;" then, again, we often call Salisbury and Whitby specimens of the "Lancet" style; and what do we call the style of Lincoln Presbytery and York Chapter-house but "Geometrical?" Thus far our vernacular, conversational nomenclature is identical with that adopted by Mr. Sharpe, and the two remaining divisions we only differ upon so far as names go, calling one "Flowing," *viz* "Curvilinear," the other "Perpendicular" instead of "Rectilinear." Where, then, do we practically differ? Simply in this,—that Mr. Sharpe, in some cases, gives the dignity of separate styles or "periods" to divisions which we generally consider merely as sub-styles.

I confess myself doubtful as to which view of the subject is the right one, and I especially doubt whether a confessedly Transitional period should be classed on equal terms with periods of perfect development, and I am disposed to think that on that point "F. S. A." has said much to add to one's doubtfulness. Were I subdividing for myself, I should have placed this division later, so as to agree rather with what the *Ecclesiologist* would call the "Early first Pointed," than to give it only the later specimens of Norman, more or less tinged with "Pointed" anticipations. The important part, however, of the question at issue does not lie here, but in the erection of the two great divisions of the "Decorated" or "Middle Pointed" into styles instead of sub-styles: on this the whole interest of the controversy is in reality concentrated.

In all systems this division is clearly acknowledged. In one it is marked as that between the early and late "Decorated;" in another as between early and late "Middle Pointed;" in a third, as between early and late "Complete Gothic;" in common parlance, as between "Geometrical" and "Flowing"—Decorated or Middle Pointed being understood. Mr. Freeman, however, has given it a pro-

minence which had never before, I think, been attached to it, by making it the grand turning-point on which the whole fabric of Gothic architecture hinges,—all before it being “non-continuous,” all after it being “continuous” in its principles of design. His opponent in the *Eccelesiologist* corroborates this by showing, that from this point is to be dated the final expurgation of Pointed architecture from the Romanesque element which pervaded its earlier course. Mr. Poole has most forcibly urged this as a point for special subdivision; and I have myself attempted to show (in a paper published with my “Plea for faithful Restoration”) that this point marks the boundaries of the upward and the downward course of Pointed architecture, and that it is also (roughly speaking) the intersecting point of its course, as traced in the different countries of Europe,—that which they all reached by various roads, and from which they all diverged again. This amount of evidence seems to point it out as really the most important point in the whole course of Gothic architecture; and if it may be shown to be a point less easy to be defined than most of the other divisions, this is no more to be wondered at than that the days differ less and less in length as Midsummer approaches, or that there is some difficulty in pointing out by the unaided eye the exact moment when the sun crosses the meridian.

“F. S. A.” has, however, made some statements which, if proved, would tend somewhat to disturb the argument: I allude, of course, to his reference to the existence of flowing tracery at the very height of the Geometrical Period. I had seen some of these statements elsewhere, and I should much wish to see the subject carefully investigated, as I cannot but suspect that misapprehensions exist. Mr. Sharpe is clearly right about Wymington: it is obviously a very late specimen bordering hard upon “Perpendicular,” and must have been mentioned by mistake for some other example, as the church contains the brass effigies of its rebuilders (“*qui istam ecclesiam de novo construxerunt*”), and bearing date 1391.

If, however, the division is disturbed by the early date attributed to many English specimens of flowing tracery, much more is it so by the almost entire absence of it, as a leading principle, in the majority of continental works, till the latter part of the 14th century. Among them, in fact, it would be idle to attempt to divide the styles on such a principle. Roughly speaking, in fact, flowing tracery is there absent just while here it most prevails, and becomes prevalent there when here it is relinquished. Still, however, there is a difference of style between the earlier and later “Middle Pointed” in foreign specimens, almost as easily distinguished as that existing in England, though much more difficult to define. All may there assume a point of division, but it cannot possibly, I think, be laid down as the broad line of demarcation which it is in our own examples. Had I, then, seen none but English examples, I should strongly hold with Mr. Sharpe’s division; but as it is, I am, I confess, very dubious, and almost disposed, after all, to view the geometrical and flowing, or “curvilinear,” as local subdivisions only, and the two together as the one middle-pointed “style,” variously subdivided in different countries. I wish we could get up a sort of committee of English and foreign architecturalists to discuss such a point as this, and, if possible, to arrange a common system of division and nomenclature. I confess myself dissatisfied with all hitherto proposed, though all have merits of their own. On this great question of the division of *Geometrical from Flowing*, my sympathies are all with Mr. Sharpe, and I should rejoice to see my way out of the one difficulty which I meet with, the non-coincidence of foreign examples. I hope Mr. S. will help us out of this perplexity.

Geo. Gilbert Scott.

P.S. I have not alluded to the inconvenience which will result whenever we may change our nomenclature. I, of course, feel it, but I leave it to be urged by “F. S. A.,” who feels it more than I do. Mr. Rickman’s terms, I fear, must be relinquished sooner or later: it

will never do to go on talking about “Early English” and “Decorated.” Whether the fourfold division of Pointed architecture be right or not I should certainly hope for a European code. Mr. Sharpe’s is exclusively English, which is one of the great objections to Rickman’s.

It must, on the other hand, be admitted as a double point in favour of “F. S. A.” that the two great advocates of the distinctness of the subdivisions of “Middle Pointed” are also favourers, on the ground of convenience, of the retention of Rickman’s nomenclature; and that the greatest opponents of that nomenclature—the editors of the “*Eccelesiologist*”—adhere to Rickman’s divisions of style.

NOTES IN THE PROVINCES.

Colchester.—The new Branch National School, in Magdalen-street, was opened on Monday in last week. The site of the school-house, with new residences behind for master and mistress, was purchased for 450*l.*; and the structures were designed by Mr. Hayward, and erected by Messrs. Franklin and Start, builders, for 700*l.* The building has a concrete foundation, with walls of red brick, and ornamental stone-work to windows, chimneys, &c., with slated roof. It is in the Gothic style. The dimensions of the boys’ school are 49 feet by 18*½*, and it is calculated to contain 120 children; girls’ school, 30 feet by 16*½*. The committee have 500*l.* in hand towards defraying the cost of the building. The inauguration of the new People’s Hall by the committee of the Mechanics’ Institute was announced for Thursday, in the present week.

Bury St. Edmunds.—At a recent meeting of the Norman Tower committee it was resolved to put the finishing stroke to the Norman tower restoration, by the erection of palisades round the area and the steps and door to the belfry.

Leicester.—The sum of 1,000*l.* has been granted by the Church Building Commission to the district of St. George’s, Leicester, on condition that the entire cost of a new church for 1,000 persons be raised by 29th of May, 1852, one-third to be free. [More than twenty similar grants have been recently made to other towns.] The committee of the Leicester County Church Extension Fund have also voted a grant of 2,000*l.* for the church and for schools in the new parochial district, on condition that an equal amount be raised by local contributions before the date named. 500*l.* more in aid from other public bodies are expected. The total cost of the church is estimated at 6,000*l.*, including a site, which has been secured between the London-road and Wellington-street.

Southampton.—A church, designed by Mr. John Elliot, of Southampton, architect, is to be erected in the New-town district, at a cost, including architect’s expenses, of about 2,600*l.*, of which 800*l.* are still required. The building is to contain 854 sittings, without galleries, 501 free.—A plan for the widening of Bridge-street in its entire length has been proposed by Mr. Elliston, in conjunction with the architect just named. Mr. Elliston estimates the cost at 14,500*l.*

Newport, Isle of Wight.—At a recent meeting of the gas company, it was resolved to lower the price of their gas further from 7*s.* to 6*s.* next year, and in the meantime that the pipes be taken to the houses of private consumers at the company’s expense. The Newport Gas Company are thus laying a fair train for their own future profit, and they must have found the results of past reductions an encouragement to continuance in the same hopeful path.

Stapehill, Dorsetshire.—A Roman Catholic chapel, just completed at Stapehill, was opened on Wednesday in last week. The building is of red brick, with Bath stone dressings, and comprises two naves and a north aisle, with a tower surmounted by a spire at the west end of the south, or nun’s, nave. The interior is devoid of florid ornamentation: the roofs are of open timber-work, and the nun’s nave is separated from the other portion of the edifice by an oak screen 8 or 9 feet in height. There is a stained glass window at the east end: the

other windows are of stained and ornamental ground glass. The chapel, which is in the Early Decorated style, is calculated to accommodate nearly 400, in addition to sixty nuns. It was commenced in 1846. The architect was Mr. Charles Hansom, of Clifton. Some sacristies and other erections still remain to be built to complete the establishment.

Rugby.—Water-supply and sewerage works are in simultaneous progress. The water-tower, contracted for by Mr. John Parnell, of Rugby, builder, is being made of brick, and will be a conspicuous object. The laying of 12 to 18-inch pottery pipes for the sewerage is being proceeded with at various points.

Swindon.—An appeal to the public has been issued for aid in the erection of a new parish church here, capable of accommodating 1,000 persons, on a design by Mr. Scott, architect, and at a cost of 7,000*l.* Nearly 5,000*l.* have now been either received or promised, and the committee have commenced building. The first stone was laid on 7th June, 1850.

Hereford.—The memorial window in the cathedral to the late Dean Merewether has just been placed in the central one of the five lancet windows at the east end of the Lady Chapel. The pictorial subjects are in circles, surrounded with tracery, and represent scenes from the life of our Saviour, the upper one being the Last Supper. It may interest some of our readers to know that the sum already expended in improving and rebuilding different parts of Hereford Cathedral is 24,299*l.* Of this sum 5,942*l.* have been spent in repairing the tower; Lady Chapel, 2,755*l.*; ditto, raising roof, 619*l.* 16*s.* 4*d.*; new floor in tower, 356*l.* 10*s.*; east end of choir, 3,233*l.*; restoration of nave, 3,392*l.* 14*s.* 4*d.*; sundries, about 8,000*l.* To complete the restoration in its entirety, a further sum of 20,000*l.* would be required.—The Roman Catholic Chapel, which has been for some months under a course of gilding, painting, and decoration, was lately reopened.

Salford.—The foundation stone of a new Wesleyan chapel was laid on Monday in last week in St. Stephen’s-street. The architect, is Mr. William Dewsbury; and the builder, Mrs. Elizabeth Treves, of Strangeways. The chapel is to accommodate 800 persons. It will front into St. Stephen’s-street, from which it will be ascended by a flight of steps, one side of it being in Wellington-street, on which side there will also be a minister’s house. There is to be a gallery, with circular front. The building will be 72 feet long, 36 feet wide, and 33 feet high from the pediment, and will be heated with hot water. The cost of chapel and house will be about 1,600*l.* It is intended to erect school-rooms in the same neighbourhood.

Blackburn.—There is at present a great amount of building going on in this neighbourhood, not only in detached houses here and there, but in large groups, and even streets, in some instances. The prosperous condition of the working classes is said to be the cause of this increase of tenements, as many are now able to rent independent dwellings who have hitherto been content with lodgings.—The subscription towards the Peel Memorial in Darwen has amounted to 600*l.*, which the committee agreed to lay out in public baths. The committee accepted the tender of Mr. Lawrence Hacking for the masonry work, that of Mr. Seth Harwood for the joiners’ works, and that of Mr. Joseph Bradshaw for the plumbing and glazing, and the ironwork. The cost of the building will be from 1,000*l.* to 1,100*l.*

Edinburgh.—The proprietors of St. Andrew’s-square, Edinburgh, have had under their consideration a proposal to convert the square into an “open place,” thus adding a new feature to the city. The Melville pillar and statue now stand within an inclosure of iron palisades, which it is proposed to throw down. The votes, however, at a recent meeting, were equal—10 to 10. So Lord Melville, remarks a contemporary, will probably remain “in statue quo.”—It is proposed to open a new street from High-street to the Waverley-bridge for convenience of access from the southern districts of the town to the railway



DOOR ON THE WELCH BACK, BRISTOL.

stations. The new line of street would run in curved lines along the hilly ground occupied by various filthy and narrow closes, which it would open up and ventilate without absolutely sweeping them away.

Wexford.—An additional wing is required to be built to Wexford Gaol, and the High Sheriff has announced that the expense thereof, amounting to 1,200*l.*, would not require to be levied on the ratepayers, as that sum would be forthcoming from a fund of 2,000*l.* amassed by the proceeds resulting from the employment of the inmates of the prison.

Miscellaneous.—The foundation-stone of a school-room was laid at St. Fagan's, Cardiff, on 17th ult. —A new lock-up is to be erected at Otley. —The foundation-stone of a new bridge has been laid at Hawick. —A new building for the Arbroath Educational Institution was opened on 15th ult. —It is proposed to erect at Dundee a monument of Aberdeen granite, consisting of pedestal, 12 feet high, and statue 9 feet high, by Mr. Ritchie, sculptor, in memory of Mr. Kinloch, and at a cost of 300 guineas.

COUNTRY ARTIZANS AND ARCHITECTS' ANNOYANCES.

IN a recent number an article appeared,—"Indian Handicrafts," an English engineer in India describes his experience amongst the native workmen, &c.

In his description of the method of serving a "raj," or bricklayer, one of the "rundes" is represented as carrying a brick in each hand, and the "other with a small wooden trencher, about the size of a bread-basket filled with the massala" (or mortar), which is the method whereby the "raj" is supplied with materials for building in India, and which certainly appears somewhat ridiculous compared with our own method.—I say our method, though not universally practised in every part of England; and the perusal of the "rundes'" operations has so vividly brought this fact to my mind, that I am tempted to give you my experience in the north of England.

About six or seven years ago I was sent by an architect of eminence to the north to superintend some repairs to a mansion or castle, and the building a strong-room, &c. On arriving at the scene of action I found some portion of the work in progress. I was singularly struck by the awkwardness of the artisans and labourers employed on the work. The "rundes," or in this instance labourers (agricultural, it is true), were using not exactly a trencher for a hod, but something very near it, in the shape of an earthenware baking-dish, holding not more than two small shovelfuls of mortar, and which one of the "rundes," after filling and nicely rounding up the top so as to form the exact shape of a pie-crust, would very carefully put upon his head, and, in due time, after cautiously ascending the ladder, arrive at his destination with the "massala," or mortar; and a very tedious process, I assure you, it appeared to be. I tried a remonstrance against what appeared so very absurd, so very slow, expensive, and slovenly an operation, but I very soon found that too dangerous an experiment to be repeated, for the Northerners entertain an exceedingly high opinion of themselves, and a very contemptible one indeed for what they are pleased to term the Southern, by which name all coming from or beyond Birmingham are designated; and the nearer to or from London itself the greater are they held in contempt; the higher the Northern in office the stronger the feeling, and which appears to reach its climax about the grade of a bailiff or steward. Those above that grade appear to be men and gentlemen. Should the poor Southern, by some unlucky chance, give offence to the great "bashaw," he has reason indeed to tremble.

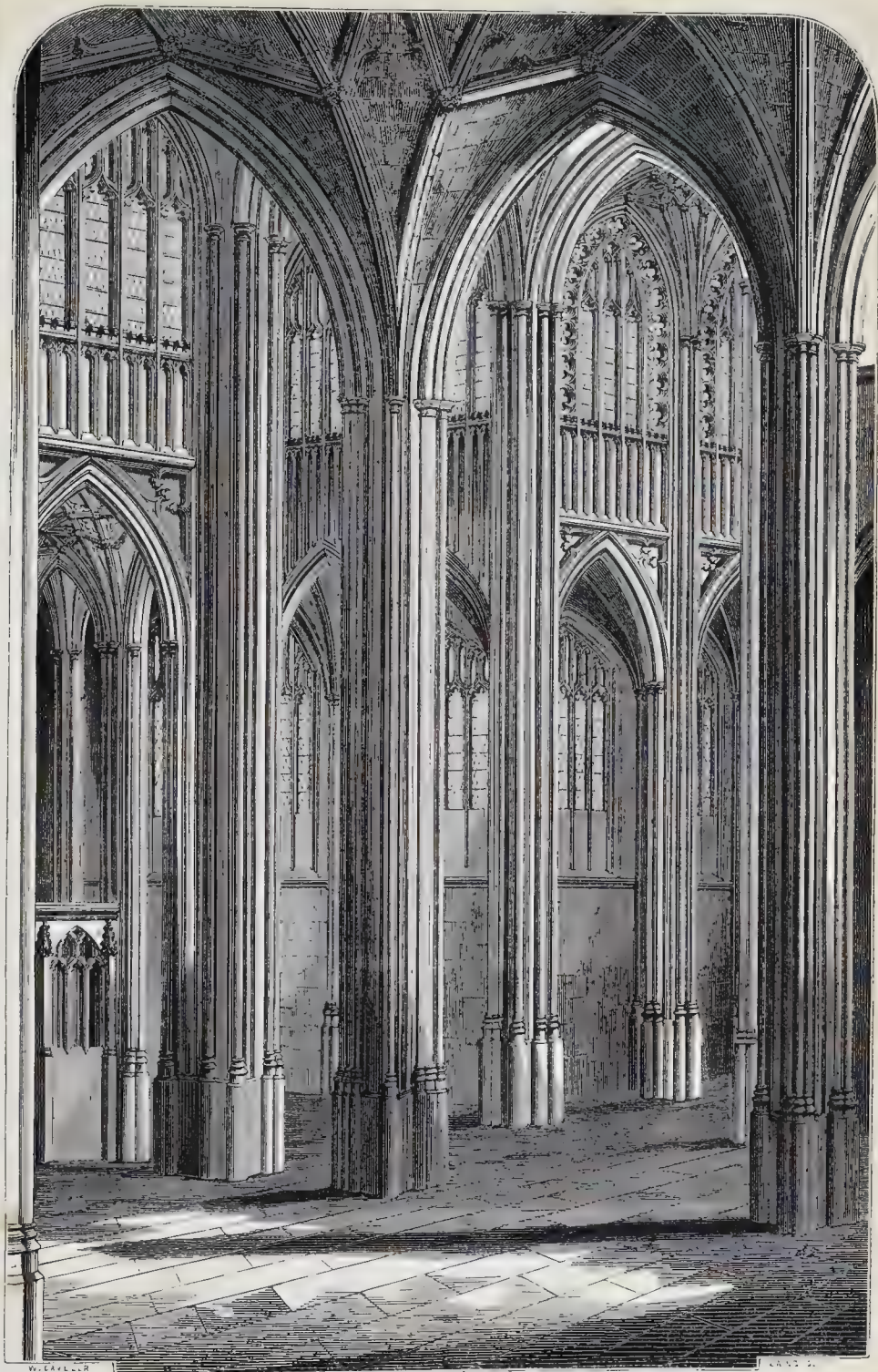
In building a strong room, brick arches had to be formed on iron girders, 6 inches below the floor or ceiling line of the next floor. The girders being fixed on which the arches were to be turned, springing from the bottom flanges, a great and stupid blunder (as it was pleased to be termed) was noticed by the Northerners: instantly a hue and cry was raised

that a "London architect had sent down drawings that no one could work from," and other observations were freely passed on the "London architect;" and his Southern representative was equally blamed for keeping the girders "too high, that he ought to have known that no man could work in a space of 6 inches," which was all the available room between the ceiling and the crown of arches, and that the floor could and should not be taken up. Notwithstanding all this vituperation, the drawings were worked to: a man was not necessitated to go between the arch and floor: the floor was not disturbed: yet the arches were turned, and properly turned. The gutter-boards being rotten, and the rafters worm-eaten, the London architect was to blame: if the roofs were not straight or the slates perished, the London architect was to blame, notwithstanding the London architect had no choice but to use Scotch fir for gutter-boards and rafters, unseasoned oak in the roofs, &c., and slates from a chosen quarry.

I mention this, and might adduce much more to show what difficulties architects and their representatives are at times subjected to through prejudice and ignorance.

A SOUTHERN.

SUNDERLAND DOCK: CRAVEN v. COMPANY.—This action, brought to recover 50,000*l.* for work done as contractors, was tried at York on Saturday, before Mr. Baron Platt. A claim made by Messrs. Craven had been investigated by Mr. Murray, who awarded them 4,422*l.*, and gave to the company 14,768*l.* for damage alleged to have been done by the plaintiffs. His lordship, after summing up, left two questions with the jury:—1. Was the reference to Mr. Murray by both parties such that his award should be final?—2. Was anything besides the claim of the plaintiff referred to Mr. Murray? The answer to both questions was in the negative. Verdict for the plaintiffs, subject to a reference as to the amount to be paid to the plaintiffs.—*Gateshead Observer.*



THE CHURCH OF ST. MARY, REDCLIFFE, BRISTOL.

INTERIOR VIEW.

[See page 476 in our present Number.

SCRAPS FROM AMERICA.

A FLOATING-BRIDGE 300 feet long and spacious enough to transport whole trains of railway cars across the channel between the Vermont and the New York Railway, has been launched upon the lake. The privilege of constructing docks at Rouse's Point, extending into the lake from each side, within 250 feet of each other, leaving a space open for navigation, has been granted by the New York State Assembly to the Ogdensburg Railway Company.

The amount of building going on in San Francisco, according to a Californian paper, is something extraordinary. Notwithstanding repeated and wholesale ravages by fire (the last quite recently), there are said to be more buildings now erected and tenantable than there were prior to the last great conflagration. Numerous and vacant stores are already to let, and the work of erecting more "fire brands" goes bravely on. Rents asked are 250 to 500 dollars a month, so that even though burnt down in a year they pay themselves, as they only cost 2,000 dollars in all. Perhaps, like some of our own, they are made for burning, —especially if well insured.

According to the *Alta California*, however, there are now in process of erection a number of buildings in San Francisco which will, should another fire ever occur, test the question whether a structure absolutely fire-proof can be built; for, it says, if these buildings, when completed, cannot resist the fire, none can, and the case is a hopeless one. Among them is the building of Adams and Co.'s Express Company, now in process of erection on the old site in Montgomery-street. In this building the piers are sunk 3 feet deep, on which is commenced the foundation: solid arches are built to strengthen the wall, which is 2 feet thick and solid to within about 2 feet of the level of the street, from which is commenced the air chamber, forming a hollow wall tied with brick and iron to the top of the building; this wall is to continue two feet thick all the way up. The building is to be three stories high, besides the basement. The roof is to be covered with tiles and cement. The floor timbers rest on projections built from the walls. The doors and windows are to be provided with two sets of shutters made of boiler iron, and each set of doors will have twenty fastenings of hinges, hooks, and bars, and the windows fifteen fastenings. The walls of the treasure vault are to be twenty-eight inches thick, in which are set iron bars one and a half inch square and four inches apart. The sills and caps are made of boiler iron, strengthened with strips of three inch bar iron. The first floor is to be laid with cement and German sand-stone tiles.

Carpenters and mechanics generally are reaping a rich harvest, realising as they do, their 8 dollars per day,—day labourers, 5 dollars; while their board is but 10 to 12 dollars per week, leaving, the former, a clear 40 dollars per week, for remittance home to their families. At least two-thirds of the money received for labour, adds our authority, is remitted by the first steamer after earned, and that is estimated at about 100,000 dollars per day.

In a "Chapter on Paving Stones," a writer in the *Boston Transcript* complains sadly of the ordinary granite and wooden pavements, for laming and exhausting horses, and M'Adam for dust, and recommends a return to the primitive pebble with which the Boston roads were once paved. In these, he remarks, every individual pebble is adapted to the *ungula*, and the horse can in no case slip farther than the small space between the summit of one pebble and that of the next. We may end here by quoting some of his observations on the pavings of antiquity:—

"Pavement of some sort has been in use for ages. A pavement of stones is spoken of in 2 Kings, xxi. 17. A pavement is referred to in 2 Chronicles, xxi. 13. A pavement of red and blue, and white and black marble is mentioned in Esther, i. 7. But these pavements were within temples or other structures. The pavement of an outward court is referred to in Ezekiel iv. 17. Paved work of sapphire is mentioned Exodus, xxiv. 10. The most remarkable species of pavement is spoken of, in Solomon's Song, iii. 10, where Solomon's chariot is said

to have been paved with love. But the Bible affords us no information upon the subject of paving the streets of a city. The earliest employment of stones for paving the streets is ascribed to the Carthaginians. In the time of Augustus, the Romans had many of their streets paved with stone. The Appian way was a *viâ strata*, or paved road, and constructed 312 B.C. There is, in King's Natural History, a description of a species of pavement, which it is impossible to read without a suspicion that Mr. John Landon McAdam must have read it himself. It may be found in Book xxvi. sec. 63. It is brief, and so curious in this connection that I will present it in a translation:—'We must not overlook one species of pavement among the Greeks. The earth having been prepared with a paver's beetle, a pavement of stone or brick, broken into fragments, is thrown upon it: then it is thickly covered with charcoal, trodden in with the feet, and mixed with sand, lime, and ashes: the mass is brought, by measurement and rule, to an equal thickness of half-a-foot, and has the form of earth. If finished off with a roller, it acquires the appearance of a black pavement.' This we know is not the process exactly employed by Mr. McAdam, but there are strong points of resemblance between the two. We know that the streets of Herculaneum and Pompeii were paved, and provided with *trottoirs* or sidewalks. Rymer, vol. v. p. 520, states that the first toll or tax levied for repairing the streets was in the reign of Edward III. There was no pavement in London till the eleventh century. Holborn was not paved till 1417, and Smithfield not until 1614. The Westminster Paving Act was passed in 1762. Paris commenced paving in 1184. Two hundred years after paving commenced in Paris, Philip the Bold commanded every citizen to repair and clean the streets before his own house."

ON THE BUILDING ASSOCIATIONS OF THE MIDDLE AGES, ESPECIALLY IN GERMANY.*

UNTIL the end of the 12th century architecture was mostly confined within the precincts of convents, where Roman art, knowledge, and tradition had found an asylum. The convents of St. Gall, Hirsau, Corvey, Fulda, Padenborn, Hersfeld, Reichenau, Osnabrück, Hildesheim, &c. possessed regular building schools (*Bau-schulen*), which were in constant communion with those of other European countries. In all these *laymen* were instructed and formed for the profession, far from the flippancy, worldliness, and intemperance of present times; a sturdy, pithy race, as figured on their very sculptures and monuments. The abbots, William of Hirsau, in the Black Forest, and Gebhard of Petershausen, near Constance, were renowned as founders and conductors of such schools, who not only built convents, but also a great many parochial churches. The order of the Benedictines, however, for a long time took the lead, and for several centuries the abbots of St. Gall, Montecassino and Clugny contained the principal building schools for Germany, Italy, and France. Serious thoughtfulness being the characteristic of these ages; when church-building seemed to tend towards exorbitant luxury, St. Bernard reproved that extravagance, and St. Robert opposed the more ascetic Cisterz to the gaudy style of Clugny.

When, however, the huge cathedrals of the 12th century began to be erected with such potent energy, the *bishops* received a preponderant influence over church architecture, which then began to migrate from the convents into cities and towns, and pass pre-eminently into the hands of laymen; and thus, beside the other corporate institutions of that period, arose the *guild of builders*, exercising a paramount influence over the whole extent of art. The mind and organization inherent in the building fraternities of the middle ages, have been a subject of much fruitless discussion, as anything mystical operates in deeds, and not in verbiage and flourish. Some have considered them as mere meeting-places of a trade association; others traced their secrets to the times of Solomon, Hiram, Hermes, &c. In England Christopher Wren was one of the disciples of *mystic masonry*. Even the universality and singleness of their thoughts, conceptions, and works show, that there was something universal and great, which lay under their exterior usages, rules, and pre-

cepts. But these men were no scribbling race, and few of the documents of the building associations are anterior to the 14th century: they did not pile up paper, but stone-piles, to be seen by every one—a huge substratum for grand designs, the offspring and parent of thought, force, power, beauty—art. Of what they wanted to put in writing, the document published by Halliwell is one of the most important, pointing to times and precedents of a still earlier age. In Germany, S. G. Klass has published the most complete collection of documents on this subject. The brothers *Boisseré*, however, who rank first amongst the revivers of German mediæval art, possess a collection of such documents, but, it seems, hesitate making it public. The Strasburg Ordinance (*Ordnung*) of 1459, that of Thorgau, 1462, &c. &c., clearly show, that a religious feeling, modesty, and honourability (*Ehrbarkeit*) were considered the main pillars of the building-fraternity, all bearing an ethical character, on which handicraft, knowledge, and art were engrailed, and which the men of those times considered *natural consequences* of an ethic and religious feeling. We, on the contrary, begin with, and base all upon, *tangible knowledge* and dexterity; but strange to say, the mind seems not to result, *ipso facto*, from such antecedents. The members of the *Bau-hütte* (building-shed, hut), masters, companions, and apprentices, were subject to the rules of the fraternity, and the supreme judge of the *Steinwerke* (stone-work) pronounced his decisions, against which there was no appeal. Of such lodges (*Bau-hütten*) there were four in Germany; at Strasburg, Cologne, Vienna, and Zurich; which latter, however, had to compete with that of Bern. The first place was always claimed by the lodge of Strasburg, whose domain extended, as stated in its order-book, "up the Rhine from Constance to Coblenz, and to what is above the Moselle (*Musel*), as well as Franconia and Swabia." When Germany became a *fief* of the Habsburgs, and Strasburg disavowed from Germany, the dominion of that city over the German fraternities came to an end, until they quite disappeared before the dimness and mist of a purely materialistic and sober civilisation. Still, their tendencies and scope were those which had already before reared the temples and buildings of Egypt, Greece, and Rome. Such reversions of times come by themselves, and the individual can hardly cope with such huge evolutions of history. Still the same thing may be said of mediæval cathedrals as of mediævity itself—"they have both not then arrived at ultimate completion."

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Athens: Excavations &c.—The late discoveries in the Court-house (*Βουλευτήριον*) have been discussed in a meeting of the Archaeological Society, at which the King and Queen, &c., assisted. Lithographs of the inscriptions found, as well as some preliminary observations on these important discoveries, are ready for publication. Even now it is obvious, that they will occasion some corrections in the topography of ancient Athens, and confirm, for instance, the opinion of those who assert that the temple of Theseus and that of Ares, are the same. This incident has, moreover, had such an influence on the lower house of the Greek Legislature, that, in the sight of those many honourable memorials placed in the old Athens Court-house to deserving citizens, they also have decided that the portraits of the three admirals who fought the battle of Navarino should be placed in the hall of their meetings.

Munich.—Privy Councillor and Chamberlain M. Von Klenze, the architect of the Museum of Fine Arts at St. Petersburg, has been made a Grand Cross of the Russian order of St. Anne. So, we delight to honour merit and—sheriffs.

Water-supply Question, Constantinople.—The Turkish Government have not been long behind in attending to this important sanitary item of their metropolis—much neglected, hitherto, in this respect. The French engineer,

* From German sources.

M. Degoussée, has been commissioned by the Imperial Government to proceed with the undertaking. M. D. has, after a careful study of the land around Constantinople, decided on the system of artesian wells, as there can be no doubt that the outcroppings of the Hamus mountains will contain strata of an aquiferous character. It is to be taken into consideration, that the Mohammedans are a *bathing people* (the Koran commanding seven ablutions a-day), and M. Degoussée may perhaps attain strata which will yield water sufficiently warm for balneary purposes, and thus supply the many public baths at a cost nearly nominal.

Gold in the Rhine-sand.—The Dutch Government have taken up, of late, the much controverted question of the Rhine sand. *Employés* who have seen the washing of gold in other parts of the globe, have visited the banks of the Rhine about Manheim, Schaffhouse and Basel, and have taken large samples to Holland to be there examined. It is not certain yet whether the washing of gold shall take place *in loco*, or whether whole shiploads of auriferous sand will be conveyed to Holland to be washed and smelted there.

Miscellaneous.

CHURCH TILES.—I notice a letter in your last week's number, to which I beg your permission to reply. The writer of the article in "Felix Farley" might easily have ascertained the correctness of my former statement, had he taken the trouble to make inquiry at his own door, viz., of Mr. Charles Ring, agent for the tiles at Bristol, who would have quoted 9s. per square yard, or 1s. per foot, as the price of the plain tiles; and the same information might have been obtained at most of the principal towns in the kingdom, where agencies have been established for the purpose of taking orders at the above terms, to be supplied from the manufactory. The establishment in Blackfriars, where a stock of tiles is kept, is for the convenience of the London building trade and its immediate vicinity. The prices quoted there include carriage from Stoke, unpacking and repacking, and a [variety?] of other expenses that must occur to any practical mind; and the best answer to the charge of the prices being extravagant is, that the establishment has been conducted at a loss of several hundreds a year from its opening to the present time. Your correspondent may be rather sceptical as to the accuracy of this assertion. So were the Income-Tax Commissioners, until our books (audited yearly by a public accountant) were thrown open to their inspection, and then they were fully satisfied. It is most unfair to contrast the prices of the common Staffordshire or other flooring tiles with the patent tiles manufactured by me; which, independently of the use of expensive machinery, require the clays to be dissolved in water, their impurities to be separated, afterwards to be dried on a kiln and then ground, a process that is more costly than that used in preparing the clay for the finest porcelain. The price of an article cannot be extravagant when it does not pay the producer a fair return for his capital. Messrs. Chamberlain and Co., of Worcester, tried this branch of manufacture for many years and gave it up; Mr. Alderman Copeland for two or three years with the same result; and if parties such as these, with ample means, and in the command of practical skill and all available resources to success, could not realise a profit, I feel assured that, whatever the writers in "Felix Farley," or "The Ecclesiologist" may affirm, those really capable of judging will be rather disposed to commend my perseverance, under difficulties of no ordinary kind, than to conclude that I do "charge too much."

* We may here remark (though without any special reference to the subject of Mr. Minton's note), that the secretary to the London Marble and Stone Working Company at Esber, calls our attention to a statement in the article on the new House of Commons, in our last number, that "Minton's men are busily at work laying the tile pavement throughout the buildings;" and says,—"It is not Minton's men who are so employed, but those of this company. We have orders to lay all the ornamental paving, which is composed of Minton's tiles and Castle-hill stone," the floors being prepared by this company's machinery.

for the tiles, or make them merely for profit. Had this been the case, I should have done as others did; and then, it is not too much to state, that the public would not have been in possession of a description of flooring which, whether as regards beauty or durability, has never in any age been surpassed. As I before stated, I hope soon, by the introduction of new machinery, to reduce the price.—H. MINTON.

RAILWAY JOTTINGS.—The disturbances near Chipping Campden, noted in our last, were renewed, it appears, on Sunday night or Monday morning of last week before daylight, by Mr. Brunel, at the head of a literal army, now augmented to no less than nearly 2,000 men! The contractor's force opposed to these in defence of the works in dispute did not exceed 150 in number. The Riot Act was again read by the magistrates, while Mr. Hobler, from the Mansion-house, it is said, endeavoured to defend and justify the course about to be adopted. The police constables were now assisted by some soldiers, and after several heads had actually been broken and other mischief done, Messrs. Brunel and Hobler were charged to aid in keeping the peace; and the magistrates having expressed a firm determination not to allow forcible possession to be taken, a lengthened discussion ensued between the contending parties and their solicitors, and terms of arrangement were proposed, which in a short time were reduced to writing, and signed by Mr. Brunel on the part of the company. By these terms the company engaged to employ all the contractor's men, and to hold the works on sufferance until an award as to all matters in dispute could be made by Mr. Cubitt or Mr. Rennell; and if the company should decline to ratify these terms, Mr. Brunel personally undertook to withdraw the company's men from the works. Thus matters were arranged before half-past eight o'clock a.m., the attendance of the military was countermanded, and peace is at last restored.—A new company has been formed for the Paris and Lyons Railway, in which it is reported, says *Herapath*, that two contractors have taken 100,000*l.* each, another party 50,000*l.*, and Mr. Hudson 100,000*l.*—The Paris journals announce, that the first railway in Sweden has just been completed: it extends from the Lake of Langbar to that of Yngen, in the district of Filipstad, and is about 75 miles in length.

THE GLASS TRADE: STRIKES.—From what we hear, says *The Times*, our plate-glass manufacturers are likely to be entirely distanced by those from Cirey and St. Gobain, in France—a defeat altogether unexpected, but about the justice of which there seems to be no doubt. The French also show some oxide of zinc glass, the transparent, colourless beauty of which is very remarkable, and which merits the more praise from its novelty. The *Gateshead Observer*, in quoting this paragraph, however, states that "Mr. Price, of Gateshead, manufactured and exhibited colourless glass, 'imperial plate,' many years ago. It was intended, chiefly, for glazing water-colour drawings, and Mr. Carrick's portraits on marble; but the Government stepped in, by imposing a penalty of 200*l.* per foot, and suppressed the manufacture. In 1838, at the meeting in Newcastle of the British Association, specimens of this glass were shown by the side of ordinary plate glass, that the members might see what kind of glass the Government would tolerate, and what glass they preferred to throw into the hands of foreigners." These are instructive facts.—The Birmingham Quarter Sessions have confirmed the sentence of the magistrates in the case of Jukes, a glass blower, committed for two months for threatening and intimidating workmen.

BUILDERS' BENEVOLENT INSTITUTION.

—The fourth annual general meeting of the friends and subscribers to this useful charity was held on Thursday, at the London Tavern, Bishopsgate-street; the president, Mr. W. Cubitt, M.P., in the chair. The chairman said that they had met for the purpose of giving the directors the power of stating publicly to the benefactors who helped them in

need, their past doings and their future prospects. He hoped that, in the course of a short time, their means of success would be greatly extended. The secretary read the report, which stated, that the committee had the satisfaction of announcing that, in addition to the pensioners now benefiting by the aid of the institution, they had determined on the election of four others, making the total number of recipients on the funds twelve males and four females. The annual ball, in February last, had been numerously attended, and the sum received by the treasurer was 119*l.* 4*s.* 10*d.*, being an increase of 20*l.* 11*s.* 4*d.* over the proceeds of the previous year. The amount of subscriptions and donations for the year ending 24th June last, was 68*l.* 13*s.* 6*d.* The difference between this sum and that published in the year preceding, was owing to the sum received at the annual dinner last year being included in the latter. They had also much pleasure in stating that they added to their funded stock, during the year, 650*l.*, making the total amount invested 2,250*l.* in the Three per Cent. Consols. In conclusion, the directors congratulated the supporters of the Institution on the prominent position it has attained to, and thanked them most gratefully for their charitable co-operation. They hoped ere long that they would be enabled, by increased exertions on the part of their friends, again to perform one of the most pleasing portions of their duty, viz., to announce another election of pensioners. The balance-sheet, as read, showed that the total receipts, including a balance in hand of 239*l.* 16*s.* 9*d.*, had been 1,278*l.* 17*s.* 2*d.*; and after all the necessary outlay and expenses had been paid, there was left a balance in hand of 27*l.* 3*s.* The report having been received and adopted, four pensioners were then elected; and a vote of thanks was passed to the chairman, and to the treasurer (Mr. G. Bird) for his zeal in the service of the Institution since its commencement.

FALL OF AN IRON ROOF.—On Saturday week the iron roof of an iron foundry at Manchester belonging to Messrs. Parr, Curtis, and Madeley, fell in. The building consisted of one story, and was 120 feet long by 84 wide. The roof was of the light description of iron used for covering railway stations, and fitted up by Messrs. Ireland and Longden. As described by the *Manchester Spectator*, the foundry, at its eastern and western extremities, had double gable ends, so that the roof was divided into two, and rested on five or six iron columns, ranging down the centre. The principal rafters, thirteen of which crossed the roof as supports, from north to south, are composed of two screeds of wrought iron, between which is a rafter of wood, about 3 inches thick, intended to enable them to resist compression longitudinally, and also to stiffen them laterally. It is supposed that one of the columns near the centre, between two cranes projecting from the northern wall, had first yielded. From the appearance of the wall between the double gable at the east end, it would seem, says our authority, that the roof had swayed in that direction, as part of the brickwork is forced outwards by the central beam upheld by the columns, whilst it was as clearly drawn out of the west end. The rafters had also drawn from the north and south walls, without otherwise disturbing them. The damage is estimated at 1,000*l.*, the roof having cost 900*l.*

SMOKE CONSUMPTION.—A patent has been recently enrolled by Mr. George Anstey, of Brighton, for certain improvements in consuming smoke, and in regulating the draught in chimneys. The patentee claims the means of more effectually securing the combustion of the smoke from furnaces and fire-places, by causing the products of combustion to pass through apertures in plates and cones, and thereby to be retained longer than usual in contact with the flames and heat; and adaptations to ordinary fire-grates, and to furnaces of steam-boilers. Secondly, as regards the means of regulating draught in chimneys, means described of maintaining an equable degree of temperature at the upper end of the chimney, by preventing any sudden influx of cold air.

GREENHOUSES KNOWN TO THE ANCIENTS.

—Although some sheet glass has been found in the ruins of Pompeii, *M. Humboldt* has been of opinion, that the ancients did not know what we call green or hot houses. *M. Dureau de la Malle*, of the French Institute, has, however, succeeded in clearing up this point in dispute to perfect satisfaction. The name of "*gardens of Adonis*," mentioned by ancient authors, ought to have pointed long ago at something uncommon, hidden under this appellation. Plato mentioning them in his *Phædrus* says, that "a grain of seed or the branch of a tree placed or introduced in these gardens, acquires in eight days a development which cannot be obtained in as many months in the open air." According to an inscription discovered at Rome, Domitianus possessed in his palace on the Palatine a hothouse, where exotic plants were cultivated. Columella also, the head of Roman rural and agricultural authors, says:—"Rome possesses, within the precincts of her walls, fragrant trees, trees of precious perfumes, such as grow in the open air of India and Arabia. These gardens are embellished with the myrtle and the crocus in flower: there you see the balm-tree of India and the cinnamon-tree covered with leaves, as well as the tree of frankincense. Italy, this fertile land, yields willingly to the wants of her cultivators, and has learnt to contain the fruits of the whole universe." In another passage Columella mentions portable (moveable) glass houses. It was for Tiberius, that cucumbers were to be grown *ferre toto anno*, which was done in frames filled with warm dung, which were mounted on wheels for bringing them close to some wall, shone upon by the sun. *M. D. de la Malle* cites another passage of *Martial*, containing the reproach of a person to his friend, for having lodged him worse than his fruit-trees, "which children of Cilicia, for excluding them from winter and cold winds, are protected by glass in sheet from the blasts of Boreas, which do not admit but air and sun." Seneca goes still further, saying:—"Do those not live contrary to nature who require a rose in winter, and who, by the excitement of hot water and an appropriate modification of heat, force from the equinox of winter the lily-bloom of spring?" This passage, in fine, is conclusive for proving, that the Romans used steam as one of the heating agents for those *Adonis* gardens, which, considering their many warm-bath establishments, must have been an expedient obtruding itself on their attention.

MEMOTECNY.—We attended one of *M. Minola's soirées* the other evening, and found it a pleasant entertainment. It consists of surprising displays of facility in quickly committing to memory, and retaining at pleasure, an enormous amount of information, by some method of his own, which he is, moreover, able to impart to others; and the more abstruse experiments are occasionally interspersed with some very neatly executed specimens of sleight of hand. The conjuring may be intended as a relief to *M. Minola* himself, as much as to the spectators; but its introduction is rather to be regretted, for it degrades his science to the level of the clever tricks performed by wizards and other mysterious personages, whereas his exhibition of memory is far too interesting in itself to need any such assistance to render it acceptable.

THE FILES OF SHEFFIELD AND FRANCE.

—At a public dinner given last week at the Cutlers'-hall, Sheffield, to the Great Exhibition Local Commissioners for that town, one of these gentlemen (*Mr. Overend*) related the following interesting anecdote:—"There was a French gentleman among the jurors, who very properly showed great zeal in protecting the interests of his countrymen. He had admitted that Sheffield had made the best files, but he maintained that there was a house in France that could make better. He challenged Sheffield to the trial, and he selected the house with which he would make the trial, and it happened to be that of which my worthy friend the mayor (*Mr. Turton*) is the head. He sent to France to have files made for the purpose. He brought over a French engineer to use them, and he challenged Messrs. Turton and Sons to the contest. Two pieces

of steel were selected upon which to try the files, and they were fixed in two vices. Messrs. Turton accepted the challenge, but they did not send to Sheffield to have any files made specially for the occasion. They merely went to a London customer whom they supplied with files, and took files indiscriminately from his stock. They chose a man from among the Sappers and Miners in the Exhibition to use their file against the French engineer and the French files made for the trial. The two pieces of steel being fixed in the vices, the men began to work upon them simultaneously. The Englishman with Messrs. Turton's file had filed the steel down to the vice before the French engineer had got one-third through. When the files were examined, Messrs. Turton's file was found to be as good as ever, while the French file was nearly worn out. The French juror then said, no doubt he was beaten in that trial, but Messrs. Turton's file must have been made to cut steel alone, whereas the French file was better adapted for iron. A new trial then took place upon iron, and the result was still more in favour of the English file."

LEAD, COPPER, TIN, AND ZINC.—By a parliamentary return it appears that the total quantity of pig and sheet lead imported into the United Kingdom in 1850, was 11,857 tons; lead ore, 1,700 tons; red lead, 7 tons; white lead, 40 tons; and chromate of lead, 1 ton. The net amount of duty received thereon was 872*l.* 6*s.* 8*d.* The exports of British lead, in the same year, were as follow:—Lead ore, 165 tons; pig and rolled lead, 20,165; shot, 1,750; litharge, 562; red lead, 2,112; white lead, 2,043. The principal exports were to Russia, France, and the United States. The copper imports in 1850 were—Ore, 40,338 tons; regulus, 5,473; unwrought, 669; old metal, 431; bar, rods, and ingots, 4,211; plates and coin, 11; copper manufactures and engraved plates, 35,946. The British copper exported from the United Kingdom, in the year 1850, was—Ore, 150 tons; all other sorts, 21,307 tons. The total quantity of copper exported from the port of Liverpool within the year was 7,360 tons. The total quantity of tin imported in the year was 1,685 tons; and exported, 1,538 tons. The duty received on the tin imported amounted to 5,827*l.* The imports of zinc, for the same year, amounted to 18,626 tons; and the exports to 4,573 tons.

BRICKMAKERS' UNIONS.—There have been sanguinary doings at Birch, near Manchester, between about 100 unionist brick-makers and the watchers at a brick croft belonging to *Mr. James Farr*, of Rusholme, who was so persecuted some time ago by the same parties that a Government reward was offered for their apprehension. The unionists came armed to destroy soft bricks, and the watchers were armed to resist the anticipated attack. One of the unionists was killed by one of his own party unknown, against whom a verdict of murder has been given, and others were carried off wounded, it was believed, by a cannon fired by the watchers.—A unionist brickmaker at Birmingham has been committed to the house of correction for two months with hard labour for a savage attack upon a fellow labourer who had refused or more probably was unable to pay down a sovereign and join the union to which he and others intimating the prosecutor belonged.

CONVENTIONALITIES.—"In railway accidents of the present day, why," asks a writer in *Household Words*, "is the coroner always convinced that a searching inquiry must be made, and that the authorities are affording every possible facility in aid of the elucidation of this unhappy disaster? When a new building tumbles into a heap of ruins, why are architects, contractors, and materials, always the best that could be got for money, with additional precautions,—as if that splendid termination were the triumph of construction, and all buildings that don't tumble down were failures? When a boiler bursts, why was it the very best of boilers; and why, when somebody thinks that if the accident were not the boiler's fault it is likely to have been the engineer's, is it that the engineer is always declared the steadiest and skilfullest of men? If a public servant

be impeached, how does it happen that there never was such an excellent public servant as he will be shown to be by *Red-Tape-osophy*? If an abuse be brought to light, how does it come to pass that it is sure to be, in fact (if rightly viewed), a blessing? How can it be that we have gone on for so many years, surrounding the grave with ghastly, ruinous, incongruous, and inexplicable mummeries, and curtaining the cradle with a thousand ridiculous and prejudicial customs?"

NAILORS' STRIKE IN THE BIRMINGHAM DISTRICT.—The nailors, in consequence of a reduction of wages, 10 per cent. or more, sought to be made by the masters, have struck in various places, and it is believed that the strike will become general throughout the district. Meetings have been held by the men at Dudley, Rowley-Regis, West Bromwich, and elsewhere, and resolutions made to resist the masters.

SAWYERS' STRIKE, AND INTIMIDATION AT BIRMINGHAM.—A strike, originating in a reduction of wages by Messrs. Wright, at their extensive railway carriage works, to what they alleged to be the rates elsewhere given, has of late given rise to ferocious threats and injurious treatment to workmen replacing those on strike; and as an example to forty or fifty men, whom Messrs. Wright threatened to punish in like manner, one of the ringleaders has been brought before the magistrates, and condemned to three months' imprisonment, with hard labour, in the House of Correction, for maltreatment of a workman in the employment of the Grand Junction Railway Company, but then at work with Messrs. Wright, and who had been threatened with murder, his wife frightened into fits, and the man himself obliged to remain in Messrs. Wright's premises night and day in consequence. The strikers belong to a club, having for its objects, not only the keeping up of the rate of wages, but also the prevention of men from continuing to work, and the intimidation of those who remained at work.

PAINTING AND GLAZING CONTRACTS.—At the Birmingham County Court, last week, a case, *Evans v. Jones*, was decided, in which it appeared that defendant had put up some houses in *Sherlock-street*, and plaintiff, a plumber and painter, had done the painting and glazing, and brought this action for a balance due of 13*l.* 15*s.* About Christmas last plaintiff had given in an estimate, by which he was bound to do the whole for 11*l.* It was alleged that he took the job at a low figure, and was to proceed at his convenience. Soon after defendant stopped the work till March. On this ground plaintiff wanted a larger sum, but neglected to alter the old contract. A surveyor said he had examined the work, and pronounced it worth 13*l.* 15*s.*, and very well executed; but after hearing both sides, the magistrate said, in the absence of any other agreement or sworn arrangement to the contrary, the original sum must be considered as right, and as the contract had not been completed, the verdict must be for the defendant.

COATING METALS.—A patent has been enrolled by *Mr. Grissell*, of the Regent's Canal Iron Works, and *Mr. Redwood*, of Montague-street, for improvements in coating metals with other metals. The patentees claim the use of borosilicate of lead, in a fluid state, over the surface of melted copper, or brass, or of certain alloys, in the process of coating iron by immersion; also the process of coating iron with copper, by the action of fused chloride of copper, or other mixtures described, and of coating with brass, by subsequent treatment with vapours of zinc.

BLASTING ROCKS AND WORKING MARBLE, &c.—A patent has been enrolled by *Joseph Conrad Baron Liebhafner*, of Paris, for improvements in blasting rocks; also in working marble and stone; and in preparing products therefrom. The improvements in blasting have reference to that method of forming the cavity for the reception of the charge by means of acids, for which a patent was granted to the present patentee in 1845. The subject of the present invention consists in the improved methods of, and apparatus used for, the introduction of the acid into the bore.

ORDNANCE SURVEY OF SCOTLAND.—The select committee on the ordinance survey of Scotland have just presented their report to the House of Commons. It appears that the principal triangulation of Scotland was commenced in 1809, but up to the present time only 1-60th part of the whole country has been surveyed. The cost of the survey has been 101,436*l.*, or, dating from 1809, an average annual expenditure of 2,416*l.* only. With the present grant, and at the present rate of progress, fifty years must elapse before the survey can be completed and purchased. Indeed, so backward is the state of the survey, that the committee report it to be behind all the civilised countries of Europe, not even Iceland excepted, which possesses an accurate map of the physical features of its own territory. The committee therefore recommend, with regard to the future conduct and publication of the survey—1. That the six-inch scale be abandoned. 2. That the system of contouring be abandoned. 3. That the survey and plotting on the two-inch scale be proceeded with as rapidly as is consistent with accuracy, with a view to the publication, within ten years, of a one-inch map, shaded and engraved in a manner similar to the Ordnance one-inch map of England, with as many elevations as possible given in figures. 4. That the survey be proceeded with steadily from south to north, as was the original intention. 5. That Mr. Brunel's suggestions be adopted. The committee, in conclusion, call attention to the important fact, that, if the above recommendations are adopted, a saving to the nation of no less than 500,000*l.* will be effected. They, therefore, feel that they can confidently recommend such an increase of the annual grant as will complete the publication of the survey of Scotland, as proposed, within a period of ten years, so that some, at least, of the present generation may hope to live to see it finished.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—The annual meeting of this society will be held at Derby. The following is the official programme of proceedings:—Monday, Aug. 18.—Meeting of general committee; dinner at ordinary at the Royal Hotel; evening meeting in the Town-hall; President's address; papers; order of business. Tuesday, Aug. 19.—Excursion to South Wingfield Manor, Hardwick, Bolsover Castle; examination of the Rev. J. Hamilton Gray's collection of Etruscan antiquities; Steeley; Chesterfield; evening meeting in Athenæum; papers; conversation. Wednesday, Aug. 20.—Excursion to Matlock, Hadron-hall, Chatsworth, Bakewell, Yougholme; visit to Mr. Bateman's Celtic and other antiquities; Eyam, Pederwell, Castleton, &c.; evening meeting in Athenæum; papers; conversation. Thursday, Aug. 21.—Excursion to Rolleston; Tutbury Castle; Hanbury, Norbury, and Ashburne Churches; Stydd-hall; evening meeting in Athenæum; papers; conversation. Friday, Aug. 22.—Repton; Melbourne; Little Chester; Ashby de la Zouch Castle; Codnor Castle; Dale Abbey; Morley, and other objects of antiquarian interest in the immediate neighbourhood of Derby; public dinner, Athenæum. Saturday, Aug. 23.—Public breakfast: closing meeting at the Town-hall. The secretaries are Messrs. Charles Bailey and J. R. Planché, Captain Bullock, Dr. William Bell, and Mr. Alford White.

DANGER OF EMPTY HOUSES.—Among other causes for complaints among tenants and holders of house property wanting a remedy is, having for the next door neighbour an empty house. Half the burglaries round London are owing to this cause affording the thief easy access and perfect concealment. Besides, there is another evil which amounts to a dreadful nuisance, as when the house has been deserted for some length of time, and becomes so dilapidated, that there is no chance of its ever being occupied, unless the landlord does some extensive repairs. It would, of course, be impossible to make it compulsory that the money should be spent, whether convenient or not to the landlord, merely because the tenant next door does not like the gloomy, deserted, and dirty appearance of the adjoining property. But I think, without injury to the landlord,

the first annoyance arising from being continually exposed to robbery might easily be remedied, by making it compulsory that the key of all empty houses should be deposited at the station-house, and the policeman of the beat in which the house is situate should also have a duplicate key. By this means the police will possess an effectual means of assisting in suppressing some of the numerous robberies peculiar to autumn.—JAMES CLARKE.

THE SANITARY CONFERENCE AT PARIS.—The first meeting of the Sanitary Conference took place here on Wednesday in last week. It was attended by delegates from Great Britain, France, Austria, Spain, Sardinia, and Greece. The delegates were called together by M. David, Minister Plenipotentiary and Delegate from France, who in a brief address welcomed the delegates to Paris, and expressed a hope that their deliberations would be of great service to the interests of the several States which they represented. Great Britain is represented at the conference by Dr. Sutherland, and Sir Anthony Perrier, Consul at Brest.

METROPOLITAN COMMISSION OF SEWERS.—A court was held on Friday last, when the commissioners agreed to a variety of works to the amount of 5,700*l.* A special court was then held, when it was decided that a certain agreement between Henry Rains and the commissioners, and the Bermondsey Improvement Commissioners, for the purpose of terminating certain proceedings in law and equity, and of providing for a sale and conveyance of part of the St. Saviour's Mill-streams, Bermondsey, by the said Henry Rains, to the said Bermondsey Improvement Commissioners, with a view to the filling up of the same, and the final and effectual nuisance caused thereby, should be agreed to. A deed was also approved of for securing payment by the commissioners to Mr. J. C. Peach, of the sum of 20,000*l.*, lent by him to the former Surrey and Kent Commissioners.

MASONS' PROVIDENT INSTITUTION.—The usual half-yearly meeting of donors and subscribers was held on Wednesday evening at the Literary Institution, Great Smith-street, Westminster, Mr. Edward Farrow in the chair, for the purpose of receiving the report of the committee, which detailed the progressive state of the institution, and the intention to announce the election of two additional pensioners in January next, due notice to be given: it also showed a balance in the hands of the banker of 117*l.* 13*s.* 2*d.*, exclusive of 250*l.* 4*s.* 9*d.* Three per Cent. Consols. The report was unanimously adopted. Liberal donations were announced in course of the evening, and several annual subscribers were entered.

A PRETTY FIGURE FOR A LADY.—Mr. Editor,—Conceit is not a nice thing, and yet there are some nice conceits, and the following, which is architectural and quite in your way (though in another respect I hope you may not find it so), seems to me one of them. The column is an emblem of *Faith*: it springs from earth to heaven: the arch symbolises *Mercy*, it descends from heaven to earth. This is my sort of architecture, and I hope you will agree with me that it is not a bad "style."—ROSA.

THE WORM IN THE BOBBIN.—I am in the habit of winding silk and cotton on wooden bobbins, and at this season of the year suffer considerably by the worm eating its way out of the wood and through the silk or cotton that is on the bobbin, thereby completely destroying it. Can any of your numerous readers suggest some plan whereby the wood could be rendered proof against this destructive little insect? If they can, I shall, and I think many more besides me will, feel much obliged by so valuable information.—JAMES JARDINE.

NORBURY PARK.—Mr. Charles Barry, jun., requests us to state in respect to the alterations at Mr. Grissell's country-seat, incidentally alluded to while speaking of the Britton Club visit to Norbury Park, that whether the work be deserving of praise or censure, it is at least equally shared by his partner, Mr. Banks, since it has been done under their joint superintendence, and not, as stated in our article, by Mr. Barry alone.

NATIONAL GALLERY.—The Chancellor of the Exchequer has stated that instructions have been given to select a site for a future national gallery, in some position where the pictures would be exempt from the injuries from dust and smoke to which they are now subject. Two sites have been proposed, one in Kensington-gardens, and another elsewhere, for which a considerable outlay would be required.

JERDAN TESTIMONIAL.—Our readers will observe an advertisement in our present number. We are glad to hear that Mr. Jerdan is engaged in preparing his memoirs and correspondence, during more than forty years, for publication, and that they will embrace anecdotes, &c., of many of the leading political and literary characters of that long period.

FREEMASONRY.—We have received notes from several leading freemasons, claiming, on the part of particular lodges, exemption from the charge of meeting merely for convivial and charitable purposes. We may have more to say on the subject hereafter.

WATFORD SEWERS.—The following tenders have been received by the Local Board of Health, Mr. William Lloyd, engineer. For No. 1 contract for sewers,—No. 1 tender being for immediate payment on the completion of the works, and No. 2, if paid in seven equal annual instalments, the first to be paid on the completion of the works.

	No. 1.			No. 2.		
	£	s.	d.	£	s.	d.
Messrs. Munday...	2,487	0	0	4,200	0	0
Smith				3,704	5	0
Williams				3,500	0	0
Humphreys and Thirst	2,450	0	0	3,080	0	0
Piggott	2,301	16	7	2,747	4	7
Freud and Hamill	2,138	0	0	2,443	0	0

TENDERS

For a private Dwelling-house to be erected at Norton, Surrey; Benj. Reed and Son, architects.

	Red Brick.			Kensington Rag.		
	£	s.	d.	£	s.	d.
J. H. Rigby	4,400	0	0	4,723	0	0
S. Mason	4,257	0	0	4,507	0	0
T. and W. Piper	4,219	0	0	4,315	0	0
R. and E. Curtis	3,752	0	0	4,106	0	0
Locke and Nesham	3,615	0	0	3,775	0	0
Richd. Tomlin	3,596	0	0	3,554	0	0
Henry Mills (accepted in brick)	3,344	10	0	3,619	10	0

For altering and enlarging the theatre of the St. Mary, lebone Literary and Scientific Institution, Edward-street-Portman-square; Mr. Eales, architect.

J. Wilson	£1,964	0	0
Haynes and Co.	1,743	0	0
Norton	1,660	0	0
Higgs	1,523	0	0
Smith and Appleford	1,417	0	0
Hall	1,083	0	0

For the erection of Parochial Schools at Ipswich; Mr. B. M. Phipps, architect.

B. Turner	£800	0	0
G. S. Teyll	690	0	0
B. Blackhouse	577	0	0
H. Luff	568	0	0
J. Wright	524	0	0
E. Gibbons (accepted)	469	0	0

For alterations to a mansion at West Chesham, Surrey, to convert it into three residences, under the direction of Mr. Watson.

Carr, London	£1,390	0	0
Symes, ditto	1,140	0	0
Haynes, Ewell	1,122	0	0

TO CORRESPONDENTS.

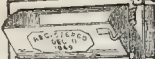
"J. S.," "G. C. B." (we shall be happy to see the book), "J. G. H." "W. D." (address "Chairman of Committee,"—at the Society of Arts), "B. W." (the statement, "the old Court-house is to be rebuilt), "B. C. P." (must see what has been previously said in our pages on the subject), "B. S. B." (we shall be glad to see M. S.), "C. E. J." (we are unable to recommend: the Joyce Shove would not answer the purpose), "East Grand Officer," "D. P. G. M.," "One of the Craft," "D. G. M.," "M. C.," "Peter Blant," "R. G. B.," "John Bull," "T. J. W.," "B. W.," "W. P. R.," "Farmer," "G. B. jun.," "L. S.," "W. L.," "Ariel," "B. H.," "C.," "S. C.," "T. S.," "Dublin Advocate," "Bristol Mirror," "North British Review," No. XXX, August, 1851, "Hamilton, Adams, and Co., London," "Journal de L'Architecture," Bruxelles, "Blackwood's Magazine," No. CCCXXX, August, 1851, "Blackwood and Sons, Paternoster-row," "Report to Subscribers to Bethnal-green Church Fund," "Observations on Balha and Washhouses, with an Account of their History," &c., and Illustrations. By Messrs. A. Ashpitel and J. Whitehead, jun. Weale, High Holborn.

"Books and Addresses."—We have not time to point out books or find addresses.

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VENTILATION—PURE AIR.

Sheringham's
Ventilator,
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of pure air
through an

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With single-puller, from 6s. each; with leading pulley, from 6s. 6d. These Ventilators are so arranged that the requisite quantity of air may be admitted for the due ventilation of an apartment without the slightest draught being felt by the occupants. When they are placed in the external wall, their action is not impeded when the house is closed for the evening, at which time a constant supply of fresh air is at once required. **HAY WARR, BROTHERS,** sole Manufacturers, 195, Blackfriars road, and 17, Union-street, Borough; and of all respectable Ironmongers, Builders, &c.

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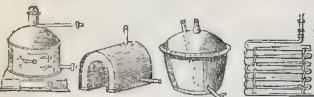


FIG. 1. FIG. 2. FIG. 3. FIG. 4.

FATH. TYLOR'S IMPROVED COPPER CIRCULATING BATH BOILER, on Iron Frame complete for BATHING. FIG. 2. COPPER RIVETTED ARCH TOP BOILER for large Greenhouses or Public Buildings, from four to forty gallons. FIG. 3. DOWN-TOP COPPERS, with draw-off cocks, for hot water baths, from three to twenty gallons. FIG. 4. TINED COPPER COIL PIPES for HEATING BATHS, by pass of water through the kitchen Range Boiler. Apply to Ironmongers or Plumbers, or to the Manufacturers, **J. TYLOR and SON, Warwick Lane, London.**

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Improved Cottage Ranges, with 30 in. 32 3/4 36 in. 36 in. 40 in. 42 in. 44 in. 46 in. 48 in. 50 in. 52 in. 54 in. 56 in. 58 in. 60 in. 62 in. 64 in. 66 in. 68 in. 70 in. 72 in. 74 in. 76 in. 78 in. 80 in. 82 in. 84 in. 86 in. 88 in. 90 in. 92 in. 94 in. 96 in. 98 in. 100 in. 102 in. 104 in. 106 in. 108 in. 110 in. 112 in. 114 in. 116 in. 118 in. 120 in. 122 in. 124 in. 126 in. 128 in. 130 in. 132 in. 134 in. 136 in. 138 in. 140 in. 142 in. 144 in. 146 in. 148 in. 150 in. 152 in. 154 in. 156 in. 158 in. 160 in. 162 in. 164 in. 166 in. 168 in. 170 in. 172 in. 174 in. 176 in. 178 in. 180 in. 182 in. 184 in. 186 in. 188 in. 190 in. 192 in. 194 in. 196 in. 198 in. 200 in. 202 in. 204 in. 206 in. 208 in. 210 in. 212 in. 214 in. 216 in. 218 in. 220 in. 222 in. 224 in. 226 in. 228 in. 230 in. 232 in. 234 in. 236 in. 238 in. 240 in. 242 in. 244 in. 246 in. 248 in. 250 in. 252 in. 254 in. 256 in. 258 in. 260 in. 262 in. 264 in. 266 in. 268 in. 270 in. 272 in. 274 in. 276 in. 278 in. 280 in. 282 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The Builder.

No. CCCXLIV.

SATURDAY, AUGUST 9, 1851.



IN continuation of our notice of BRISTOL and the visit of the Archæological Institute, we give to-day a view of the Building in College-green, known as the "MAYOR'S CHAPEL."* It is dedicated to St. Mark, and was founded in the 13th century. Its present aspect, however, is much later, and not very pure. It has a curious flat ceiling, and some fine glass in the east window. We cannot apply the same term to a modern stained glass window filled with the arms of past mayors of Bristol.

One of the most interesting portions of the building is Sir John Poyntz's chapel at the side of the chancel, which has a vaulted roof with fan groining and a series of beautiful niches. The tile paving, indented, is very curious.

Some of the monuments, both mediæval and of the 17th century, are very interesting. One to William Bride, dated 1590, has a singularly sculptured entablature.

We will now step back to

WELLS,

that we may quote a portion of Professor Willis's remarks on the cathedral there. The lecturer said, in the course of his observations, that,—

"The cathedral consisted of an Early English nave and front, transepts, portion of the choir, which had since been elongated, in the Decorated style, and the tower also carried up in the Late Decorated style, with a mixture of the Perpendicular. There was also a Decorated chapter-house, besides the two great western towers, the upper part of which was also in the Perpendicular style. Such was the general history of the building. They all knew that Bishop Jocelyn, who presided from 1206 to 1242—the very beginning of the Early English style,—built the church, the old Norman church being exceedingly ruinous, as appeared by the history of the canons of Wells. That history gave them no continuous account of the building, and they were obliged to depend for their information on three documents—1st, the *liber albus*, or great white book; 2nd, the *liber rufus*, or red book; and 3rd, another white book, not named. These books contained a number of the records of the chapter, in which the progress and restoration of the cathedral was incidentally spoken of; and from them they learnt that Jocelyn had an authority to enlarge, or, as he said, to rebuild the cathedral, and in doing this he (the lecturer) surmised that the bishop elongated the nave. An examination showed the style of the cathedral to be tolerably homogeneous: there were, however, some traces by which a practised eye could judge where the alterations had been made, inasmuch as the sculpture and enrichments were better executed, and the triforium between the great clerestory windows of the arch above were different in form. When they proceeded into the choir, it would be found that the first three arches were the same as those in the transept: it was, therefore, quite clear that at one time the choir was in the same state as the transept, and that Jocelyn completed it in all the parts necessary for the performance of the service, but that he did not touch the nave. Looking to the existence

of an early English wall on the outside, and comparing the character of the buttresses, he came to the conclusion that at one time the church was cut off with a square end by a high wall. He also inferred that it had a long aisle running round the square, ending, and probably communicating, with a lady chapel. They were aware that the aisle was commonly called the procession-path, because the clergy went out of the doors of the choir to it to visit the various altars, sprinkle them with holy water, and perform their devotions at them; and the arrangement, which was very similar to that at Salisbury, doubtless arose from the aisle communicating with some important altars. The reason why it did not run quite round the transept was because the altars were always placed under the east walls. It was only by the study of these apparently small and minute points that they were enabled to arrive at any knowledge in regard to the arrangement of their cathedrals in former times. He did not consider that the building under Jocelyn proceeded to nearly the length of the present building, and he conceived that the side aisle walls received an interruption. In the best Early English cathedrals the masonry was of the most beautiful kind, the courses being laid with admirable regularity; but that performed in the middle ages was of a more slovenly character. This afforded one of the principal means they had of judging of the periods at which particular parts had been built or restored. For example, if the side aisle walls and nave were thoroughly executed, they would be found much better built than the parts immediately adjoining: in fact, they had three distinct periods in the masonry of the walls. He now came to one of the most strange changes of all. People would call Wells an Early English cathedral; but if they looked at most of their Early English cathedrals, such as at Lincoln, Ely, and Salisbury, and if they examined and compared them, they would find a resemblance between them, showing that they were all of one school of art, erected by masons who worked together, and who only understood one style. Any one well versed in these examples, who came to Wells, would find that its cathedral was a very different thing, and would see at once that the work had been done by a different set of people altogether. Wells cathedral certainly must have been begun five or ten years after Lincoln, which latter was commenced at the latter end of the twelfth century. It was therefore in all probability begun some three years after the commencement of the thirteenth century. Wells was certainly very little removed from the Norman style. It was evidently only an improved Norman edifice, worked with considerable richness. The Early English style probably was introduced from France, as he had shown on another occasion. There must, therefore, have been in the district of Somerset a school of masons who went on working in their own fashion long after the Early English style was introduced and practised in this country. The front of the cathedral was an ordinary style of Early English, the same as at Salisbury and Ely, from which he inferred that before the completion of the work the original architect and his pupils were dead and gone. This showed another curious fact in the history of mediæval architecture, inasmuch as it at once disturbed the notion that changes were simultaneous. It was not unnatural, in a district where stone so much abounded, that a style peculiar to it should spring up among masons who were always working together. The tower was in the lower part of Early English architecture, which terminated a short distance above the roof, where in all probability, the tower of the first building terminated, all that was then required being a sufficient tower for the different roofs to rest upon. It was generally attributed to Bishop Jocelyn that he built the church, but the probability was that it was no such thing. No doubt that at different periods he succeeded in getting from the chapter and the canons of the church powers to improve and repair it from time to time, but there was every reason for supposing that the canons them-

selves supplied a large portion of the money for carrying on the work. He had succeeded in discovering in the documents of the chapter entries which went to show that the canons of the church voluntarily taxed themselves, to the extent of a tithe of their means, for five years at a time; and more than that, he found the clergy of the archdeaconry of Taunton transmitting to the dean and chapter of Wells either a tenth or a fifth of their incomes for the work, which the dean recorded in the books, in order, as he stated, to show the world how generous they were, and in order that it might not be made a precedent for the tax. He found that in 1286 the chapter was called together, and there was laid before them the urgent necessity not only of proceeding with the completion of the new structure, which had long before been begun, but that the old fabric might be repaired and sustained. He supposed that the new structure there referred to meant nothing more than the lower part of the chapter-house, which was called the crypt. He took it, that in 1286 this was completed, and that they wanted to carry on the upper part of the work. Next, he found that in 1318 the canons voluntarily taxed themselves a tenth of their means for the new campanile or central tower, and in 1321 came that magnificent voluntary gift from the clergy of the Taunton archdeaconry, towards putting a roof on the campanile. He had now got a date for the tower, 1321: it was clear that it was carried up and finished by a bold stroke. In 1337-8 convocations were called in a great hurry, on account of some imminent emergency, which was stated to be that the tower had begun to settle and crack down, as was not uncommon, because the mediæval builders, notwithstanding all the good things said of them, were most rash and unskilful persons, and went on building mass on mass like the Tower of Babel, and then when the edifice began to settle they were driven to all sorts of expedients to bolster. The lecturer then went on to show by reference to many striking points in the building that at some time Wells Cathedral-tower must have sunk in this way, and that in order to strengthen it and ensure solidity, the builders were obliged to introduce expedients, which would account for the irregularities and peculiarities observable in the structure. With regard to the lady chapel, great difficulty had been experienced in getting at the date of its erection. There was some tradition about it, but he had been fortunate enough to find an incidental mention of the work, which would give a date. It was a simple license from the Bishop Tokenfield, which license was dated 1326, and by which he assigned to the canon residentiary and his heirs for ever a piece of his own garden. In describing the land he said that it extended "200 or 300 feet from the east end of St. Mary's chapel lately completed." This showed that the lady chapel was finished a few years before 1326. In 1325 they found that the canon set about making new stalls, the old ones being ruinous, and sent to Middleton for the wood. They made an order that every canon should pay for making his own stall, but whether the bishop was to make his own throne also did not appear. This was interesting as showing how money was raised in those days. The canons made their stalls, and as it was hardly likely they would have done so unless the choir was sufficiently advanced to enable them to sit in them, he supposed that they might fix the date of the choir at about that year.

Mr. Cockerell's theory as to the sculptures in the west front of the Cathedral is well known by his published work on it. He estimates the cost of these sculptures at not less than 20,000*l*. Mr. Edward Richardson is now engaged in the restoration of one of the figures, which fell from its place a short time ago. This is being done by the liberality of Dr. Markland.

The restoration of the interior of the Cathedral, under the direction of Mr. Salvin, is making rapid progress. The stone-work has been scraped and pieced: the new stalls are

* See page 499, in our present number.

up (carved in stone); and colour has been slightly introduced in the vaultings. The vaulting of the Lady-chapel is stone colour: the ribs have blue and red lines upon them, and the bosses are gilt. The capitals of the columns are also gilt, and coloured red and blue. In the chancel the bosses, alone, are gilt on a red ground. The new stained glass does not seem to be of a very satisfactory character.

The lower story of the Chapter-house, referred to by Mr. Willis, has many very interesting points, and the refectory has a pulpit by the side of the fire-place.

St. Cuthbert's Church, in Wells, eminently deserved a visit, and should have been described by some architect acquainted with it. The arcade, dividing nave and aisles, is Early English; the upper part of the building, Perpendicular. The roof, a most interesting specimen, was grained some years ago to imitate oil-cloth! The chancel is now being restored: we could not learn that any architect was employed. An extraordinary series of stone effigies, painted and gilt, were discovered here about three years ago, and are placed in an adjoining apartment. The position of the piscina, at the east end, high up, is peculiar; especially if the low level of the door at the side be observed. The tower (ascribed to Wolsey, although certainly earlier in aspect), is broad and massive,—one of the finest in the country, of its class. The state of the upper part of it demands immediate attention. We cannot stop, however, in Wells. The journey back was long and tiresome, but the day as a whole was very satisfactory.

Amongst the papers read at the architectural section was one by Mr. Britton on

THE TOPOGRAPHY OF BRISTOL,

of which we give a portion:—

"Let us indulge a hope," said the writer, "that the pursuits and conduct of London archaeologists may make a favourable and lasting impression on provincial lovers of the science, and prove to them, as well as to those who are merely lookers on, that our objects are rational and intellectual, and eminently calculated to expand the mind and ameliorate the heart.

"Nor dull nor barren are the winding ways
Of hoar antiquity, but strewn with flowers."

Having traversed these paths for more than half a century—explored their "highways and byways"—on mountain and dingle—on the wide-spread plain—in the secluded dell—in the "busy haunts of men," and in deep recesses now almost deserted by the human race, and only occupied by the owl, the bat, the toad, and the fox,—I can confidently assert that objects of the deepest interest may be found in all these devious tracks. It is true the flowers of the parterre referred to by the poet have not much similitude to the relics of bygone ages; but it is equally true that "hoar antiquity" has many charms and fascinations to those who can appreciate them. As the florist and the botanist have their *hortus siccus*, to preserve and renew to the eye and mind the forms and hues of flowers and plants, so has the archaeologist his casts, models, drawings, and engravings of rare and interesting antiquities. One studies the living world and its beauties—the other things that have been. One looks "through Nature up to Nature's God,"—whilst the other studies the progress and history of man through his works, and therein traces the Omnipotence and Omniscience of Deity. Let us therefore pursue our favourite studies with zeal, and with discrimination; deriving, as we must, a great amount of useful knowledge by comparing and contrasting the memorials of former ages with the arts and

customs of the wondrous epoch in which we live."

After speaking of the failure of Mr. Seyer in his endeavour to obtain access to the archives of the Bristol Corporation for the preparation of his memoirs of the neighbourhood, the writer remarked,—“Fortunately for us, the topographers and antiquaries of the present age, we live in better, more enlightened, and liberal times; and although we may meet with impediments to check laudable inquiry in such places as the Rolls-office, the Tower archives, the State-paper and Prerogative offices, there are many public museums and libraries freely and gratuitously accessible to respectable authors and antiquarian students. The manuscripts, regalia, &c., which belong to this city, and which have been kindly exhibited to the members of this institution by the corporation, show the character and value of such property.”

Mr. Norton read a paper on the proposed restoration of Bristol Cross, in the course of which he said, that by the liberality displayed by the gentlemen of the council the contract for the erection of the cross had been entered into with a native artist, Mr. Thomas, for 300*l*. The steps forming the visible substructure were of Cornish granite, from Penryn, and cost 100*l*. The figures were not yet contracted for, but he hoped when the shell was up that the love of archaeology and architecture awakened would induce the citizens to enrich the vacant niches with their appropriate effigies.

At the Historical section the Chevalier Bunsen read a paper on the Lake Moeris. His Excellency said,—

"Of all countries in the world none depends, and up to the present moment depends, more upon the element which Pindar and Hippocrates call the first for mankind, after the air we breathe, than Egypt—the produce of the Nile, as Herodotus calls the greatest part of its arable soil. If, then, it should turn out that the Lake of Moeris, one of the greatest miracles as well as riddles of ancient Egypt, is to a certain degree the work of man, and has for its object nothing less than to render habitable and fertile what since has been, and still is, the richest and most productive province of the land of the Pharaohs, the inquiry into this subject will present not only an antiquarian interest, as the solution of a historical problem which since Napoleon's expedition has occupied the attention of the civilised world and exercised the ingenuity of scholars and antiquaries, but also a fit subject for the Archaeological Institute of Great Britain.

I believe I have established the principal point of interest: the Lake of Moeris was a vast reservoir of the Nile, destined to irrigate the province of Fajum. It was constructed so as to allow the superabundant water to supply the eastern districts of the valley of the Nile, in the neighbourhood of Fajum. This is so natural and certain, that M. Linant has submitted to the Viceroy of Egypt a project to renew the Lake of Moeris for the same purpose, in order to restore the province of Fajum to its pristine fertility, and to have at command a supply of water for the western side of the valley of the Nile in years of scarcity."

Amongst other papers read we may mention one by Mr. Clark, on the

SEPUCHRAL MONUMENTS IN BRISTOL, wherein he said that—"This city had a great number of sepulchral monuments in its cathedral and churches, which, although they were not so sumptuous and magnificent as those to be found in many other cities, had been set up to commemorate persons who had perhaps been unequalled for their generous and benevolent actions. During the restoration of the

chapter-room attached to the cathedral, several stone coffins were discovered, one of which had a rude carving on the lid, which Dean Beck caused to be built in the wall of the monument, where it could now be seen. In St. Mary's, Redcliffe, were remains of three coffins: one of them had a slightly relieved sculptured effigy on the cover, with two words under it, 'Joannes Lamyngton,' who was chaplain in 1398. The crypt of St. Nicholas church was said to have been originally a cemetery of the ancient church, and subsequently used by the fraternity of the Holy Ghost as a chapel: it contained a stone coffin, discovered in 1821, and by the inscription upon it the remains were discovered to be those of one Mabel and Richard le Draper, who were placed there in 1311. In it was a perfect male skeleton, and at its feet a female skull, the body appearing to have been burnt to enclose it within the coffin. In St. Mary Redcliffe church was a curious slab to the memory of Wm. Coke, who was cook to the founder, Wm. Canynges, and had the symbols of his occupation, namely, a knife and skimmer, engraved on the stone, with an old-letter inscription on the top. In the cathedral were eight richly ornamented recesses formed in the walls of the chancel and aisles: they constituted part of the original design; having been constructed when the edifice was rebuilt by Abbot Knowle. The three recesses in the chancel contained the monuments of Abbot Knowle, the reformer, who was said to have refused for interment the corpse of his murdered sovereign, Edward the Second; of Abbot Newberry, and Abbot Newland, alias Nail-heart, the latter of whom beautified the building. Near the pulpit was an altar-tomb, containing the statue of a skeleton, the emblem of mortality, lying with its head on a mitre, and a pastoral staff on the right side: it was to the memory of Paul Bush, first bishop of the cathedral, who, having incurred the displeasure of Queen Mary, by marrying, was obliged to resign his bishopric. Then there was the effigy of Thomas Lord Berkeley, who died in 1243, and another to the memory of Maurice Berkeley, the second lord of that name, who died in 1281. In the south aisle, under an arch in the thickness of the south wall, which was formerly open to the chapel of the Virgin Mary, now used as a vestry room, was an altar tomb, which contained five shields, charged with coats of arms of the Berkeleys, Ferrers, and Quincys, and thereby attributed to the second Thomas Lord Berkeley, whose wives were of the families above mentioned: his death occurred in 1321. There were also several other monuments in the cathedral, erected at a time subsequent to those we have previously alluded to. The chapel of the hospital of St. Mark, now called the Mayor's Chapel, contained some very beautiful sculptured figures, among which were two effigies, supposed to represent Maurice de Gaunt and Robert de Gournay, the original founders of the hospital. There was also a beautifully-carved marble recumbent figure of Miles Salley, Abbot of Einsam, afterwards Bishop of Llandaff, who died in 1516. There was another altar tomb, with the effigies of Sir Thomas de Berkeley (who died in 1361) and his wife."

Mr. Clark then proceeded to describe some of the monuments in St. James's Church, where was interred, in 1147, its founder, Robert, Earl of Gloucester; St. Stephens's Church, St. Mary-le-Port, and St. Peter's; after which he produced some rubbings of monumental brasses. He concluded by expressing a hope that a greater interest might be taken in restoring and preserving those beautiful examples of early art which they possessed, and that some method might be devised for superseding the style of memorials now used for one more in character with the edifice in which they were placed, and thereby adorn the church instead of disfiguring it.

At the joint dinner of the Canynges Society and the Institute, the Bishop of Oxford pro-

posed prosperity to that society, and said, with respect to St. Mary's, Redcliffe,—"The citizens of Bristol had shown a determination to restore to its pristine beauty that magnificent building in which they had that day met for public worship. It was to the lasting honour of Bristol that men engaged daily in the earnest pursuit of the business of life should form themselves into a society to restore that edifice to perfection, and he would say that it was a noble and an English undertaking. They had had read to them that day a paper, which showed them how, through consecutive generations, the citizens of this ancient city had distinguished themselves by beautifying and perfecting various edifices. Then came a long period of carelessness and negligence, in which, like spendthrifts, they suffered that which their ancestors had handed down to them to waste under their hands. Thank God, they now lived in a better time, when men showed they would restore the wrecks of many generations, and thus do honour to God and to His church. He could not help thinking, even taking the very low ground of expediency, that more was done to promote the great object of church restoration by thoroughly doing a work of this kind, by proceeding without fear of cost and completing the beautiful work of the original, than by any less perfect means. By doing so they were only giving God his due, by producing beauty on every side, even in the desert island. He believed it was more to the purpose to restore thoroughly such an edifice as that than to build twenty poor and miserable churches."

The Report of the Committee said, "the works at Redcliffe Church, in progress at the last annual meeting of Canynges' Society, viz., the four clerestory windows of chancel, have been completed. The screen, dividing the lady chapel from the chancel, has likewise been restored; thus enabling the restoration committee to remove the temporary screen, which removal has produced an effect on the interior of the fabric most gratifying and encouraging. The necessity of completing the east window of the chancel is obvious and pressing, and your committee have much gratification in stating that the funds requisite for that purpose have been provided by Sir John Kerle Haberfield, Mayor of Bristol; and Robert Phippen, Esq."

Mr. Proctor, the originator of the Society, was unfortunately prevented by illness from attending. The chairman, Mr. Harford, justly dwelt on the pains and time Mr. Proctor had devoted to the work.

The munificent "Nil Desperandum" was not forgotten.

Dr. Whewell, in replying for the Universities, made some very interesting comments on the title *Pandozator*, prefixed to a name on a slab in Redcliffe Church, and usually translated "brewer." The doctor showed that it meant the public entertainer of a corporation or body.

Mr. Miles's collections at Leigh Court were visited, and at Blaise Castle, the seat of the president, Mr. Harford, we saw some very fine pictures, in a gallery admirably well lighted from the centre of the ceiling. The grounds here are perfectly beautiful.*

* The proceedings of the meeting were faithfully reported by the *Bristol Mercury*, *Bristol Times*, *Bristol Gazette*, *Bristol Mirror*, and *Yclef Parley*, though the last erroneously attributes Mr. Godwin's paper on "St. Mary's, Redcliffe," to Mr. Britton. The reporters complain bitterly of want of courtesy and attention on the part of the officers of the institute. Surely gentlemen who have so arduous a duty to perform as the reporters of the public papers, and to whom so much is owing, are entitled to consideration.

THE PRESERVATION AND RESTORATION OF ANCIENT MONUMENTS.*

MR. FREEMAN commenced by saying that in one principle he trusted that all his hearers were heartily agreed: no hand, he hoped, of all that he saw around, would be held up against the general position that the remains of antiquity are to be guarded with jealous care, and that no innovation, no tampering with a single stone is to be admitted, unless manifestly demanded by the most paramount necessity. Somehow or other mankind had not uncommonly displayed a greater facility in pulling down than in setting up: the great father and founder of this school of art destroyed abbeys that he might establish bishoprics; and we need go no further than this city for proof that he found the former process considerably easier than the latter. Yet the great mediæval architects, whom we now feebly imitated, might properly be referred under that head, for no race of men were more regardless of the works of their ancestors, or swept away with a more ruthless hand the glorious productions of an early day. How rarely was a church of any pretensions met with which remained entirely as it came from the hands of the original architect! Even in the case of Westminster Abbey, although it was continued in the fifteenth century in a style which none but a technical observer of minutest detail could distinguish from the original design, we should almost have preferred to have preserved to us the older structure, rude and unornamented as it may, by comparison, have been, instead of the divine fabric which arose from its ashes, and which the princely taste and bounty of a Henry and an Edward combined to rear. There was scarcely any space of time in the history of our greater churches in which some change or other had not been going on, and our ancestors seemed eagerly to have grasped the opportunity afforded by comparatively slight dilapidations to reconstruct portions to much greater extent than any necessity required. The fact was, that the mediæval architects stood in an entirely different position from that in which we do with regard to the erections of their predecessors. In their time the forms of Gothic architecture were still parts of a living whole: the religious and political sentiments of which they were the material expression were not extinct: the building to be destroyed did not at any period speak of an entirely past state of things. The total revulsion of taste and sentiment which was the result of the Reformation had not yet taken place, and the feeling of antiquity with which we are impressed in reference to mediæval structures having no existence then, they altered or sought to improve in the same spirit as we should deal with works of the last age. History and archaeology, too, had among them no existence: the idea of literary or artistic property had not arisen: the prince or prelate transferred to himself the praise of the architect, whom he did but supply with his material means: the architect laboured for his own end, reckless of those who had gone before; just as the balladist and the chronicler appropriated, without scruple, whatever they found among the stores of their predecessors calculated to answer their own immediate purpose. As to how far the destructive propensities of mediæval architects might be subject of regret or otherwise at the present day, it must be admitted that if we have lost, through them, much that might have conduced to a direct study of art, we have gained, on the other hand, in the history of the successive changes which individual buildings have sustained, numerous sources of enthralling interest.

Turning now to the practical part of the subject, all present probably would agree, as an abstract proposition, in the canon laid down by a practical restorer of the day,—"Preserve as much as possible: destroy as little as possible:" yet when general principles were sought to be applied to particular cases, every shade of opinion would be found to exist. When the reaction of opinion in favour of mediæval architecture arose, and the state of too many of our churches led to efforts for

their restoration, the clergy were actuated by the highest motives in seeking to put the edifices entrusted to their care in a condition more meet for sacred purposes. Still the hasty setting about such good works, without sufficient knowledge and discretion, had issued in the unnecessary destruction of many valuable monuments of antiquity, and had brought not a few churches to a state from which the authors of their so-called restoration would now—if they could—be the first to rescue them. In many of our simple village churches the charm was not so much that of direct architectural beauty as one compounded of the sentiment of antiquity and of some inexpressible and (as it were) fortuitous result of picturesque grouping. Here unadvised restorations were more dangerous than anywhere else, and buildings of this class were precisely the places where that strange phantom called restoration, veiled in the garb of an angel of preservation, had had the most undivided sway. An old church, whose venerable simplicity was its only beauty, was to be tricked out with every conceivable prettiness or ugliness which had arisen in the brain of the worthy incumbent, whether consonant or not with the indications of the fabric, or the plainest rules of art and common sense. Then, too, there were the enormities of churchwardens' Grecian or Gothic! and, imbued with the same spirit of pseudo-restoration, guide-books were sometimes found to recommend that the process should be applied to buildings especially inappropriate for its reception, viz., military ruins. The result was a general distrust in many quarters against restoration, while by some it was absolutely forbidden. He would divide all antiquarian remains, architectural and otherwise, into two great classes, one of which he believed to be legitimate objects of restoration, while the other ought simply to be preserved from further injury. Some monuments of antiquity were valuable merely as antiquities, and were not applied at the present day to any purposes of practical utility: others were valuable as monuments, and were also actually applied to some modern purpose. The one class were objects for simple preservation, those in the other should be faithfully restored. Into the class of objects worthless to the practical man he would cast "hatchets of the stone period, battle-axes of the eleventh century, and rapiers of the seventeenth, Vatican MSS., Abingdon Missals, and Editions Principes; coins of Darius, Justinian, and Oliver Cromwell; the Nimroud sculptures, the Elgin marbles, and the cartoons of Raphael; the bell of St. Patrick, the spurs of Charlemagne, and the cross of William of Wykeham: all he would hurl together in indiscriminate chaos, and finally proceed to crush them with the accumulated weight of Stonehenge, Kit's Coty-house, Chesham Castle, Tintern Abbey, and the Pyramids of Egypt." All these things were very interesting; some of them very beautiful: to the antiquary, the historian, the artist, each respectively was invaluable: all he said was, that to a plain, practical man they were all of no manner of use. Whatever value and interest these various kinds of objects possessed, irrespective of the purely æsthetic charm of many of them, was derived from their being the works of past ages: the least modern alteration at once destroyed their whole worth. Mr. Freeman then made an appeal in favour of preserving from the insidious assaults of the restorer the castles of mediæval times. Strange, indeed (he said), is the conflict of emotions which they excite—admiration and awe, and hatred and gratitude. A thousand contradictory visions are conjured up at the very thought: their various portions may indeed call up pictures of very different periods in wild confusion: we may mingle up the iron warriors of the Conquest with the courtly chivalry of Cressy and Poitiers, but one general impression—that of the loftiest forms of heroism and magnanimity coupled in the same class, and even in the same man, with deeds of the blackest cruelty, may give a fair view of the whole period which the aged guardian of one of the noblest of feudal ruins felicitously designates as 'castle times.' We may set the

* Read by Mr. Freeman at Bristol.

splendours of the hall against the horrors of the dungeon. The lordly towers of Cardiff still tell us of the weary years of solitude and blindness dragged on by him whose foot was the first planted upon the ransomed battlements of the Holy City. Corfe Castle has its 'tower of hunger,' though no Dante has arisen to give it immortality; but poet and antiquary alike have told us

'What shrieks through Berkeley's ramparts ring;'

and we in these days and these islands can hardly realise the times when, within this very city, the 'Pearl of Brittany' lingered on from childhood to old age, doomed by the jealousy of those whom Nature had marked out as her guardians. 'The age of chivalry is past,' so, we may trust, is that of bondage and of lawlessness—of force met by force and fraud by fraud. Yet let us not forget that amid the storms of feudal anarchy the tree of English freedom took firmer root,—that, save for passing through the fiery ordeal of Norman despotism, the liberties of an earlier day might have withered and died away as they have done in other lands which once showed as fair a promise. Of those times our castles are the still living witnesses, but surely every trace of a modern hand takes away from their venerable majesty. They tell wholly of the past: it is impossible to pass beneath their frowning gateways, to look down upon their dens of torment, without a feeling of gratitude that they are ruined and desolate. They are faithful witnesses with which we may not tamper, fallen giants with whom it becomes us not to trifle. Every feeling is best gratified by the sight of a castle wholly deserted: guarded and fenced in, it may be scrupulously preserved from further dilapidation: whole and entire is its masonry, but with every thing suggestive of human habitation swept away. A castle used as a modern dwelling-house is indeed a sad sight, after Kidwelly and Pembroke, Chepstow and Caerphilly.

The author then referred to an instance of restoration at Oyster-mouth-castle, Glamorganshire, as one where the illusion of antiquity was destroyed, while distinct testimony of the past has been swept away by it. Nor could he advocate the restoration of ruined churches. Mr. Sharpe had skilfully and successfully restored, on paper, several of the shattered windows of Tintern Abbey; but he should be very sorry to see anything of the sort carried out in practice, even if a few fragments of the original work were to be brought back to their place again. Primæval antiquities ran little chance of suffering from restoration, yet it was well known that a large rocking stone was lately displaced in sheer wantonness by some workmen employed on the South Wales railway. Whether the stone was naturally or artificially placed, its dislodgment was unpardonable; but the question arose, should the mischief be repaired? There was a difference of opinion on the subject; but it appeared to him that the charm and mystery attaching to the stone had perished with its dislodgment, and its restoration would be a simple unreality. Let us, then, not attempt to restore, but let us sedulously preserve all those remains of the past whose value is purely antiquarian or æsthetic, and which do not directly subserve any requirement of modern life; and let us, further, preserve everything, wherever the consideration was of any consequence, in its proper place. This latter remark had reference to the wholesale carrying off of statues, obelisks, and other monuments from the places where they were originally erected. "The Elgin marbles," said Mr. Freeman, "by being deposited in the British Museum, may, for aught we know, have done much to improve the British school of sculpture, but it has only been at a cost which every lover of Greece and Grecian art, every one whose heart leaps up at the very name of the first seat of literature and of freedom, must for ever consider as immeasurably too dear. The glorious temple they adorned was wantonly mutilated: the statues themselves can no longer be contemplated as the genius of Phidias designed: no longer forming the adornment of a great architectural whole; no

longer preserving their appropriate distance from the eye, they have sunk into mere specimens of antiques. Let it be that they have been brought into a place of safety, and sheltered from the further mutilations which they might have undergone during the storm of revolution which has swept over their native land: let it be that the cannon of the infidel might have here and there swept away a leg or an arm which had survived through so many assaults of time and the barbarian: yet liberated Greece might have looked upon the proudest monument of her ancient freedom, shattered and ruined, indeed, by the work of ages, but at least spared this most wanton and irremediable mutilation. The Temple of Athens is no more: it exists no longer in its integrity: none can now contemplate that wonderful blending of various arts in one harmonious whole: the architecture and the sculpture are disjointed, and the whole they united to form has thereby perished for ever. And the regret with which I regard the removal of the peerless works of the Grecian chisel I would extend, in an infinitely smaller degree, to the uncouth productions of the barbarians of the East. Far be it from me to place the honoured name of Layard in the same class with the destroyer of the Parthenon:

'Eratostratus and Elgin'

must retain that bad pre-eminence in which the indignant poet has so happily conjoined them; still I cannot conceal my conviction that a more genuine love and reverence for antiquity would have allowed the sculptures of Nineveh, at whatever risk, to repose in their native land, while our curiosity in this distant island had been gratified by drawings and models alone. No traveller can now again behold in their glory the palaces of the Assyrian despot any more than the fairest shrine of Hellenic freedom: none can again contemplate the general effect of an architecture which trusted so much more than any other to the effect of its sculptured decoration. And even the practical argument cannot apply in this case: winged bulls and eagle-headed kings are surely mere antiquities, in the very strictest sense. It cannot be that, with the wonders of Grecian and Teutonic skill before us, we are to derive new lessons of art from the mis-created monsters of Oriental phantasy.*

METROPOLITAN WATER SUPPLY.

OUR readers will scarcely be surprised at the announcement by Lord John Russell, of the intention of her Majesty's Government not to proceed with their Bill for the better supply of water to the metropolis this session. We cannot say that we regret the decision; for, looking at the scheme as a whole, it lacked that comprehensiveness which is so much to be desired in sanitary measures, and was by far too costly. Its promoters were not sufficiently careful of the health and well-being of the consumers; that is to say, the two millions and a half of human creatures dwelling in London, to whom good water is denied, and who are even stinted in the quantity of liquid filth which it is the interest of these corporate bodies to supply.

With the character and general features of Government measures, our readers are sufficiently well acquainted to render recapitulation of them unnecessary; and they will doubtless readily concur in the belief, or at least hope, that its postponement will lead to the omission of the objectionable clauses, and the substitution for them of others more consonant with the feelings of the population, and better adapted to their wants.

This delay, therefore, will permit of ample time being given to the consideration of the various schemes and suggestions put forth by private parties, and allow of any useful features they present being engrafted on the original measure. Indeed, we see no just or valid reason why the whole should not be entirely recast.

The great obstacles that have been raised by the agents of water companies, forced the

* Many of the opinions expressed in this paper were warmly combated by some who were present.

Government, we fear, to propose what, after all, they admit to be, in spite of its great expense, an inefficient remedy for the present supply, to this city, of water alike defective in quantity and quality. But the determined opposition of the metropolitan representatives, and of those independent members—independent of the influence of parties whose monopolies were threatened—who have distinguished themselves by earnest advocacy of sanitary reform, has, without doubt, done good service. It has shown that the inhabitants of London, with the examples of Manchester, Liverpool, and even provincial towns of inferior pretensions before their eyes, are not disposed to submit longer to be coerced into payment of the highest price for the worst supply of the most important element in supporting life and promoting health.

If any change is to be made, in the necessity of which all parties concur, it must have for its chief and immediate object the supplying, in abundance, water of the purest and softest nature to the whole of the inhabitants of that huge conglomeration of dwellings which is termed London—from the wealthy denizen of the palaces of Belgravia to the poor and wretched inmates of the filthy hovels in Agar Town or Spitalfields. The supply must be cheap, always ready, and plentiful, not only for potable and domestic purposes, but for cleansing the persons and dwellings of the people,—aye, and the streets too.

A Bill which purposes to effect this will have the hearty support of all classes, with the exception, of course, of those whom it might be considered invidious to name; and when carried out would conduce more than any legislative measures that have preceded it to promote the health, well-being, and morality, of the working-classes.

During the time that will elapse before a Bill of this nature is framed and introduced into the House next session, we trust that the source and mode of supply of water to the metropolis will undergo re-investigation, and that it may be conceived in the most comprehensive manner.

It is universally admitted that for the future the source must be constant and at high pressure.

As regards the source, public opinion seems to be to a great extent in favour of the Board of Health scheme, for collecting rain-water issuing from the Surrey sands, which is purer, softer, consequently productive of economy in domestic use, and capable of being obtained more constantly and abundantly than from any of the other water-bearing strata around London. Yet, in spite of this favourable verdict, we think due provision should be made against contingencies, and that rival schemes should be fairly tested.

Provincial towns of less wealth, means, and importance than London have already led the way, and supplied their inhabitants with water of a refreshing and pellucid character, scarcely to be comprehended by those who are condemned to drink a liquid loaded with the sewage of a large town, and stored up for days fermenting till its loathsomeness is increased tenfold by the engenderment of things of impure natures and disgusting forms. Why should we hesitate to follow their examples, and avail ourselves of their experience to surpass them? The poor of Whitehaven, Bolton, Bury, Stockport, Paisley, and other towns are supplied with soft water derived from rainfall received on gathering grounds situate at a distance, and removed from the influence of soot or dirt; or from springs that deliver the rainfall, received on remote gathering grounds, in a pure and cool state in the vicinity of the cities.

The same, if not greater, facilities are at the command of Londoners. Within some twenty-five miles of our city are the Farnham sands, which every twenty-four hours yield 51,375,000 gallons of water, "of primitive purity, perfect as to aëration, of grateful temperature (about fifty degrees), brilliant in colour, and soft almost as distilled water." And yet we drink the sewage waters of the Thames, in some cases unfiltered, and the scarcely less impure waters of the New River and Lea!

Not only do we desire to see fountains send forth their cool and limpid streams uninterruptedly; but, also, at short intervals throughout the entire length of our streets and alleys, we should wish to see erected and connected with the mains, instead of the present fire-plugs,—stand-cocks, which might be cast with an ornamental appearance. These stand-cocks, or a certain proportion of them, should be supplied with flexible hoses, the extremities of which should be capable of being fitted with delivery-nozzles and spreaders, according as it might be required to direct streams of water upon a burning building, or to water or wash the streets. If these arrangements were adopted, and every policeman on duty provided with a key to the stand-cocks, as is the case at Liverpool, the risk of destruction of property by fire would be greatly diminished, and the rates of insurance ought to decrease proportionately. But, supposing the insurance companies refused to reduce their rates, as it has been publicly stated they would, nothing could be easier than for the inhabitants to establish an office for that purpose on the mutual principle. A large shipowner, we have heard, finds it more profitable to risk the loss of one vessel annually than to insure his whole fleet of merchantmen. The saving in insurance rates is not the only economy the carrying out of this system would effect. The watering and cleansing of streets constitute a heavy tax upon the parishes at present, but with high service and stand-cocks fitted with flexible hoses, as before explained, no horses and carts need be employed, while even fewer hands would be required for watering as often as might be deemed necessary. Indeed, we see no reason why the police should not be employed in this duty. The cleansing of the paved streets would also be rendered less laborious and less costly than at present, by sweeping them down every morning instead of washing up the dirt and carting it away.

Some useful information upon these three heads—the economy in insurance rates, watering, and cleansing streets—might be obtained from Boston, in the United States of North America, and we certainly think that the promoters of the Bill would do well to provide themselves with accurate data obtained from this source before they proceed further in the matter.

ON THE FORM AND POWER OF CHAIN CABLE LINKS FOR CRANES, &c.

THE form inevitably assumed by the oval-shaped link in common use when overstrained, might, one would think, have not only suggested the idea of adopting that form, *ab initio*, with unstrained fibres, adapted, *à priori*, in cementive integrity, to the pull *à posteriori* which was certain otherwise to tend at least, in every instance, to force it into the assumption of that well-set pulling shape, the flat sided; but have also, long ere now, made oval links, even cross studded and strengthened (?) ones, quite obsolete. All the more so, since our bridge-building engineers have almost of necessity been led to adopt flat-sided links, albeit pretty long ones, and even our Admiralty a sort of medium between these and the right sort. Considerations such as these, we believe, led to the introduction of Price's improved method, which simply consists in the substitution of the short straight-sided link for the oval. This link is constructed in such a way that every fibre of the metal must be equally strained in equal times. It is considered to be not only much stronger than the oval link chain, but lighter and more desirable in every way; besides which, it can neither kink nor foul. Regarding the comparative strength of such links, Mr. Turnbull makes the following remarks:—

When Mr. Thomas Telford proposed the erection of the Menai Suspension Bridge, he performed numerous experiments on the tensile strength of malleable iron, by which he ascertained that the mean force required to produce rupture in a bar of one square inch sectional area, was equivalent to a dead weight of 29½ tons, or 66,080 lbs. avoirdupois, exerted in the direction of the fibres; and this has

been adopted conventionally by the most eminent engineers, as a standard for tensile strain ever since, assuming one-half of it, or 14½ tons, as a measure of the force to which a bar of iron may be constantly subjected if drawn in the direction of its length.

Now, in the case of a cable link with straight sides, the direction of the strain may, for all practical purposes, be considered as nearly coincident with the fibres of the metal; and admitting this, the strain, or rather the force of resistance, will be directly proportional to the number of fibres in the transverse section.

Thus, if the sectional area be equal to two square inches, the constant straining force to which the metal may be exposed is 29½ tons, or 59 tons to produce fracture; the half of this being what was found to rupture a bar of one square inch of section: therefore, admitting the strain on a link of the cable to be similar to that on a straight bar where every fibre is equally strained, a link of ½ths of an inch in diameter will show a practical resisting

$$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times 0.7854 = 8.87 \text{ tons,}$$

the weight which a bar of one-inch area of section will bear with safety, the metal being of a medium quality: this in round numbers may be taken at nine tons.

With regard to the link of an oval form with a stud in the middle, it cannot be so strong theoretically as the one without it; for it is manifest that the stud, besides increasing the weight of the chain very considerably, acts as a transverse lever on the fibres of the metal, which being compounded with the tensile strain, must in some measure operate to increase the effect; for a strain that is partly tensile and partly transverse must be more efficacious in producing rupture than one that is purely tensile.

The links at present in use are of two sorts: in one case they are short and curved without a stud, and in the other they are of an oval form, with a stud in the middle, with a view no doubt of preventing the link from collapsing. Cable makers give a proof weight of thirteen tons for a ½ link; but it would be advantageous to know what quality of iron they employ, and also by what rule they calculate the strength of the link with a stud; for we maintain that theoretically a body exposed to a compound strain cannot resist it so effectually as it can a simple.

ARCHITECTURAL COMPETITIONS.

It would be but reasonable to require those who affirm that competitions are useful and desirable, to enunciate the grounds for such an opinion in a distinct form; but neither in public nor in private has it been my fortune to meet with any valid reasons in favour of the system, and scarcely with any attempt to state them. But by their practice many of the profession plainly declare that it is a good custom, though some think the manner of working it may be improved. I am of the number of those who hold that it is utterly inimical to the best interests both of the profession and the public; and with your permission I will briefly state the grounds of my opinion, in the hope that some gentleman will explain in what respect I, and others, err; and how it is that competitions do, or can be made to, aid in the advancement of architecture, and the advantage of the profession and the public.

First. The tribunal to whose judgment the designs are submitted, is quite unfit for performing the functions it has assumed. Building committees, for the most part, are composed of persons who know nothing of building operations: should it chance that there is one amongst them, who has had the least experience, he is a *quasi* pope, and launches his infallible dictum in the usual papal and arbitrary manner. The other members will probably consist of a cotton-broker, who is a first-rate judge of Sea Island, or East India, but quite ignorant of the characteristic differences between the Grecian and Gothic styles: another may be a lawyer, well versed in precedent, with a great distaste for every

thing unsupported by the chapter and verse of example: the medical practitioner, anatomist though he be, urges sanitary improvements utterly irreconcilable with stability or convenience; whilst the manufacturer thinks that four walls of bright-red brick, with holes for windows—"just like my new mill"—is exactly the thing required.

When these gentlemen meet together, with some six or eight others equally qualified, and agree "after a division" to certain conditions, the advertisements are issued; and on the appointed day the designs are sent in. In the course of a few hours (where as many weeks would be too brief a season) a selection is made: the minority find their position strengthened by one or two of the designs submitted: some waverers, or absentees from previous meetings, are won over; and a selection is made greatly at variance with the conditions prescribed by this same committee! Perhaps it will be said that the reference to a professional umpire, and the public exhibition of the designs, will provide security against such frauds—to designate them from their effects, and not from the intentions of either committee or competitor: yet, in a case which came under my own knowledge, the designs were exhibited, and the committee did consult a surveyor, of high provincial repute, before making a selection; and their ultimate award was supported by his opinions. Having subsequent misgivings that the cost of execution would greatly exceed the proposed outlay, the working drawings and specification were submitted to the same surveyor, and were declared by him to be complete and satisfactory: the contracts were entered into, and the actual cost exceeded the proposed outlay fully 65 per cent., although a very important part of the stipulated accommodation was omitted. In this case, there is no doubt that part of the excess was occasioned by the intermeddling of individual committee men, and by the committee, as a body, sanctioning deviations from the contract drawings; but this would only account for a small portion of the excess, perhaps for 12 or 15 per cent.

I dissent from the analogy sometimes drawn between a competition in painting or sculpture, and one in architecture: in the former, the water-colour sketch, or the clay model, is almost a fac-simile in miniature of the completed work: even a cartoon is not more dissimilar than an engraving; but, to the uninitiated, architectural drawings do not convey any accurate notion even of the external appearance, much less of the minutiae of internal arrangement, which ought to be a subject of great consideration in a building that is intended to be of any utility: even perspective drawings are very imperfectly understood on 'Change. Besides, it continually happens that committees, as well as individuals, materially alter their first ideas, upon more mature consideration, and after the inspection of different designs; and they see no dishonesty in making their selection under the guidance of their increased experience, instead of giving the premium, small though it be, to the architect who has adhered most closely to the instructions originally laid down by themselves; and then making an arrangement with him whose design is most in accordance with the experience they have gained.

In the preceding remarks I have supposed the committee to be influenced by a desire to act an honourable part, though they may manifest that wish in a strange way; but in how many cases are the selections notoriously made under the direction of private interest? Architects who engage habitually in the competition business, seem to have a code of morality and laws of honour peculiar to themselves: some tell me that where they have succeeded it has been through mistaken identity, or strong interest: one gentleman informed me that he never engaged in a competition without first securing some friendly interest in the committee; and others, whilst they assume that their own success is entirely the result of individual merit, freely allow that other cases have been decided through interested motives. It may be that committees are grievously wronged; that successful com

petitors are maligned; but the profession has, and can have, no security for the competency or faithfulness of a self-appointed and irresponsible tribunal.

Secondly, apart from the reasons implied above, I conceive that competitions have a very degrading influence on professional men, as they are generally games of hazard played with clogged dice or marked cards: where no tricks of this kind are adopted they are simple lotteries. History has recorded many instances of the marvellous infatuation induced by gambling of every kind; how lotteries or commercial manias influence all classes and descriptions of men to engage in speculations of the wildest kinds for the chance of success, where the odds are greatly against the deluded victims of eager avarice. In a similar way do I account for the support yielded to competitions by so many of the profession; for I have never yet met with a person out of the profession who did not wonder at the fatuous folly of architects in expending so much money, time, and labour on such precarious probabilities. Yet do we find this absurd practice of competition pervading all ranks of the profession, from the hoary gambler, who has grown grey in the career, to the artful pupil, confident in the unexhausted resources of his virgin genius; for I have heard of the master and his pupil engaging in the same competition.

"But surely," it will be said, "the practice of design thus gained is useful, to the younger architects especially?" Only, I believe, to a very limited extent: no doubt, considerable facility is acquired for designing *exteriors*, and in all the artifices for securing false or exaggerated effects in drawing; but the detail of ornament, perfection of arrangement, interior effects, and constructive excellence,—these are virtues which cannot be attained by the mere public competitor: their value is too occult to be worthy of parade in a show design; and, consequently, in his occasional successes, the competitor by profession frequently commits most egregious blunders. Even Elmes, with all his talent and refined taste, in designing a music hall (the St. George's Hall in Liverpool) has omitted to provide a situation for the orchestra; and now, wherever it is placed, that important feature must necessarily have an intrusive appearance, and injure some of his most studied effects, instead of being a valuable accessory, as it might have been made. Let me ask, was there ever a building erected from competition drawings which was not remarkable for some extraordinary omission in the accommodation, or for some serious excess in the cost? I believe not, and think that such a result is accounted for by the supposition that as day-dreaming and reverie weaken the intellect, and incapacitate it for grasping the practical details of every-day life, so the practice of merely general design is analogous to castle building, and prevents its victims from doing justice to their conceptions whenever the opportunity is afforded for carrying them into execution. A much more masculine and vigorous character of mind would be cultivated if young architects would be content to continue subalterns some few years longer;—if they would extend the range of their experience by devoting more time to study, and less in attempts to practise;—and if they would familiarise themselves with practical details, common-place though they appear, by acting as clerks of works on various buildings. Could the secret history of the profession be displayed, I fear it would exhibit a woful list of men with fair abilities wasting their energies on fruitless competitions,—wrecking their gay convoy of rich hopes on barren disappointment.

Thirdly, the eagerness with which architects rush into competitions tends to deprive the profession of respectful consideration from the public. If the usual scale of professional remuneration is excessive, let it be reduced; but if it is only fair and reasonable, can the public be expected to think so, when so many are willing to work for the mere chance of obtaining a gratuity much less than the charge each would be entitled to claim were he specially consulted? In what way is the support of architectural competitions to be

reconciled with the sanity of the professional mind? This question I cannot answer; and so, for these and reasons frequently expressed by others, do I abstain from a custom which I consider is "more honoured in the breach than the observance," and I shall be happy to form another cipher after Mr. Oliver's unit in his anti-competition league.

JOSEPH BOULTON.

GUTTA PERCHA AND ITS "HALF-MARROW," INDIA-RUBBER.

THESE two singular Proteuses,—brother and sister, shall we call them, of one species?—are ever assuming some new form or other of utility in the hands of those capable of turning their wondrous plastic capabilities to account. One interesting recent use to which gutta percha has been put may be seen in the department of "machines in motion" (an odd place for it), at the International Exhibition. Gutta percha stereotypes, with gutta percha matrices, may there be seen, as well as impressions of the stereotypes, printed on paper in the usual printers' ink. The whole process, we should think, might be gone through in a few minutes, by help of some artificial cooling agency, or within an hour even without it. The matrix is just taken by pressure from the block of types while the sheet of gutta percha is hot and soft, and a sharp and fine impression it is quite capable of taking. When cold and hard, this stereotyping plate of gutta percha is ready to have a like impression, or reverse of itself, taken also, by pressure of a second soft and moist sheet of gutta percha on it; and this, when cold and hard, is ready at once for the press plate or cylinder. The specimens of printing from letters and engravings thus formed are as sharp as if taken in metal, and the flexible nature of the substance admits of its being curved round a cylinder, to adapt the surface more completely to the action of the cylinder printing machine. The gutta percha type is even stated to be very durable, and to possess the advantage of printing the impressions on dry and even on glazed paper. This novel application of gutta percha, if it realise the expectations of the inventor, promises to be an important addition to typographic art.

A recent experiment at the Regent's Canal shows that gutta percha may be made useful in submarine blasting, or other explosive operation, even at a "40 mile range,"—a pretty "long range" truly. A coil of wire, 40 miles in length, and completely coated with gutta percha, was laid under the water in the canal, at the rear of the works of the Gutta Percha Company in City-road. One end of this great length of wire being attached to a galvanic battery, the other was led into a gutta percha vessel filled with gunpowder, and sunk in the mud at the bottom of the canal. The instant the circuit was closed, the powder exploded, and the electric influence traversed the 40 miles without any perceptible lapse of time. "This experiment, it is said, was performed in the presence of Lieut. Ward, R.A., who attended by order of Sir John Burgoyne, the Inspector General of Fortifications.

The probable utility of gutta percha in warfare is curiously enhanced by the fact, by the way, that some of the continental military (the French, if we recollect right) are actually said to have got ball-proof gutta percha breastlets—waistcoats—or whatever they may be called, from which balls drop off like mere hailstones! so that ultimately the honest cobbler's idea that for the defence of town walls against cannon balls, "there was nothing like lining them with leather," may at last be realised some day in gutta percha.

In mining, too, as well as in warfare, its use is daily increasing, as the experiment just noticed may itself show. Buckets for descent and ascent in mines are also made of gutta percha, and we observe that a gutta percha tube has lately been placed in a colliery in Wales, having a shaft 400 feet deep, whereby a whisper, either from the bottom or top, is said to be instantly heard: a whistle calls attention, and then follows the message. A great source of mischief may be thus abolished by a safe and expeditious mode of communication.

There is one abuse of gutta percha which we must not omit to notice, namely, the use of gutta-percha clubs by a set of ferocious scoundrels at Sheffield, who called themselves, with satanic humour and devilry, the "Gutta-Percha Club." Some of the members of this reputable club were introduced to the police magistrates on certain occasions in connection with the irregular transfer of property; but we do not know whether they be still at Sheffield, or whether they did not much more probably go in due time to Van *Dæmon's* Land to witness the eclipse—of their "gutta-percha club."

We have enumerated but a few of the uses, not already noted in our columns, to which gutta percha has been more or less recently put; and although the varied uses of this substance itself are limited by its limited quantity, we do not despair of the production of something like it from substances more abundant in quantity. Indeed, what we some time since noted as to an alleged discovery in America, of a method of dissolving and remoulding leather itself, supports us in this idea; and so does another fact that we now recollect of, namely that chemists have found bitumen under certain circumstances to yield a substance very like caoutchouc. A word this to the wise of a wide-awake generation: and now, we will not be surprised, in consequence of it, soon to be able to announce the artificial and abundant production of a cheap and good substitute for either gutta percha or india-rubber, or both.*

Manifest as are the uses of India-rubber too, as well as of gutta percha, we rather think that gutta percha has, of late, been taking the lead; but no harlequin and pantaloons ever followed in the wake of each other more diligently in magical transformations than do these two no less supple associates in transformations of a more useful and not less astonishingly varied and protean order. The last new transmogrifications of India-rubber we happen to have heard of besides the bat-wings for human use to be elsewhere noted in our columns, are those quoted in the following extract from the *Westminster Review*:—

"India-rubber and gutta percha seem destined to make a revolution in the world. Strange, how little the savages have done with them. For the elastic bow of yew an elastic string of vulcanized India-rubber is now substituted, and drives an arrow with equal force and precision. A man may now carry his bow in his fob. . . . And thus [by the vulcanizing process] a stretched-out compressed pipe of India-rubber will yield a bowstring of any power that may be required. Another inventor has made a compound application of this principle. The rebound of the elastic cord is made to compress air in a tube by sudden action, and the air throws a bullet with considerable force. There is another advantage attending this arrangement: a man can pull with a force of about 60lbs. weight. If each elastic cord be equal to 60lbs., and he attaches twenty strings and puts them on tension at twenty efforts, he will have a force of 1,200lbs. to discharge at one effort. This principle is now applied to harpoon guns with advantage, whales being exceedingly sensitive to noise, as when powder is used."

So that India-rubber is not behind hand in offensive weapons for warfare, if gutta percha, in breastlets, or in lining fortification-walls, be a-head in those for defence.

BUSTS OF RIGNY AND CODRINGTON.—A celebrated sculptor of Paris, it is said, has received orders from the Greek Government for marble busts of Admirals de Rigny and Codrington.

* Nature, says the *Athenæum*, in a hopeful spirit like our own, as to "things to be found out," is not exhausted. Within her fertile bosom there may be thousands of substances yet unknown as precious as the only recently found gutta percha. To doubt this, would be to repudiate the most logical inference afforded by the whole history of the earth. Corn and grape excepted, nearly all our staples in vegetable food are of comparatively modern discovery. Society had a long existence without tea, coffee, cotton, cocoa, sugar, and potatoes. Who shall say there is not a more nutritious plant than the sugar-cane, a finer root than the potato, a more useful tree than the cotton? Buried wealth lies everywhere in the bowels of the earth, which needs but the true divining rod of organized action for its discovery.

RESTORATIONS AT STOW CHURCH,
LINCOLNSHIRE.

At a meeting of the Yorkshire and Lincolnshire architectural societies held on the 17th ult. at Ripon, the Rev. George Atkinson read a paper (amongst various others) "On the Restorations in Progress at Stow Church," of which he is the incumbent.

The church of St. Mary, at Stow, in Lindsey, a village situated about ten miles northwest from Lincoln, though of considerable local fame, has not, until within a very few years past, been much known to persons at a distance. Besides the extreme singularity of its structure and general appearance, which could not fail to attract attention from all passers-by, the uniform tradition prevailing all the country round, from time immemorial, that "Stow Church is the mother of Lincoln Minster," where the bishop had his seat before it was removed to Lincoln, invested the site of the structure itself with considerable interest, and the revival, which has so happily taken place, of knowledge and taste in regard especially to ecclesiastical architecture and antiquities, promoted and directed as it has been by institutions like the Architectural Societies of Yorkshire and Lincolnshire, has latterly added much to the interest which had been felt in this remarkable monument of ancient piety. Stow church is of the cross form, without aisles, and having a central tower. Its interior dimensions are, in round numbers, 150 feet in length from east to west; of transept, from north to south, 82 feet; breadth of nave, 27 feet; of chancel, 24 feet; of transept, 23 feet; height of side walls, about 33 feet. On a first glance a practised eye would be led to pronounce it wholly a Norman church, with some insertions of pointed windows, and the substitution of a perpendicular tower for the original one. Its eastern and western portions would, on closer examination, confirm the impression, exhibiting, as they are found to do, the usual features of that style. After referring to the general character and aspect of the nave and chancel, Mr. Atkinson drew attention to the transept of the church, which was found to differ very remarkably in its constructive features, as it did in other respects, from the other two portions. He described the structural differences which led to the conclusion that the transept of this church exhibits an earlier and a later Saxon. During the meeting of the Archaeological Institute at Lincoln, in the summer of 1848, a visit was made to the church by a large party of its members. Most of those who had not seen it before, came with a strong presentiment that they would find it to be nothing more than early Norman, but they were satisfied, after careful examination, that the transept had formed a portion of a Saxon church, and that of a much larger class than any other of which the remains now exist. This visit proved the happy occasion of giving practical effect to the wish which had long been felt in many quarters that an effort should be made to commence the restoration of this venerable structure. Earl Brownlow, the lord lieutenant of the county, president that year of the Archaeological Institute, in conjunction with the bishop of the diocese and other eminent persons, set on foot a subscription, the proceeds of which, together with the contributions of the title-owners, are now being expended on the restoration of the chancel, and it is to be hoped that the means will eventually be found for putting the whole fabric into a sound state. Mr. Atkinson showed that the historical notices of Stow church which have been handed down strongly confirm the above conclusions, grounded on structural evidences only. He connected the church with the bishopric of Lindsey, or Sidnacester, and glanced at the history of that see, which was founded in the year 678. Of the time or the cause of its extinction, there was no express record. William of Malmesbury, who wrote about the middle of the twelfth century, confesses that he had not been able to ascertain by what means it perished. However, it appeared that the see of Sidnacester was united to that of Dorchester, Oxon, in 949, after it had been vacant eighty years.

This date might, in conjunction with the marks of fire found on the only remaining portion of the original cathedral, lead to a probable conjecture as to the cause of the long vacancy, viz., the destruction of the city and church by the Danes. He observed that the peculiar interest attaching to the transept of Stow church, arose from its being the only example now remaining of what a Saxon church of the largest class was; and certainly it was calculated to give a much more exalted idea of the handywork of our Saxon forefathers than they had commonly had credit for. What the original nave was in length or general structure, there were no means of determining; but from the traces of the foundations of the side walls, where they joined the transepts, it must have been twice the width of the present Norman nave, or more than fifty feet, and consequently must have had arcades and side walls. He next adverted to the chancel, the part at present undergoing restoration, and which, therefore, formed more properly the subject of the present paper. The whole of the original work above ground has been destroyed, but in the preparations for a repair of the foundations of the present Norman chancel some discoveries were made in respect to the ground plan of the original choir. These Mr. Atkinson minutely described, and also the use which had been made of them in determining upon the plan of restoration. The grand feature of this work was the restoration of the original stone vaulting, which was now far advanced. The prospect of seeing the vaulting restored at all was no little thing, but to see again the very same design in all respects, when neither memory nor tradition of what it had been, or indeed whether it had been, survived, appeared quite beyond all hope, and yet this was actually to be seen in the restoration. The only particular in which they were left to conjecture was as to what had been the arrangement of the several patterns as to order of place in the groining. Here they could have no guide, but the principle on which they had been arranged, as suggested by Mr. Pearson, the architect, was such as would, Mr. Atkinson thought, commend itself to all as probably the original one, viz., that they should be placed in the order of their richness, the richest being nearest the east end. There is one thing, said the rev. gentleman in conclusion, which this very ancient structure has often brought to my mind most strongly, and it will not, I trust, appear to you otherwise than as it does to me, well calculated to confirm us in our attachment to the Reformed Church of England,—I mean the testimony which it affords to the simplicity of the ritual of our church in those early times, compared with what it had gradually become for some ages before the Reformation. We can admire the beauty of many of those features which were subsequently introduced into our churches, but if any object to us, as a defect, that our present ritual does not require, scarcely admits of, the use of these things, we have in the structure to which I have invited your attention a ready and surely an efficient answer that they were equally unknown to our Saxon, and even to our early Norman predecessors in the Church of England. Some of these developments, as I may be permitted to call them, appear never to have found admission here at all: of the absence of the rest originally, as well as of the after introduction of some of them, several parts of the fabric bear witness. For instance, in the jambs of the side windows, north and south, of the altar space, there was a fracture and displacement of the mouldings exactly in the same place in each, occasioned, doubtless, by the insertion of a cross beam to support one of the lofty wood canopies which are often reared over the altar in Roman Catholic churches. The Saxon piers of the eastern tower arch are to be seen cut and channelled to allow of the insertion of the beams of a roof loft, and a winding staircase actually mined out through the north-east pier to afford access to it. A small recess within the church, near the north door of the nave, probably contained a holy water stoup, but its pointed arch marks its late origin; so likewise does the arch of a niche outside the western

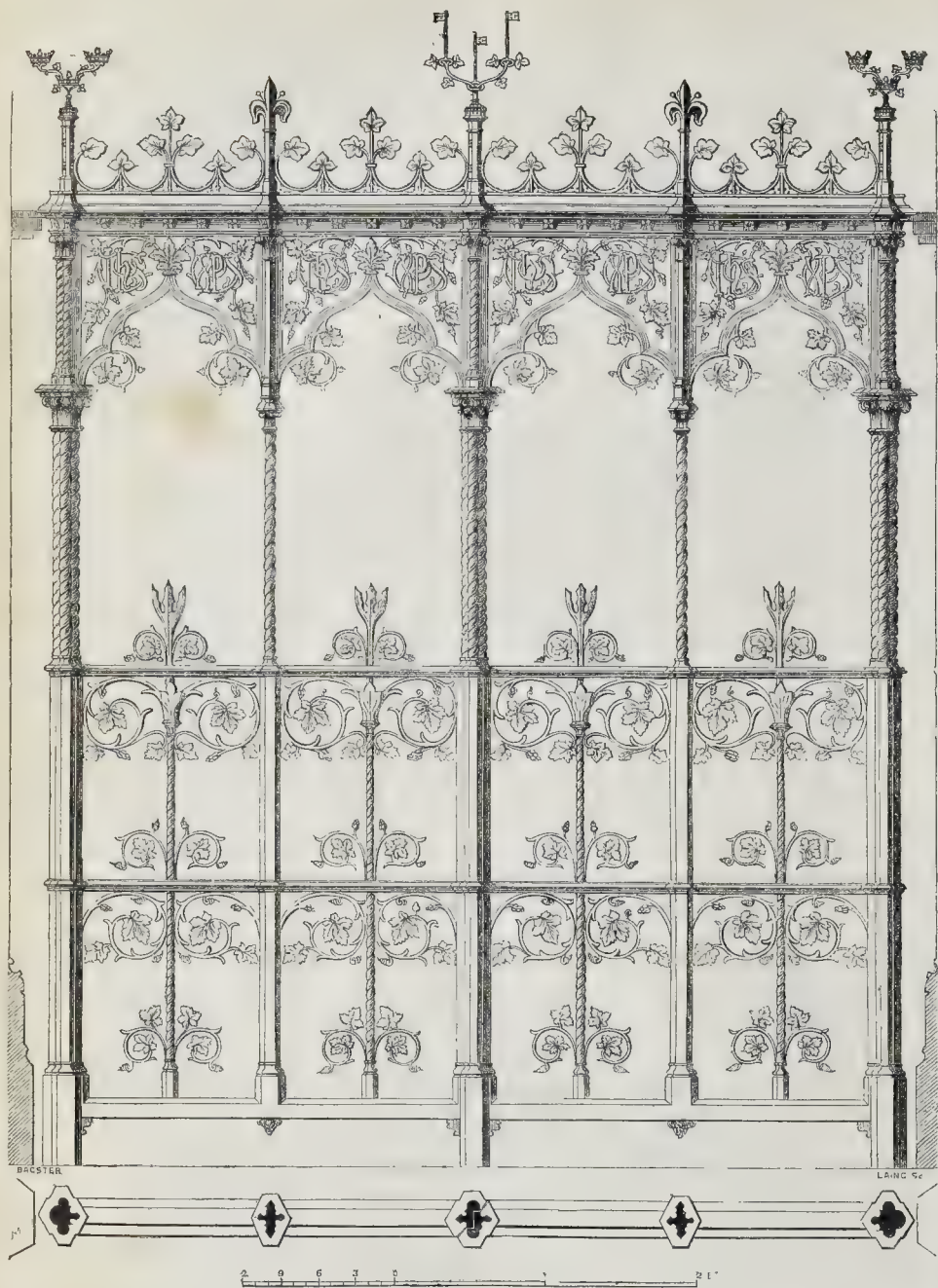
doorway, in which was probably placed a figure of the Virgin, in whose name the church is dedicated. Other comparative novelties might be enumerated, but let these suffice to show that English churchmen, while they feel it one of their highest duties, one of their happiest privileges, to aid in preserving, and restoring where needful, the sacred and venerable structures which our forefathers in the faith erected, have yet cause, in the midst of all our admiration of their wonderful beauty, to love and be satisfied with their own pure and simple worship as it has been reformed, in which, if they are less like to the later, they are all the more like to the earlier Church of England, as to the pure and primitive state of the Church universal itself.

CALCULATING MACHINES.

MR. BABBAGE had better look to his laurels. We lately remarked that were his calculating machines in the International Exhibition the public interest in them might be re-excited, and the means afforded him of completing them. Their place, we may almost say, has been occupied by another calculating machine, which, it appears, is completed, and, according to the *Daily News*, was examined the other day by the Governor of the Bank of England and some City friends. It is in the Russian Court, and is the invention of a Polish Jew named Staffel, a native of Warsaw. It works sums in addition, subtraction, multiplication, and division with a rapidity and precision, it is said, that is quite astonishing. It also performs the operation of extracting the square root and the most complicated sums in fractions. The machine, which the inventor calls "arithmetica instrumentalis," is about the size of an ordinary toilet, being about 18 inches by 9, and about 4 inches high. The external mechanism represents three rows of ciphers. The first and upper row, containing thirteen figures, is immovable; the second and third, containing seven figures each, moveable. The words addition, subtraction, multiplication, and division are engraved on a semi-circular ring to the right, and underneath is a hand which must be pointed to whichever operation is to be performed. The figures being properly arranged, a simple turn of a handle is then given, and the operation is performed at once as if by magic. The most singular power of the instrument is that if a question be wrongly stated, as, for instance, a greater number being placed for subtraction from a lesser, it detects the error, and the ringing of a small bell announces the discovery. The inventor has exhibited its powers to the Queen, Prince Albert, and several persons of distinction, and the experiments of Friday are said to have seemed quite satisfactory to the very competent judges who had assembled to witness them. The inventor also exhibited a curious machine for ascertaining by weighing the fineness of gold or silver. This also was much admired, but it is to be submitted to further and more severe test. Both machines are, to say the least, extremely curious, and have been rewarded with a silver medal by the Russian Government.

THE DWELLINGS OF THE THIBETAN CAPITAL.—The houses of Lassa are generally large, of many stories, and terminated with a terrace, slightly inclined, to facilitate the draining off of rain water. They are covered with whitewash, with the exception of some borders, and the frameworks of the doors and windows, which are painted red or yellow. The reformed Buddhists are particularly fond of these two colours: they are, so to speak, sacred in their eyes, and they call them Lama colours. The inhabitants of Lassa, having the custom of painting their houses every year, they are usually very clean, and always look as if newly built; but the insides are far from being in harmony with the fair appearance of the outside. The apartments are dirty, smoky, strong-smelling, and encumbered with furniture and utensils, thrown here and there in disgusting disorder. The Thibetan habitations are, in fact, nothing more than great whitened sepulchres.—*Hue's Travels in Tartary, Thibet, and China.*

METAL GATES IN NEW SCREEN, ELY CATHEDRAL.



METAL GATES, ELY CATHEDRAL.

In accordance with our promise, we now give an enlarged view of the brass gates in the new chancel-screen at Ely Cathedral.*

* See p. 460, ante.

A BRIDGE OF BASKET-WORK.—The bridge across the Zab at Lizan is of basket-work. Stakes are firmly fastened together with twigs, forming a long hurdle, reaching from one side of the river to the other. The two ends are laid upon beams, resting upon piers on the opposite banks. Both the beams of the bas-

ket-work are kept in their places by heavy stones heaped upon them. Animals as well as men, are able to cross over this frail structure, which swings to and fro, and seems ready to give way at every step. These bridges are of frequent occurrence in the Tiyria mountains.—*Layard's Nineveh.*

THE MAYOR'S CHAPEL, BRISTOL.*



* See p. 111, for plan and Number.

NOTES IN THE PROVINCES.

East Kent Workhouse.—The guardians being dissatisfied with the manner in which the contractors have built the new workhouse, Mr. Fowler having been asked to report on the subject has done so, and after pointing out various incidental defects as to pointing, &c., and some others, he says,—"I think it right to observe that there were no proper working-drawings to show the various details of the construction, so as to insure a correct execution of the work. The only drawings were those upon which the contract was founded, and they are at the small scale of $\frac{1}{4}$ inch to 10 feet; also very few dimensions are figured upon them. The specification is very copious, but not clear or exact in many important particulars. It further appears that no clerk of the works was employed to superintend the erection of the buildings, as contemplated and provided for in the conditions annexed to the specification. Under all these circumstances it may be fairly presumed that many of the defects are owing to a want of superintendence, rather than any intention of the builders to save expense in materials or labour. That although the contractors are not thereby exonerated from the due fulfilment of their contract, yet it may be worthy the consideration of the guardians, that so far as they have failed to make use of the proper and customary means to protect their own interests, they have not so good a ground for penal proceedings against the builders, should such be contemplated." The reporter also says,—"With respect to the instructions of the board on the 10th of June that I should report upon the comparative values of the works as they are, and as they ought to have been executed, I beg to say, that if the builders be allowed (as I have suggested) to reinstate all such defects as can be made good, there will be very little matter to which such valuation can apply excepting the brickwork; and I do not see how the extent of the defects in the internal construction of the walls, &c., can be ascertained and estimated, unless by cutting into every part, more or less, to disclose the actual state and condition; a process which would be attended with great inconvenience, probably much beyond the amount at issue. That after all it would only be an *ex-parte* proceeding, and not binding or conclusive; therefore I would recommend as the preferable course, that if there be any dispute on this point, it should be at once referred to arbitration."

Dover.—The local Gaslight and Coke Company have given notice that, for the purpose of facilitating the more general use of gas in private houses, shops, &c., they have reduced their price to all who burn by meter, so that, deducting ten per cent. for prompt payment, the net price will be 6s. per 1,000 cubic feet. A correspondent of the *Dover Chronicle* throws great discredit on the meters in use.

Ventnor.—Since the erection of the esplanade, which is 1,000 feet in length, the realization of a pier and harbour at Ventnor has become a popular subject, and there are projects on the tapis for either a floating break-water or fixed works.

Newport.—A new gas company have commenced preparations in the Marsh for the erection of their manufactory, the plans of which have been open for public inspection. We understand, says a Hampshire contemporary, that Mr. T. W. Stratton, architect, has been appointed to the office of surveyor, and that Messrs. Fox and Henderson are the successful contractors for the iron work. The whole of the works are to be finished and in operation by the 1st of January, 1852, and the public lamps lighted and tested, the contractor having engaged to furnish a pure and efficient supply, the quantity and quality to be unexceptionable, and its brilliancy to be sufficient to enable the leader of a newspaper to be read at 15 feet distance. It is said to be Sir William Hilary who has agreed to light the town with 140 lamps of superior gas all the year round for 280*l.*, while the present company has been charging 264*l.* for lighting eighty lamps but eight months in the year.

Clifton.—A communication, says the *Gloucester Chronicle*, took place lately between the

trustees of the suspension bridge undertaking and Mr. Brunel, as to the probability of its long-promised completion, when Mr. B. undertook to provide 3,000*l.* to defray their existing liabilities, and to provide a person to complete the bridge, retaining the tolls of the work when finished, to repay the additional cost. The proposition is still in abeyance, owing to a difference of about 500*l.*

Chester.—Some workmen employed in digging a cellar near the Exchange, says the local *Courant*, have exposed several large blocks of stone at the depth of eight feet, and among them one with an ancient inscription, which induced the proprietor to preserve it. It was sent to the rectory of St. Mary's, and turned out to be a portion of an altar, with a legend in Greek characters, which described it as having been dedicated to certain genii and preservers of man, by one Hermogenes, a physician, who seems to have exercised his profession in the Roman army at Chester, as there were several tiles near it stamped with the well-known mark of the 20th Legion, L. XX. VV.

Manchester.—For some time past workmen have been employed in building a wall fronting the dyeworks of Mr. Owen at the bottom of Medlock-street. The wall was being erected on some arches which formed part of the dyeworks, and on Wednesday one of the workmen discovered symptoms of weakness and decay in one of the arches, and in a few hours after both arches fell in.—Messrs. Howard and Atkinson, of St. Mary's-street, have presented to the Peel's-park Library and Museum a fountain, as an ornament to the library room. The fountain is about 4 feet high, and consists of a square grey granite vase, the pedestal and the column which support the basin being ornamental metalwork, of a floral pattern, painted in imitation of scagliola. The fountain is self-acting.

Preston.—The local Board of Health, it appears, have lately appointed a committee to obtain a better and cheaper supply of water to the town. Should the company demur to the terms of the committee, the latter, says the local *Guardian*, will at once proceed to call in an inspector under the Health of Towns Act, as a first step to placing the supply of water in the hands of the local board. The attention of the local board is now also being directed to the gas monopoly.

Bolton.—Some of the local poor-law guardians, backed by a poor-law inspector, propose to have a new workhouse erected for the whole of the Bolton Union. The infirmary, too, is said to be much in want of enlargement, which is advocated in the local *Chronicle*.

Leeds.—The committee of the Leeds Gas Companies have determined that from the commencement of the current half-year the price of gas should be reduced from 4s. 6d. to 4s. per thousand cubic feet, with the usual scale of discounts to large consumers. In the circular just issued, announcing this reduction, they also inform their customers that any surplus beyond the dividends, as limited by Act of Parliament, will be applied to a further reduction in the price. It would be well for all other companies to take an example by enlightened enterprise such as this. Had this been the rule in place of the exception from the commencement, there would have been no agitation for cheap and good gas; as, to insist on willing and reasonable, as well as far-seeing, companies such as these seem to be, reducing their price at once or precipitately to the minimum, would be most unreasonable.

Huddersfield.—There is a stir here at present in extending the town, knocking down obstacles in the way, and effecting general street improvements.

Filey.—The spirit of improvement is here also at work, as indeed it has been for some years; but since last season the movement has been increased by the completion of a very extensive promenade and pleasure grounds, which have been laid out in front of the crescent by Mr. J. W. Unett: a number of first-class houses have also been erected, and other improvements made.

Edinburgh.—It appears that notwithstanding the outcry about the removal of an ancient

landmark, John Knox's house, and the offers to restore it, the building is still in so tottering and dangerous a condition as to require that a portion of it should be immediately pulled down.

Miscellaneous.—The new waterworks at Pontypool are nearly completed. Ringwood, near Romsey, is about to be lighted with gas.—The Worcester New Gas Light Company have recently reported a dividend at the rate of 8 per cent. for the last half-year.

CHURCHES, CHAPELS, AND SCHOOLS.

Gwensylth, near Wrexham.—The new church here was consecrated on Friday, the 25th ult., by the Lord Bishop of St. Asaph. The site was the gift of the Rev. Robert Wickham, vicar of the parish (Gresford). The church is in the Early English style, and consists of nave, 66 feet by 30 feet; chancel, 24 feet by 17 feet; south porch, 11 feet by 9 feet; vestry, 13 feet by 13 feet, at the angle formed by the east wall of nave and the north wall of chancel, over which is a tower and broach spire, 100 feet high, surmounted by a vane. It will accommodate 400 persons. The roofs are open timbered deal, and stained dark oak, the principals springing from carved stone corbels 7 feet below the level of inner wall-plate. The benches are open, with sloping backs and moulded stall-ends; they are deal varnished, but not stained. The doors, altar-rails, and communion-table are of Riga oak: the floors are English oak: the pulpit, reading-desk, and font are of Caen stone, of very chaste designs: the reredos is also of stone. The east window, the gift of Mrs. Williams, of Gwensylth Park; and the south chancel window, the gift of Thomas Penson, Esq., of Gwensylth Hills, are by Wailes, of Newcastle. The designs were furnished by Mr. Thomas Penson, architect, and carved by Mr. Ebenezer Thomas, at a cost of 2,300*l.*

Barnwell.—The chancel of the church of St. Andrew has recently undergone a partial restoration, under the direction of Mr. G. G. Scott, architect. We are indebted to the *Northampton Herald* for the following particulars:—The east window, which is of considerable size (containing now 135 superficial feet of glass), was half blocked up with stone panelling: the remainder was glazed with square panes of common glass, between four crossed mullions, all tracery in the head of the windows having vanished. The side window of the chancel being perpendicular in style, it was deemed advisable to insert a perpendicular window in the east end, of the full size, the stone-work of which has been executed by Mr. Rippiner, of Oundle. The tracery is copied exactly from that which still exists in the window of the chancel of the ruined church of Barnwell All Saints, the adjoining parish. It has been filled with Powell's quarried glass, surrounded by a narrow blue border. Below the window a moulding has been carried across the whole east wall, and a reredos of tiles, manufactured by Messrs. Minton, has been erected. The border of these tiles is blue and white. Proceeding westward, the chancel was blocked up by two pews, higher even than those which still remain in the nave. These have been replaced by carved seats, placed stallwise along the walls on each side. The carpentering was done by Mr. Gann, of Oundle. The more elaborate parts of the carving were executed in London by Mr. Mitchell. Much remains to be done.

Hartwell.—A new church was to be consecrated here on the 8th inst. The old chapel was in a most ruinous state. The new church is after a design by Messrs. Vickers and Hugal. The building was so far under the direction of the Architectural Society that, at their suggestion, the style of the old chapel was preserved, even the pillars being moved into the new church. There is still a deficiency in the funds.

Hawnes (Bedford).—The re-opening of Hawnes church is announced by the *Bedford Times* to have taken place on 17th ult. This edifice consisted before of a chancel, nave, and south aisle, with a tower at the west end. A new aisle has now been added on the north

side, corresponding with the other. Beyond the new aisle is a chantry, running parallel with the chancel, and separated by some plain screen-work. Thus the whole of the north side is new; and on the south, the walls have been under-pinned and cased throughout, and in many places entirely rebuilt, especially the porch; while the arrangement and disposition of the windows are also new. These latter exhibit in a modified degree the variety which forms a characteristic in the Middle Pointed style, of which Hawnes church is supposed to have been an early specimen, and in conformity with which its present restoration has been carried on, under the direction of Mr. Woodyer, of Guildford. At the east end, the original three-light window has been replaced by one of the same number of lights, but of more elaborate design: this is the only alteration made in this part of the structure. The tower is the only portion of the church which has been left untouched: its appearance, however, is considerably altered—scarcely, it is thought, for the better—by the great elevation of the nave roof, which, as there is no clerestory, is carried across in nearly unbroken lines, from aisle to aisle, and, in order to secure a sufficiently sharp gable, to a height which is said not to harmonise with the humble dimensions of the tower. With respect to the interior, the expanse of roof, of dark oak, is relieved with bosses and other ornaments of the kind, brilliantly picked out. The chancel ceiling is polychromed in compartments, formed by oaken rib-work, the upper moulding of which is gilded, each compartment being surrounded with a deep border of blue and white trefoil alternate, and containing the sacred monogram. The east window is by O'Connor, in illustration of John xix. The stained glass in the wheel window in the eastern gable of the chantry (supplied by the same artist) is said to be somewhat kaleidoscopic in its pattern, and flaming in its hue. The original chancel-screen, of perpendicular work, has been restored to its proper place. The passages from this screen to the western door, as well as between the entrances on the north and south sides, together with the chantry, vestry, and south porch, are tiled in alternate squares of red and black: the chancel is also laid with the same material, but of different patterns. Over the communion table, and forming a sort of low reredos, are some encaustic tiles—the gift, as stated, of Messrs. Minton, who furnished the rest—and others, less costly, arranged in panels on either side. The sittings in the body of the church are of oak, low and square-headed—after the original pattern—and all open: the pulpit is in Caen stone. The heating apparatus, supplied by Mr. Haden, of Trowbridge, is concealed behind a solid screen at the west end of the south aisle.

Wilburton.—The church of this village has been recently repaired and fitted up with open benches, pulpit, &c. of carved oak, the ancient oak roof restored, the stone pillars and arches renovated, and various other works executed by Mr. Rattee, of the Carving Works, Cambridge.

Deal.—The following are the names of the parties who gave in tenders for building an infant school here, with the amount of each tender, excluding shillings:—Messrs. Eastes, 661l.; Mr. Rogers, 530l.; Mr. Wise, 504l.; Mr. Brewer, 521l.; Mr. Cullen, 599l.; Messrs. Cotton and Gibbons, 499l. The committee, it appears, were not in a position to meet so large an outlay: they consequently altered their plans, and instead of subjecting them to public competition, as in the first instance, sent for Mr. Wise, and entered into private arrangements with him. This was opposed by three members of the committee.

Durdam Down (Bristol).—The parochial schools of St. John the Evangelist, newly erected, were opened on Wednesday in last week. The building was erected from the designs of Mr. G. C. Cripp, architect. The building fund is still deficient about 200l.

Cheltenham.—At a recent meeting of ratepayers it was resolved "that the opening to the High-street of the view of the Old Parish Church, by the removal of the present build-

ings between the two passages leading to the churchyard, would effect a most important improvement to the town at large;" and the meeting pledges itself to use its best exertions to carry out that object.

Wigan.—A monument to a local celebrity has been placed in the parish church. It is in the perpendicular style of Gothic architecture, about 9 feet high, and is placed in a recess formed in the north aisle of the church, between the Walmsley chapel and the arch of the tower. It is of Caen stone, and ornamented with buttresses, pinnacles, crockets, and other details. The back of the recess will be relieved by ornaments of diaper pattern in polychromy. The designer was Mr. J. Gibbs, late of Oxford.

Miscellaneous.—On Thursday week the first stone of the new church of St. Matthias, Stoke Newington, was laid by Earl Nelson.

—The first stone of a new Roman Catholic Church was lately laid at Mortlake, Surrey.

—A new organ has been recently placed in the church of St. Saviour, Walmer. —The foundation-stone of a new parsonage-house, at Askerswell, was laid on the 23rd ult.

—The foundation-stone of a church for the district of Sutton-on-Plym, according to a Devonport paper, was to be laid on 5th inst.

—Blaenavon Church has been repaired and otherwise improved, with increased accommodation, and was reopened on 24th ult.

—The parish church of Llangwm Issa, recently rebuilt, was consecrated on 23rd ult.

—The church had been in ruins for nearly 100 years.

—The Newington Independent chapel, at Liverpool, is at present undergoing an alteration of some importance, the lower part of the large central window in front being removed to make room for a main doorway.

—The foundation of a new Roman Catholic church was laid at Londonderry on Saturday week.

—The chief stone of Mount St. Vincent Orphan School, at Limerick, was laid on Saturday before last.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Photography applied to Art.—"*Italie Monumentale*," by M. E. Piot.—Photography, like any other nascent art, did not present at once all the aspects of future usefulness and appliance. As long as this operation was restricted to metallic plates, it was but a substitute for the tinzel art of miniature painting. But since paper could be substituted for the costly and cumbersome metal, and numerous impressions made thereof, it became deservedly a new branch of art-application. It was, in fine, M. E. Piot who overcame all difficulties, to bring out a work of architectural and art illustration, based on large photographic originals, taken after nature. One may not think, that the process of taking solar views is one merely of mechanism and routine. The numbers of "*Monumental Italy*" hitherto published represent two sketches of Santa Maria del Fiore, one of the jewels of mediæval Florence, the masterpiece of Arnolfo di Lappo. Equally praised is the inclined steeple of Pisa—a problematic whim of construction, where the greatest faithfulness of portraying is indispensable. After the work on Italy has been concluded, Greece and Egypt will have their turn, in this original and praiseworthy undertaking.

Brussels.—*A Belgian Walthalla.*—According to its size, the Belgian capital is that where most is done for the progress of art and humanity. Now a collection of statues and busts of great Belgians is spoken of, and this has been brought to bear on the miserable sculptures with which the Brussels (ay, and other parks) are hitherto disfigured. It is intended, that as the images are got ready, they be first exhibited in that place of public resort, also for the sake of accustoming the great mass of the nation to these sights. Subsequently, an especial Pantheon is to be built to contain the whole galaxy of Burgundian celebrities.

Blucher Monument in Silesia.—This building has been formed with the character of strength, similar to that of the man it celebrates. The foundation is made of the rock of the Zobten-

berg: the superstructure, forming a square building, consists of mighty granite blocks from Strehlen, renowned for great tenacity. Above that is a round tower, in the niche of which the bust of the stalwart soldier, made by Rauch, is placed. It will be surmounted by a sort of cupola made of one single block of 13 feet diameter. The plan of the monument is by the Baurath of the king, M. Starck.

Viaduct over the Vale of Albano, Rome.—A bridge of considerable architectural merit is now being erected over the vale between Albano and Aricia, being on the line of the *Via Appia nuova* from Rome to Naples. It was begun in 1846, and is intended for avoiding the very rapid descents and rises on both sides of the date. The viaduct consists of three ranges of arches, of which the lower row contains ten, the middle thirteen, and the upper seventeen arches, all built of hewn stones. The cost of these works is calculated at 260,000 Roman scudi, and would be much greater if the quarries whence the stones and the *puzzolana* are raised, were not close at hand.

A DREAM OF ARCHITECTURE.

By GÖRTHE.*

A PHILOSOPHER characterised architecture as *solidified music*, which was assented to but hesitatingly. We think we cannot reproduce this fine thought in a better form, than by calling architecture a music which has ceased to vibrate (*verstumme Tonkunst*).

Imagine Orpheus, who, when a vast, deserted building-ground was assigned to him, sat himself down on the most appropriate place, and by the vivifying tones of his lyre, formed a spacious square around him. The rock-masses quickly seized and dragged forth from their contiguity, by lovely, enticing, and forcibly-commanding tones, were compelled to arrange themselves according to the rules of trade and art, while they moved on with precipitation for the sake of forming themselves into rhythmic strata and walls. And thus street might join street, while wall-like inclosures were not wanting.

The tunes might have ceased, but *harmony* remained. The citizens of a town thus formed pace and live amidst eternal melody: the mind cannot sink, nor activity be lulled: the eye takes up the functions, duties, and qualifications of the ear, and even in the commonest day the dwellers feel an ideal existence; and without reflection, and not asking for the how, they participate in the highest moral and religious enjoyment. If we were to fancy ourselves pacing up and down St. Peter's dome, an analogy would exist of what we have dared to express.

In a badly built town, on the other hand, where chance has, as with a bad broom, swept the houses together, the citizen dwells unconsciously in the desert of a gloomy existence; and the stranger arriving therein feels as if he were amongst the sounds of bagpipes, drums, and whistles, preparing to witness the dances of bears and monkeys.

PATENT LAW AMENDMENT.

A CLEAN sweep of the "fees," and of those whom the fees feed, was far too good a thing, we fear, to be easily or readily attained. There is some considerable difference, however, between being "bled" to the extent of a cool hundred or two in the outset of a patent, and being merely "cupped" of a few fives and tens in the first couple of years, and only drained out of forties and eighties at the end of the third and the seventh, respectively, when the "poor inventor" will be "accustomed" to it, like certain eels to the process of skinning. These comparative benefits, as will be seen by the following resolutions, agreed to in the Commons Committee on the Patent-Law, and now under discussion in the House itself, may be regarded as at least now probable:—

"Resolved—That there shall be paid to her Majesty, her heirs and successors, for or in respect of the several instruments, matters, and things hereinafter specified, made, or issued in pursuance of any Act of the present session of Parliament for

* Posthumous Works, vol. iv., p. 251. 12mo.

the amendment of the law touching letters patent for inventions, the several stamp duties following—that is to say:—

On warrant of law officer for letters patent	£5	0	0
On certificate of clerk of the patents of payment of the fee payable at or before the expiration of the third year	10	0	0
On certificate of clerk of the patents of payment of the fee payable at or before the expiration of the seventh year	20	0	0
2. Resolved.—That there shall be paid to her Majesty the following fees on the respective documents herein stated:—			
On leaving petition for grant of letters patent	£5	0	0
On notice of intention to proceed with the application	5	0	0
On sealing of letters patent	5	0	0
On filing specification	5	0	0
At or before the expiration of the third year	40	0	0
At or before the expiration of the seventh year	80	0	0
On extension of period of provisional protection	10	0	0
On leaving objections to granting of letters patent	2	0	0
Every search and inspection	0	1	0
Entry of assignment or license	0	5	0
Certificate of assignment or license	0	5	0
Filing application for disclaimer	5	0	0
Caveat against disclaimer	2	0	0

STAMP DUTIES TO BE PAID.

On warrant of law officer for letters patent	5	0	0
On certificate of clerk of the patents of payment of the fee payable at or before the expiration of the third year	10	0	0
On certificate of clerk of the patents of payment of the fee payable at or before the expiration of the seventh year	20	0	0
3. Resolved.—That compensation be made, out of the Consolidated Fund of the United Kingdom of Great Britain and Ireland, to persons entitled to fees and charges payable in respect to letters patent, for any loss they may sustain in consequence of any Act which may be passed for the further amendment of the law touching letters patent for inventions."			

THE IRON TRADE.

FROM a return which has been printed by order of the House of Commons, it appears that last year 785 tons of iron ore, 1,613 tons of chromate of iron, 650 tons of pig iron, 34,065 tons of unwrought iron in bars, 933 tons of bloom iron, &c., were imported, principally from Sweden and the United States, into this country. The iron exports were 4,996 tons of unwrought iron in bars (nearly 5,000 tons of which were exported to the East Indies), and 648 tons of unwrought steel. The declared value of the wrought iron and steel imported was 60,338*l.*, and that of the wrought iron and steel exported 33,139*l.* The quantity of British iron exported from the United Kingdom last year was very considerably greater in almost every form—pig iron, bar iron, cast iron, &c.—than in the year 1849. The declared value of last year's exports of British hardware and cutlery was 2,641,432*l.*, and the quantity was 25,746 tons. In the year 1849 the quantity was 23,421 tons, and the declared value 2,201,314*l.* The declared value of the machinery and mill-work exported last year was 1,042,166*l.*, of which 203,991*l.* was the value of the articles of this description exported to Russia, 117,349*l.* of those sent to Italy, 84,534*l.* to the Hanseatic towns, 73,167*l.* to Spain, 59,106*l.* to France, 83,508*l.* to the West Indies, 49,970*l.* to the East Indies, &c. The value of the machinery and mill-work exported in 1849 was 700,630*l.*—In reference to the present state of the trade, in the raw material, chiefly, amongst the Staffordshire and other iron-masters, a Birmingham paper says:—"Throughout every branch of the business, complaints of losses and want of remuneration are most energetic. The occupiers of coal and ironstone works assert that their mines are being exhausted at rates that scarcely realise the royalties to the proprietors, and the enormous burthens of taxation and parochial payments to which they are subjected. The owners of blast furnaces affirm that, even with the present thankless

prices of materials, the cost exceeds the marketable value of their pigs; and the manufacturer declares that he can obtain no return for his capital or risk, the latter being a consideration of weighty account at the present moment. Confidence, indeed, is fast giving way to a feeling of anxiety for the result of the present unmodified production under such ruinous circumstances."

PARIS AND THE GREAT EXHIBITION.

AFTER the Canynges Society's dinner in Bristol on Thursday night in last week, one railway took us to London, and another, with a steam-boat in correspondence, put us down, on the following evening, with a goodly company besides, in the metropolis of France, to enjoy the hospitality of the Municipality and the President. The Hotel de Ville, with its affluence of decorations; Versailles, with its acres of painted canvasses and limitless water-spouts; and St. Cloud, with its delicious gardens (and a fight for eatables that beat Guildhall hollow), have been crowded with our countrymen and countrywomen, delighted with all they saw. We must postpone till next week, however, anything we may have to say on the subject.

BELLS, GREAT AND LITTLE.*

THE casting of bells is of great antiquity; the first are said to have been founded at Campanian in the year 400. But in the Jewish ceremonies of the tabernacle, and afterwards in the temple, bells of gold were attached to the dress of the high priest. The largest bells in the world are in China and Russia, and at Nankin there were four bells of such enormous size that, when first struck with a wooden hammer, they brought down the tower, and still lie neglected among the ruins. The weight of one was computed at 50,000*lbs.*, double the weight of the bell at Erfurth, said to be the largest in the world. But in the belfry of St. Evan's Church, at Moscow, is one weighing 127,000*lb.*, and it was surpassed by one cast at the expense of the Empress Anne, weighing 430,000*lb.* This is, undoubtedly, the largest bell in the world. The tradition is that the beam on which it hung was accidentally burnt; but this is denied. The Russians might as well attempt to suspend a first-rate man-of-war with all her guns and stores. It is 67 feet in circumference, and more than 21 feet high. Its real history is this:—A fire took place in the Kremlin, the flames of which caught the building erected over the pit in which the bell still remained after having been cast. In consequence of this the metal became hot, and the water thrown on the building to extinguish the flames fell upon the bell, causing a fracture near the bottom, sufficiently large to admit two persons almost without stooping. Its value is about 67,000*l.*, and it has been for more than a century in its present position. The largest bells of England are those of Christ Church, Oxford, weighing 17,000*lb.*; St. Paul's, London, 11,474*lb.*; and Great Tom of Lincoln, 10,854*lb.* We may add to this outline of casting in brass and bronze one fact relative to the necessity of great caution. Towards the end of the 17th century there was a foundry at Moorfields, and in 1716 the cannon taken by the Duke of Marlborough from the French was about to be recast there, and attracted a great number of visitors and strangers, including one Scalch, a Swiss founder. He observed that the moulds were not sufficiently dry, and communicated the fact to the principals of the department; but, piqued at being dictated to by a foreigner, they treated his warning with contempt. When the red hot metal flowed into the moulds, the moisture was converted into steam, and a fatal explosion took place. The liquid metal flew in every direction, a great part of the building was destroyed, and several lives lost. In consequence of this the foundry was removed to Woolwich, and the management of it entrusted to the sagacious Scalch.

* From the Morning Herald.

Miscellaneous.

ZINC.—Sir,—The foreign zinc is no better, not more durable, nor more useful than British zinc; and if some *Société Anonyme* would patriotically do as much for it, as the Belgium government and the rest do for "Vieille Montagne," more of it would be used. It is unfit for a tropical voyage, and no sane shipowner would put zinc on the bottom of his vessel, when he could obtain copper, which endures much longer; and the labour being the same the dearer copper is cheaper than zinc. I have put slips of zinc outside the copper round the bows, which have tended to preserve the copper from oxidating for a time; but that is all I would recommend on that subject. Zinc is useful for building purposes, windows, tubing, &c. &c., to all which purposes our people first applied it. We rendered it malleable, rolled it into sheets, and applied to our uses, which uses they have not the habit of using, so that they cannot reciprocate our indulgence. As to zinc paint, oxide of zinc, although it is relatively lighter than oxide of lead, and ought to be cheaper, yet the trade of it is mystified, and it comes to the public dearer than lead in comparison; besides, it is not new nor of recent discovery.—L.

STEAM ONCE MORE "GOING."—A gentleman who, on the respectable authority of *Aris's Birmingham Gazette*, was ridiculed about seven years ago for maintaining the "absurd idea" of the practicability of establishing an Electro-Magnetic Telegraph, by submarine agency, across the Channel, and even suggesting the possibility of carrying it on to India, now announces the discovery of "a new Motive Power by mechanical agency, as an economic substitute for steam to a considerable extent, and likewise a power for lifting immense weight by small and inexpensive means, *ex. gr.*, lifting water, both as to height and quantity, ample for generating sufficient water power for mill purposes—*working itself*—as also for draining low lands by raising water to a higher level to be taken seawards." We understand that one of the projects of the advertiser is to raise water 22 feet high, at the rate of 100,000 gallons per hour. The doings of Appold's centrifugal pump are nothing to this machine, which is capable of "working itself."

NATIONAL GALLERY.—Lord John Russell, in laying upon the table of the House of Commons the report of the commissioners appointed to inquire respecting a site for the National Gallery, said, that the commissioners had reported their opinion to be, that the National Gallery ought not to be left on its present site, and that it was very desirable to obtain a better site in the neighbourhood of Hyde-park or Kensington-gardens. They also stated it to be their opinion that a site in the neighbourhood of Hyde-park might be procured on reasonable terms; but if that should turn out not to be the case, and the expense was too great, then that the new gallery should be built in Kensington-gardens. The Government would take the whole subject into their consideration before the next Session of Parliament.

NEW MATERIAL FOR PIPES AND PILARS, VASES AND RESERVOIRS, &c.—A patent, dated 22nd of July last, has been granted to Thomas, Earl of Dundonald, Admiral in her Majesty's navy, of Chesterfield-street, in the county of Middlesex, for improvements in the construction and manufacture of sewers, drains, water-ways, pipes, reservoirs, and receptacles for liquids or solids; and for the making of columns, pillars, capitals, pedestals, vases, and other useful and ornamental objects, from a substance never heretofore employed for such manufactures.

STOPPAGE OF BLACKFRIARS BRIDGE.—From the 1st inst. the thoroughfare for carriages was stopped. Foot passengers, however, are permitted to pass over as usual. The committee, it seems, have been reluctantly obliged to adopt this step, the continual sinking of the defective pier giving rise to serious apprehensions for the safety of the public. This is no more than we anticipated.

INSTITUTE OF MECHANICAL ENGINEERS.—A general meeting of the members of this Institute was held on Wednesday in last week at Birmingham. Mr. J. E. McConnell, in the absence of the president, took the chair; and, after the minutes of the previous meeting had been confirmed, Mr. Marshall read the first paper for discussion, "On Improvements in the Construction of Railway Waggon," by Mr. Henry H. Henson, of London. A paper, by Mr. Siemens, of Birmingham, "On a new Regenerative Condenser for high and low pressure Steam-engines," was next read, and it was followed by a paper by Mr. Archibald Slate, of Dudley, "On a new Blowing Engine working at high velocities."

BOILER EXPLOSION AT HEY, NEAR OLDHAM.—We are far from recording every one of these ever-recurring mischiefs. We only occasionally allude to them by way of repeated protest against the avoidable continuance of what we deplore. Three lives have just been lost at Hey, near Oldham, by the bursting of a steam boiler attached to the mill of Messrs. Rhodes and Co. of that place. The boiler was almost new.

THE WORM IN THE BOBBIN.—In your number of the 2nd instant, Mr. James Jardine inquires for a preventive to the existence of "the worm in the bobbin." I believe if the bobbin be macerated in a solution of corrosive sublimate, the object may be attained. The salt combining with the albumen of the wood, the nutriment of the insect would be destroyed; and it would not inhabit its substance, as the teredo does not penetrate timbers so prepared and placed as piles in the sea. The experiment will cost little more than the trouble of making it.—AN INHABITANT OF MAY-FAIR.

A "SELF" IMPELLED STREET CARRIAGE.—The *Courier du Havre* states, that a vehicle, 6 feet long and 3 wide, was lately seen to circulate through the streets of the town, moved by concealed mechanism. The inventor of the vehicle, M. Prevost, of Lisieux, declares that he travels usually by it three leagues an hour without fatigue on ordinary roads, and that he can easily go over from twenty-five to thirty leagues a day on it. The moving power in this case is not the muscles of the legs or arms, but simply the weight of the person seated.

THE PEOPLE'S CARRIAGE.—We lately noticed an omnibus, equal to its name, which has begun to run between Glasgow and Paisley with fifty-six passengers—first, second, and third class. With a handy vehicle of this calibre, combined with the penny system at Liverpool, to enjoy the advantages of which it appears there is now a complete scramble, we would have something like a people's carriage for suburban traffic, whereby the pent-up working-classes of this great metropolis might daily have a mouthful of fresh air in the country for twopence. As for the town traffic, with less lumbering carriages, the experiment at Liverpool is certain, as the local *Times* remarks, to lead to the extension of the cheap system.

THE BRICKMAKERS' AFFRAY AT RUSHOLME.—A reward of 100*l.* has been offered by Government to any person who will give such information and evidence as shall lead to the discovery and conviction of those who discharged guns, and destroyed property, during the recent attack upon men who were protecting the brick-croft of Mr. Farr, at Rusholme. It is announced that the Secretary of State will advise the grant of her Majesty's pardon to any accomplice who shall give such evidence as to lead to the same result.

THE NEW CHURCH AT VICTORIA-ROAD, KENSINGTON. has been consecrated. It is dedicated to the Saviour, and will be used as a chapel of ease to the parish church. It is in the early English style of architecture, and is built of Kentish rag-stone: cost, 5,000*l.*, raised by voluntary contributions. It has a tower and spire at east end of aisle. Room has been allowed for a peal of bells, which will be shortly introduced into the tower. The interior has a very plain appearance, the decorations being in the time of the fourteenth century. There are no galleries, and the pews are low and open. The church is capable of holding eight hundred persons, and a portion of the sittings will be free.

LONDON WITH A CLEAN FACE.—I think it will be admitted without a single dissentient, that to look well or to advantage both houses and public buildings should have a clean exterior. It is the same with the *genus homo*. Contrast a dirty with a clean person: the one excites disgust, the other is viewed with pleasure. And what city, may I ask, has more dirty-looking buildings than London? It is painful to see its noble buildings begrimed with soot and dirt. How soon do all its structures fall victims to this nuisance! And where is their beauty then? gone: and instead of the clean and fresh material which so pleased the beholder, a metamorphosis has taken place, and soot and smoke with ruthless sway claim them as their own. However delicate the ornamentation, however exquisite the sculptured exterior, they not only become spoiled, but hideously black. Witness, amongst a thousand instances, Henry the Eighth's Chapel, or St. Paul's. The houses of the metropolis would soon become as black but for the aid of paint, and painting a stone building is almost akin, to daubing a statue with pigment. Is there a remedy for this? It has occurred to me that glass would be a cure. I throw out the idea for him who thinks it worth anything, that glass might be used to face buildings with, instead of stone. I do not mean translucent or crystal glass, but glass ground, of requisite thickness and strength. Such a material would not absorb the dirt and smoke constantly floating on the air, but every shower of rain would wash them off, and buildings would look as fresh and new as ever. And as glass, from recent improvements, can be moulded to any shape almost as perfectly as if cut, the most exquisite Gothic and other ornaments might be produced.

A MILITARY "FIRE-WHEEL."—Mr. Wm. Delany, of Jerpoint, in this county, a miller in humble circumstances, has invented a most original piece of ordnance, consisting of six barrels disposed in the form of a wheel, which revolve upon an axle, and are loaded, primed, levelled at an object, and discharged alternately without the lapse of a moment between, so that the fire upon any point may be perpetually kept up without the slightest loss of time. The model is beautifully contrived and put together, and the machinery is perhaps as ingenious in its conception as we have ever seen.—*Kilkenny Moderator*.

BLASTING GOLDEN ROCK.—Quartzmining, according to a correspondent of the *Harford (U.S.) Courier*, is beginning to attract a good deal of attention at San Francisco. News, he says, has been brought to this city, by express, of one of the most astounding discoveries that California has disclosed to the world. Two men in two days blasted out of the solid rock three hundred and fifty-five thousand dollars (80,000*l.*) worth of gold! One of the owners here, who owned three-sevenths of the vein, was living on the charity of friends when the express arrived, informing him that there were 153,000 dollars subject to his order, on Carson's Creek, near the Toulomne. His name is Morgan." May it not be Walker?

OPENING OF VICTORIA-STREET, WESTMINSTER.—On Wednesday last, the new street, leading from Westminster Abbey to the Vauxhall-road, was officially opened by the Commissioners of the Westminster Improvements. Among those present were the Earl of Carlisle and Sir E. Pearson.

CHEMICAL RE-SHARPENING OF OLD FILES AND RASPS.—It is stated by a writer in *The Chemist* that by the following cheap and simple process old files and rasps may be made nearly equal to new ones. First boil them in soap lyes, or a mixture of slacked lime and soda in water: this done, wash them in water, and directly throw them into a tub full of dilute sulphuric acid, formed of one part acid and six parts water: let them remain here for some time, the exact period being easily found by taking out a file and observing whether the nicks appear sharp or not: as soon as the desired sharpening is effected, the files must be taken out and washed in another tub containing a solution of soda, about an ounce of soda to a pail of water.

STRIKE AT OLDHAM.—On Monday week the mechanics, to the number of upwards of 600, in the employ of Messrs. Hibbert and Platt, turned out, owing to the masters contracting to let work to a man named Michael, contrary to the rules of the Mechanics' Society. They held a numerous meeting in the Hall of Science, but appear to have either thought better of it, or to have carried their point, as they resumed work on Wednesday morning.

IRISH MALACHITE.—We have been shown some beautiful specimens of Irish Malachite, from the copper mines, county of Cork. Large pieces of this were broken up, in complete ignorance of their value, by labourers. We do not know what quantity may be still attainable, but the pieces we saw were of as fine a quality, as we should imagine, as if they came from the mines of Demidoff.—*Mirror of the Times*.

[ADVERTISEMENT.] THE LOCK CONTROVERSY.

TO THE EDITOR OF "THE BUILDER."
SIR,—In the *Illustrated News* of to-day it is stated that Mr. Hobbs "formally accepted" the challenge we gave him at the meeting of the Institution of Mechanical Engineers. This statement is wholly incorrect, as Mr. Hobbs declined the offer to attempt to pick two of our ordinary commercial locks then produced, as decidedly as he refused the former challenge made by us in the *Times*.

In reference to the alleged lock-picking at an empty house in Great George-street, it may be as well to inform the public that Mr. Hobbs had access to the lock for a fortnight previous to his public attempt, and that the door was opened for his convenience during the whole time he was operating. It will be remembered that the first lock said to have been picked was in his possession previously for seven days.

Mr. Hobbs talks about fair "commercial" locks. The lowest price he asks for each lock similar to that he shows at the Exhibition is 50*l.*—by no means too much for such a complicated piece of workmanship. Our locks of the same size are sold at 50*s.* each.

We beg further to state that we shall not be bound by any set attempts made by amateur or professional lock-pickers on locks out of our own possession. The undeniable protection they have afforded for more than thirty years from thieves and burglars is the best evidence in their favour.

We are, Sir, your obedient servants.

CHUBB and SON.

57, St. Paul's Church-yard, Aug. 7, 1851.

TENDERS

For the erection of St. James's National Schools, Shore-ditch: Mr. James Tillot, Architect. Quantities furnished:—

T. and W. Piper	£1,635 0 0
W. Laurence and Son	1,523 0 0
E. Carter	1,407 0 0
Haynes and Co.	1,495 0 0
W. Brusa and Son	1,404 0 0
M. Ashby and Son	1,463 0 0
S. Grimsdell	1,424 0 0
R. and E. Curtis (accepted)	1,372 0 0

For the New Penitentiary, Durham: Mr. John Howison, architect:—

Mason and Bricklayers' Work.	
Spark and Hindmarsh	£292 0 0
Forster	915 0 0
Gainford	994 0 0
Winter	946 0 0
Fusshon (accepted)	773 0 0
Carpenter, Joiner, Glazier, and Smith's Works.	
Robson	£471 10 0
Moore	471 6 0
Forster and Gradon	375 0 0
Martin	350 0 0
Thompson (accepted)	342 11 0

Slater's Work.	
Preston (accepted)	£27 0 0

Plumber's Work.	
Sadler	£35 0 0
Heron	84 16 0
Almond (accepted)	78 19 0

Plasterer's Work.	
Tindal	£30 0 0
Dickens	30 0 0
Coxon	75 5 6
Pearson	64 0 0

Painter's Work.	
Wake and Company	£25 0 0
Brimington	14 10 0
Hodgson (accepted)	11 8 6

For Works at Homerton College, Middlesex, for the Congregational Board of Education, consisting of New College and School Buildings, and sundry alterations (exclusive of fittings): Messrs. Smith and Thurston, Architects:—

Smith and Appleford	£4,163 0 0
Cubitt and Co.	4,130 0 0
Locke and Nesham	4,033 0 0
T. and W. Piper	3,587 0 0
H. and E. Holland	3,524 0 0

EXHIBITION OF INDUSTRY OF ALL NATIONS.
CLASS 5, F 12 AND 13.—LOCOMOTIVE ENGINE DEPARTMENT.

PROSPECTUS OF AN IMPROVED SYSTEM OF PAVING STREETS,
AND
CRANNIS AND KEMP'S PATENT WOOD PAVING:

CLEAN DRY STREETS, ECONOMY, DURABILITY, QUIET, AND GREATER FREEDOM FROM SLIPPERINESS THAN ON ANY STONE PAVEMENT.

The Patentees, after some years of close observation, are more than ever convinced that Wool Paving (as far as the material is concerned) is no failure; the fault lies not in the material, but in the system of laying it down. Were the streets paved with stone in the same manner as wool has been laid, their surfaces would be constantly strewn with fallen horses; for who would venture to start a horse with a load behind him on the smooth surface of the Flag-Stone Pavement, unless he wished to see him prostrate? And where has there been a piece of Wool Paving but what has had a smooth surface, or ten times worse than smooth, by having V-shaped grooves cut in the surface of the blocks?

An inspection of a Model at the Crystal Palace, Class 5, F 12 and 13, and at the Polytechnic Institution, with the assistance of the following Diagrams, will at once convince the reader that the system now respectfully submitted to the public is entirely different to any Paving hitherto introduced, and possessing the following advantages over all others, viz.:-

1st. *Simplicity of Construction.*
2nd. *Adaptation to general use, and entire freedom from slipperiness;* for the Patentees believe it will be safer to travel over than a Macadamized road, the surface will be more even, and a better foothold to be obtained.

3rd. *Facility of Removal and Replacement.* Any single block, if worn, can be replaced by a new

one in a few minutes, so that no stoppage of the traffic will be necessary for repairs, or for removal to get at gas or water pipes.

4th. *Economy of Material and Labour.* It can be laid in the first instance as cheap as any other system, and kept in the best repair at the least expense; the foundation being neither wet nor dry, and covered in from air, will last for a great many years.

5th. *Protection for Drainage.* No settling of water between the foundation and superstructure, as with combinations of concrete and wood, but all surface-water conveyed direct to the sewers, keeping streets very dry and clean, and far more healthy than on the present system of either wood or stone, where water is allowed to stagnate and endanger the health of the inhabitants, no provision being made for its removal excepting along the channels or gutters, to effect which the pavement must be so much arched (to carry the water off to the sides) as to prevent the horse treading on an even surface, excepting just in the centre of the road, where he but seldom has an opportunity of travelling in the streets of London, or other towns of great traffic. And

6th. *Durability.* A good substratum and thorough drainage being secured, no partial sinking can take place; the whole road or street must go together,—the curbs give way and the planks break asunder before any inequalities can present themselves in the surface, beyond what are intended for the foothold and fair wear and tear.

FIG. 1.



FIG. 2.



FIG. 3.



Figure 1 represents Messrs. CRANNIS and KEMP'S method of forming a foundation of planks. A number of short planks, *a, a*, are laid transversely on longitudinal planks or bearers, *b, b*, and both the transverse and longitudinal ends are so laid in, or dovetailed, as can into the other, that they form a substructure possessing all the strength of the arch, in respect of any weight or force which can be applied in a downward or lateral direction. While, at the same time, they can be taken up when required with the greatest ease. The mode in which the transverse planks are formed is by double bevelling them at the ends, in the manner shown in the view of a single block given in *Fig. 2*; and by leaving a ridge, *d*, between the two bevells, the result is, that when the blocks are put together, a number of small open spaces, *c, c*, are left, which serve for the purpose of drainage.

On the foundations, such as are above described, a superstructure of blocks, of any convenient form, may be placed; but Messrs. Crannis and Kemp would particularly recommend the following, as uniting in an unequalled degree simplicity of construction, sure footholding for horses, cheapness, and durability.

Figure 3 is a view of blocks of wood, which, when placed in alternate rows of high and low blocks, the high block in one row standing next the low block in the adjoining row, forms a pavement of the description shown in the perspective view of an entire carriage-way, *Fig. 4*. It presents, it will be observed, at every point a secure foothold for horses, without any surface-grooving whatever, and in point of efficiency generally, may challenge comparison with any system of paving hitherto laid, whether of wood or stone.

FIG. 4.



Figure 4 is a perspective view of a carriage way, showing Messrs. CRANNIS and KEMP'S improved system of paving by forming a stratum of large gravel, broken granite or other stones, 12 to 18 inches deep (at the bottom of which are laid drain pipes, communicating with the sewers to insure perfect drainage), on which stratum their plank-foundation and superstructure is laid, thus forming a system of paving on a principle, the Patentees believe, hitherto untried, and having

advantages over all systems hitherto adopted. The preceding plans form only a small portion of the combinations of Paving included in Messrs. CRANNIS and KEMP'S Patent. The Patentees are desirous of establishing a Company to carry out their views, and solicit the co-operation of parties desirous of introducing a quiet, clean, and safe system of Paving. Communications addressed to the Patentees, 5, Sydenham Grove, Old Kent-road, will have immediate attention.

The Builder.

No. CCCXLV.

SATURDAY, AUGUST 16, 1851.



HE daily papers have so fully recorded the events of the week spent in Paris, by the corporation of London and the persons who have been most intimately connected with the Great International Exhibition—the splendid hospitality of the municipality and the President, and the sham fight on the *Champ de Mars*, where, by the way, amusingly enough, 40,000 men under arms were not thought sufficient protection against the *blouses* who assembled on that occasion, so two or three additional regiments were ordered down,—that it is unnecessary for us to give any particulars. The little mistakes, too, made on the occasion; the strange disregard of men to whom the Exhibition owes much, and the want of some one unselfish and kindly spirit to bring persons together, and to make all feel that they were recognised, have not escaped comment, and doubtless will bring more. We were not amongst those who had cause for complaint, so listened quietly, and almost amused, to those who had, and we could tell some funny stories. We let these pass, however, and reserve our space for such observations on the buildings and matters that passed before us as the peculiar flurry of the occasion permitted us to make. Paris cannot be visited by any who have their eyes open without advantage. Its beautiful boulevards, its spacious quays, noble public buildings, and the elegance and taste in decoration that everywhere prevail, extort the admiration of all, and give us a lesson of which we ought to take advantage. We have some grand things to set against these: we have good reason to be proud and thankful: but in many respects we are greatly behind the French, who, notwithstanding their present miserable condition, politically and morally, are assuredly a wonderful people.

Talleyrand used to say, "That sovereign has a little mind who seeks to go down to posterity by means of great public buildings. It is to confide to masons and bricklayers the task of History." Fortunately, however, for Paris, the rulers there have ever thought differently, and they have enriched the metropolis with structures of extraordinary magnificence and completeness. What one has begun the next has patiently finished; and the same desire is still exhibited. When we were in Paris, the Chamber of Representatives were discussing the propriety of voting fifty millions of francs for public works and improvements. We attended one of the sittings, by the way, and saw with astonishment the Babel-like confusion that prevailed. At one moment, a hundred members were speaking at once; the attendants were crying, "to your places gentlemen;" and the poor president was banging away at his gong, in a fruitless attempt to obtain order. To reduce wisdom and good government from such a chaos seemed impossible. The temporary house, although of very large size, appears well adapted for hearing in, having

this advantage, it must be remembered, that the speeches are all delivered from the same place.

The completeness of which we have spoken is strikingly evident in their decorations. While the course pursued in London, is to omit as much as possible, in Paris the endeavour is to do everything that can be done. The suite of rooms in the *Hôtel de Ville*, of enormous extent, affords an example: every inch of wall and ceiling sparkles with gold and colour, and the appearance of the whole, though the taste of parts may be questionable, is magnificent to the extreme. The effect of the great gallery here, when fitted up for the dinner which took place, was singularly brilliant. It is painted throughout, without any gilding; a series of Corinthian columns which surround the walls are white; lunettes formed in the ceiling above are filled with painted wreaths and vases, and the spandrels with children. The ceiling, formed into panels, is principally yellow and blue. In the arcade between the columns were yellow and white hangings: flags of all nations were suspended on either side, and countless wax-candles in chandeliers of brass and glass shed a brilliant light over the whole. Affluence of light is a main requisite for successful effect,—sometimes forgotten.* In the room that was fitted up as a theatre, the ceiling is a mass of gilding, relieved by green and maroon colour; and the pilasters on the walls have heads painted in the upper part of them, of great power and beauty.

As the *Hôtel de Ville* is so close to the old *Cité* (an island in the Seine), we will step over the water to the *Sainte Chapelle* there, and the Cathedral of *Notre Dame*, where, in both cases, works have been going on for several years. At the *Sainte Chapelle* a million of francs (40,000*l.*) have been spent, we are told, and 20,000*l.* more will be wanted. The ancient glass here is of a delicious colour, and it has been well imitated in the restorations. The colourings of the side walls and columns are better than those of the vaultings. There are two curious circular detached staircases of wood, one on either side of the altar, which lead to a reliquary over it: and in the heads of an arcade around the walls are some ornaments formed in mastic on glass. The restoration of the lower chapel, the east end of which is of singular design, is not yet commenced. M. Lassus is the architect engaged.

At *Notre Dame*, M. Viollet le Duc is superintending the works. About 3½ millions of francs have been spent here, and it is estimated that, in the whole, ten millions will be wanted. It is not long since we gave some particulars of the proceedings here. The restoration of the west towers is going on; the bad stones are taken out and replaced with new, and others are scraped. A new Sacristy of considerable elegance, externally, has been built by M. Viollet le Duc on the south side of the east end of the Cathedral.

At the *Conservatoire des Arts et Métiers* very extensive works are going on, and have been previously noticed by us. The style of building is Italian, but M. Vaudoyer, the architect, has chosen to erect the library as a detached building, in the Early English style: it is of stone, roofed with green and red tiles in pat-

terns, and has an ecclesiastical appearance. Within it is divided into two aisles, by a central range of columns, and vaulted with stone. The windows are filled with stained glass, and the whole of the interior very elaborately painted. The walls are stone colour, the joints drawn in red; the columns are alternately slate colour and red; the vaulting is stone colour, powdered with *fleurs de lys* and stars, and the groinings are varied with red, brown, green, and slate-colour. There is a tribune at the side, painted and gilt, with stairs in the thickness of the wall,* and at one end of the apartment are some excellently painted figures, *en cire*, by M. Gerome, typifying the arts and sciences. The windows are on one side only, and blanks on the other side are painted in the same patterns and colours to correspond with the glass,—an arrangement we cannot admire. The floor is *parquetted*, with a wide border all round of small buff and black encaustic tiles.

Great improvements are observable in the streets by those who have not recently seen Paris: *trottoirs* are almost universal; the painted signs have nearly all disappeared; and the drainage is very different from what it used to be.

The largeness of the houses enforces the employment of an architect, and affords an opportunity for the display of ability. Land is very dear in Paris, and the result of course is, that all the houses are carried up very high. Not long ago a plot of land on the Boulevard was sold, and realized, at the rate of 160*l.* for every 36 feet superficial of the area: this, however, was probably a maximum price. There are at this moment, few private buildings going on.

In their executed works the French architects appear to hold fast to established styles, but there is a desire abroad, as here, to work out something new, and we give illustrations of one project of the kind, a design for a church,† by Mons. E. Nepveu, exhibited by that architect last year.

The building is of colossal dimensions, and has a preponderance of vertical lines carried out to great loftiness. With Mr. Nepveu's theory, which makes Classic architecture the architecture of *conformance*, and the Gothic, the architecture of *disformance*, we will not here meddle. All the vaultings were to be of cast-iron gilt, and there was to be an inner dome perforated in patterns to admit a view of the outer dome beyond. The organ is shown in a sunk chamber under the centre of the dome, and painting and sculpture were to be largely employed in the decoration of the structure.

Returning to the streets, most of the houses that have been built within the last five years display a considerable amount of external sculpture. In decoration, it will be observed that much greater use is made of statues and busts, though they may be but casts, than amongst us.

There are many pretty cast-iron canopies recently put up over doors: the cast ironwork generally, as our readers know, is very good.

The duration of external gilding in Paris, as compared with London, is very great, and affords evidence of the condition of our atmosphere,—a condition which we might, and ought to, materially improve by enforcing the combustion of smoke. The gilded lamp-posts

* The chandeliers, looked at singly, had no great claim for admiration; but when viewed altogether,—looking along the range on either side,—their sparkling brilliancy, caused by the glass amidst the metal, was extraordinary.

* Why are the small pillars forming the enclosure to these steps put out of upright?

† See page 509, in our present number.

in the *Place de la Concorde*, look as fresh as if but recently done. And what a glorious place this is! When the sun shines upon its fountains and orange trees, its Luxor obelisk, Chamber of Deputies, the *Madeleine*, Champs Elysées, and the Tuilleries, we know no piece of a city more beautiful in the whole world.

We must now leave the gay capital, however, till next week.

REFORM OF FREEMASONRY.

I WAS much pleased with Mr. Godwin's article on this subject; but he appears to labour under some misconception regarding the state of the craft in the present day. It is not now a merely convivial and charitable association, but, in the opinion and practice of many of its most accomplished members, a truly religious order, capable of high and holy purposes: whilst it inculcates the first principles of morality and virtue, it interferes with no man's religious belief; but teaches him his duty to God, to his neighbour, and to his own soul, and fits him for the proper discharge of that duty. Faith, hope, and charity, temperance, sobriety, chastity, and obedience to the commandments of the Almighty, are urged in all its formulas. I am one of those who wish to see speculative, symbolical, or, as it is called, *free* masonry, more operative, and I have laboured to make it so in the lodge over which I have for many years presided as W. M. and P. M. We have conducted our proceedings, when the lodge has been tiled, as if we were in a church or chapel. No sooner has the Bible been opened than the voice of praise has been added to that of prayer and thanksgiving in the best tones which a well-practised choir of brethren, aided by the organ, could command; and this has been repeated during initiations, and before the lodge has been closed for refreshment. I hope at no distant period also, that besides the customary authorised lectures on the craft, we shall have lectures on astronomy, architecture, music, and the other arts and sciences, in which the public may be permitted to participate as auditors.—A PAST GRAND OFFICER.

THE publication, in your valuable journal, on the 26th of July, of the paper, read before the Institute of Architects several years since, on the subject of Freemasonry, offers a favourable opportunity for calling attention to the fact that, however much architecture and building were indebted to Freemasonry, any practical connection between the thing signified and the existing institution has entirely ceased. Freemasonry, as it now exists, with its "peculiar system of morality," aims at being a charitable institution of peculiar excellence, under the agreeable garb of good fellowship and social assemblies. It cannot, however, be denied, that it has, very improperly, ceased to exercise the least influence on the sciences and arts in which it originated: it has also not attained its secondary and now professed object; for no other charitable institution ever did, or does, apply in charity so small a per centage of the sums collected in various ways from its several members. My object is to endeavour to restore some intellectuality to "the craft," and incite "the brethren" to recover their lost influence in those useful and graceful arts which conduce so much to the comfort and exaltation of mankind. A little reflection, in or out of the "Lodge," must convince the "Past Master" down to the "entered apprentice," that if the body of Freemasons did ever do any good to the world by promoting the arts allied to architecture, they have ceased to do so now, and that all the good they do, does not compensate for the change, in the objects they pursue. Being "free or speculative" masons, the emblems they use should in reality be applied to their "morals," in the sense of elevating the minds of the fraternity above the mere vanity and festivity which are now its chief characteristics.

It may be as well, to a right understanding of Freemasonry as it exists, to state its consti-

tution, which may be done without any breach of the solemn obligation to secrecy. A Freemason's "lodge" consists of a master annually elected by the members of the lodge, and capable of being once re-elected, certain officers, whom the master appoints, and the subscribing members. The past masters, masters, and wardens of lodges compose the "Grand Lodge." Every lodge contributes annually to the funds of the Grand Lodge a certain amount for each of its members. The members of a "lodge" pay an admission fee, varying in amount according to circumstances, but usually something considerable, so that (mechanics' lodges excepted) the contributions to the funds of a lodge are sufficient, indeed, for great and useful objects, as well as for good fellowship. The funds, however, are now expended in a small contribution to Grand Lodge, an insignificant outlay in charity, the trifling lodge expenses, and the whole of the rest in eating and drinking. Nine out of ten of all the lodges have, at some time, exceeded their income in the expenditure for "banquets." The income of Grand Lodge, arising from some permanent property and the contributions of the lodges as above stated, is disposed of by less than one moiety being expended in charity, and the balance being otherwise disbursed.

The Grand Lodge, or parliament, composed as above, meets once a quarter at Freemasons' hall, for about three hours each sitting; but the affairs of the craft are practically in the hands of the "Board of General Purposes," the members of which are annually appointed, partly by the nomination of the "Grand Master," and partly elected by the Grand Lodge. There are also some charities mainly supported by the "Craft," or general body of Freemasons, viz., for aged and decayed Freemasons, and a boys' and girls' school.

The admission of a member into a lodge is by ballot, and the monthly meeting is spent partly in "lodge," when the new members are initiated, and the other "work" of the lodge is transacted: the rest of the evening is passed in dining and drinking toasts. Both in the lodge and at the banquet religious and political matters are rigidly excluded. This, of course, limits the field of conversation; but when, in addition, there are frequent and oft-repeated formal toasts and speeches, together with professional singing, it will be seen, that whatever good-fellowship may produce, there is very little room for intellectuality. No doubt some of these meetings are very agreeable, while others are insufferably stupid; so that it may truly be said, that the same number of gentlemen, meeting under any other circumstances, could not but be greatly more profited by the conversation. So utterly abandoned has the craft become to small charities and personal indulgences, that although it is a fundamental rule that none shall be advanced without a competent knowledge of the "arts and sciences," yet, when a member is examined prior to advancement, the very limited knowledge required is absent,—the answers being palpably dictated by a bystander.

Now, my object in this communication is, to urge the importance of restoring to Freemasonry that soul which it has undoubtedly lost, and to preserve much that is really valuable in the institution, by again in some way allying it to the art with which its name is associated.

CORNER STONE.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Archæological Society, Rome.—At the last meeting of this society, M. Visconti, *Commissario dell' Antichità*, read a paper on the ancient altar and tabernacle of the Basilica Lateranense of Rome. Having alluded to its origin in 1369, owing to the finding of three holy heads (!), he named Giovanni di Stefano da Siena, as the hitherto unknown architect of this fine art-work, ascertained from a *Breve* of Urban V. It is the artist who made the sculptures in the dome of Orvieto. A goldsmith of the name of Giovanni di Bartolo from Siena, was also mentioned, of whom are the two statues in the middle of the monument, serving as guardians to the

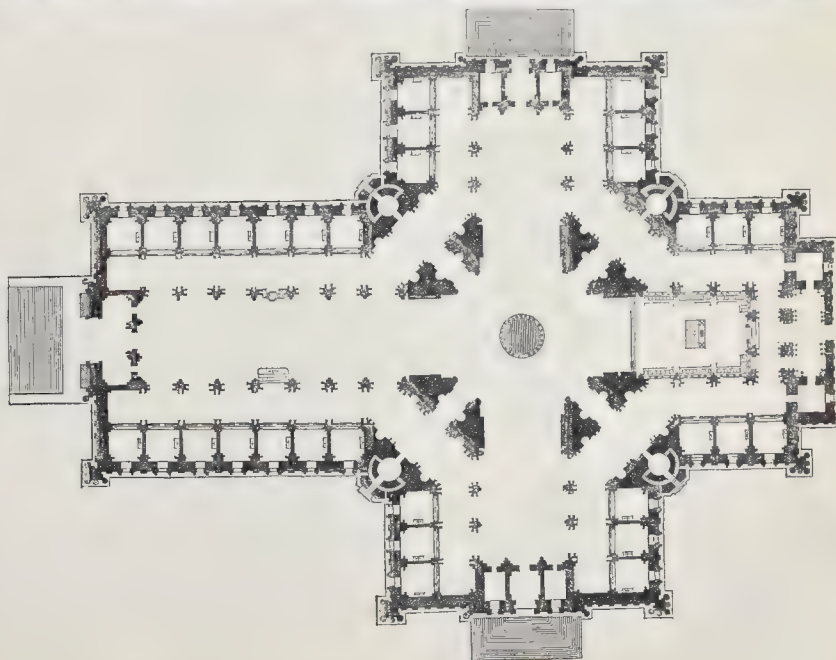
relics. The heads of these statues were of pure gold, the remainder of silver and gold enamelled. These materials, as well as many precious stones appertaining thereto, were contributed by Charles V. of France, and the two Joannas of France and Naples. The paintings which adorn the basement of the tabernacle, have given rise to great disputes, in which authors, like Mellini, Baglioni, del Titi, Angelo Rocco, and others, have taken a part, some ascribing them to Berna da Siena, or even Leonardo da Vinci; on all of which M. Visconti entertains some doubt. Interesting, moreover, is the warning, put forth also by the learned commissary of antiquities on this occasion, not to restore ancient monuments without the greatest attention to their original character.

Increase of Collections, Louvre, Paris.—This museum has been lately enriched by articles, brought by M. Sauley from the East. Amongst them are fragments of tombs of two kings of Judea. Mexican and Egyptian relics also have been added, and amongst the pictures, one of Velasquez, representing his own portrait with those of other personages of his time.

Begas, the Painter.—It is curious to observe, that although M. Begas was a very young man in Goethe's lifetime, yet that great man fully anticipated the beautiful subsequent career of the Berlin painter. The portraits of the Charlottenburg gallery of illustrious men, painted by him, would be alone sufficient for his subsequent fame. Besides that of Meyerbeer, lately finished, A. Humboldt, Schelling, Carl Ritter, Leopold Buch, Rauch, Cornelius, and Schadow have been already exhibited—a galaxy of characters every country would be proud of. The enterprise, however, is a constantly progressing one, and the portrait of the great naturalist Lank is now in preparation.

Naples: Architecture and Archæology.—The descriptive work on the city of Naples, published by order of Government, "*Napoli e i luoghi celebri delle sue vicinanze*," has been followed by one of a more professional character, entitled "*Monumenti del Regno delle Due Sicilie*." It is the celebrated Sc. Volpicella who has described the cathedral, the church of S. Dominico, the Porta Capuana, &c. The text is enriched by transcripts of inscriptions, and passages of ancient chronicles. Of an equally commendable character are the "*Tombe illustri Napolitane*," by Giuseppe del Re, as well as the "*Tesoro lapidario Napolitano*," by Aloe, works hardly known beyond the limits of Italy. Interesting are the "*Lettere sulla chiesa dell' Incoronata e sulla sepultura di Giovanna I.*" by G. Angeluzzi. The author of the latter work does not think, that the frescoes of the seven sacraments ascribed to Giotto are by this master: the reasons, however, for the authenticity of the monument in the church of Sta. Chiara are well supported. Of great archæological interest is the book of R. Garucci, "*Storia d' Isernia ricavata da Monumenti di Architettura e di Numismatica*." This work treats of the history of this city of ancient Samnium, which, with the exception of Corsinium, was the largest of the Italic confederation. Its history before the Samnian war is not to be found in the classic writers, and has now been restituted by M. Garucci from its ancient architectural and numismatic remains. The two Benedictine friars Corne and Monaldi have published a work on the Convent Trinità de la Cava, and the Canon Passano a description of the church of Salerno.

The Steam-engine in Italy, in 1756.—During some late works at the Catalogue of the Library of Venice, a memoir, dated as above, was found, in which a certain canon Gautier, Professor of Mathematics, dilates on the inconvenience of steam navigation, and submits a plan for a *fire-engine*, by which ships could be navigated. No attention was paid to him in France, but the Venetian ambassador invited him to the Lagune city, as the government intended to give to its navy a new impulse. There he obtained the support promised to him, and was just on the point of commencing his experiments, when he died.



DESIGN FOR A CHURCH.—By MONSIEUR E. NEPVEU, ARCHITECT.

[See page 507 in our present Number.

THEORY OF ORNAMENTATION IN
GOTHIC ARCHITECTURE.

SCULPTURED decoration in architecture is one of the most important elements which we possess for giving character, richness, and variety to our designs; but the principles which have regulated its use among those nations in which architecture has been studied as an art, have not been so fully investigated as the subject deserves. This appears to me especially to be the case as regards ornamentation in Gothic architecture; for though we have had elaborate treatises on the forms of mouldings and the differences which may be traced therein at the successive periods of the style, still the knowledge thereby obtained partakes so much of mere antiquarianism, as to leave a void in the minds of those who seek to ascertain the theory of an art which produced such a peculiarity, and, to a certain extent, such a uniformity of style, as, though it may be divided into five or seven periods, it may still be classed and known as a whole as Gothic architecture. The mere investigation of the dates at which the variation in form of tracery and moulding occurred, though eminently useful in fixing the recollection of forms prevalent at certain periods, and providing thereby a safeguard for the exact imitation of the style which predominated at such periods, will not supply this theory. We must look for it in the architecture itself by a careful discrimination of the differences which exist between it and the styles and practice of other national architecture. Some of these differences, which are broad and patent, have been noticed by the earliest writers on the subject.

The evident characteristic of its being an arcuated style of architecture contrasted with classic columnar and trabeated; the invariable adoption of pointed arches in preference to semicircular; the tendency to obtain effect by height and by pyramidal forms, instead of rectangular horizontal ones; are all principles which have been ably developed in the various treatises on the art. Rickman, in his well-known work, was one of the first who pointed out some of these differences, which give the marked character of Gothic architecture in distinction and contrast with the Greek and Roman. He alludes to the horizontal character of the cornices in the latter as opposed to the prevalence of vertical lines of mouldings in the former. He points out the manner in which the mouldings in classic architecture project from the face of a building, while in the Gothic (with the exception of drippstones) they recede from it, or, as Brandon expresses it, are sunk from the face of the work. He adduces also other contrasts, and elucidates in this manner certain differences which may be considered as principles of design. There is, however, another branch of study which tends to give essential character to all architecture, not only to Gothic, but to that of all nations, which has not received in this style that attention and study as regards principles which it assuredly deserves.—I mean the system of ornamentation by sculptured decoration.

The subject, therefore, to which I wish to call attention is the manner in which the Gothic architects, from the period of the Early Pointed Architecture to the time of the Renaissance, used their mouldings, and composed their ornamentation; and if we find that their use of these materials, which are common to all architecture, is essentially different, not only from the classic, but also from the architecture of the Indians, Egyptians, or Moors; that such use prevailed during the various periods which have been distinguished as forming one combined style, under the name of Gothic, and that it gives a marked peculiarity of design to the architecture itself, we may fairly presume that it was a principle which the Gothic architects or freemasons laid down as a sure guide in all their designs. The principle to which I allude, is the careful avoidance of disturbing the surface contour of their mouldings by sculptured carving; or, in other words, ornamented or carved mouldings, known as such in classic architecture, were never used.

Modern English architects, who, thanks to the careful investigations of antiquaries and non-professional writers, are excellent copyists,

and can carefully follow and work out the details which have been elaborately supplied them by numerous valuable publications on the art, have adopted the system; but it is singular that no writer on Gothic architecture has alluded to the peculiarity, and, I assert, principle, on this matter of ornamentation. Paley, in his very useful manual of Gothic mouldings, makes some valuable remarks on their variety and effect as mouldings, but alludes but slightly to the use of sculpture. "Gothic architecture," he says, "revelled in the use of mouldings: we are not speaking of what are usually called *ornamental mouldings*, such as dog's-tooth, the balldower, &c., so much as of the plain, continuous lines of light and shadow, though they are in effect identical, since the former are nothing but serrated ridges, more or less rounded and modified from the first process." Brandon adopts the same view, pointing out how the dog's-tooth ornament was *sunk out of the block*. Colling, in his work on Gothic ornaments, does not allude to any system, but illustrates, by drawings, the facts which he has collected, and which all show the principle which I believe guided their design. Their mouldings were not carved or sculptured: the effect was produced by *superadded ornamentation*.

The difference is, perhaps, more evident to an architect who has been occupied in design in both species of architecture, than to him who has confined his study to the Gothic alone. In the classic style, if he wishes to obtain richness by ornamentation and decoration, he seizes at once, according to the examples of the Greeks and Romans, on the mouldings themselves, and obtains his effect by fretting and cutting up their surface contours: thus, the egg-and-tongue, the water-leaf, the honey-suckle, the raffle, the dentil, are all obtained by sinking down the surface of the moulding, and relieving the lines of the ornament, illustrating the remark of Ruskin, "that the Greek workman cared for shadow only as a dark field wherefrom his light figure or design might be intelligibly detached." This system was pursued until every member of the cornice was sculptured and decorated, as may be observed in the ruins of Spalatro, and those of Palmyra and Baalbec; and not only in classic, but, in fact, to whatever architecture we look, we find that this system prevailed. In the Egyptian we may observe that the mouldings were always used as the first and chief points of sculptured decoration, as the cable mouldings at the angles of their temples, the large cavetto of their crowning cornice, and the numerous carved mouldings on their columns and panelings amply testify: such also was the practice of the Indians and Moors.

The absence of this means of enrichment in Gothic architecture may appear at first incredible to a person rich in recollection of the highly decorated effect which a Gothic edifice produces upon his imagination; and the glorious host of exquisite devices in foliage which seem to live and wave over its surface would seem to refute me; but a careful and extensive examination of the style has convinced me that such is not only the fact, but that it was a principle which their architects laid down, that their system of mouldings, beautiful and perfect for obtaining light and shadow under every aspect, should never be further frittered up by indentation and carving. Where further richness was to be given, they gave it by superadding ornamentation and sculpture, without destroying the forms of the mouldings. The effect is the same as that produced by the statue of the veiled vestal in the Great Exhibition, where the marble veil adds grace to the figure, without concealing the features beneath it.

Look, for instance, at the first indication of decoration in the Early Pointed style. Amidst a deeply-massed group you observe one running up and down the arch filled with that peculiar ornament called the dog's-tooth, or, at a later period, another with a series of ball flowers, or another with a richly-carved emboss of crisp and trailing foliage, imitated from nature itself. Are not these, some will say, carved mouldings? Certainly not: compare them with the Greek and Roman, and the essen-

tial difference is at once perceived. In Gothic the form of the moulding is preserved beneath the ornament, and the ornament itself is superadded of a totally different contour: the sculpture might be removed, as it now is, in some places by havoc or time, and the form of the moulding still appears perfect. Destroy the carving in a classic entablature, and an unmeaning lump is the result. It was from the desire of the architect to maintain this principle of preserving the contour of his mouldings that the system of deep undercutting and perforating their foliage arose. Instead of carving their mouldings, they threw a light and elegant decoration over them. Even in the capitals of their columns the same principle is perceptible, as in almost every instance the true bell-shaped form of the cap can be traced under the foliage, strongly corroborating the idea that the origin of this ornamentation was taken from nature, and arose from imitating the effect produced by tying leaves and branches round the capitals as even now we are in the habit of doing in our churches at the festival of Christmas. It is probable that the peculiar crocket ornament also arose from a similar imitation, as the dried forest leaves of the oak and chestnut often present a *fac simile* of the sculptured representation.

If we examine further where the Gothic architects placed their other points of ornamentation, and observe how different they are from all preceding and succeeding systems, the truth of this theory will appear still more evident. They called in the powers of geometry to give varied outline in their tracery and to produce forms which have almost the grace of sculpture, while the contour of their tracery mouldings is plain and untouched; but when they required sculptured ornament they placed it at the points of their cusps, terminating them in leaves or enriching their traceried vaults by sculptured bosses at the intersections of the ribs. They carved crockets, finials, brackets, and spandrels, but never the mouldings enclosing them: they hung leaves round their capitals in graceful twisted foliage, but still preserved the idea of their original forms of moulding.

That this was a principle peculiar to the Gothic architects may be further proved by examining the style of ornamentation in the preceding and succeeding periods. In the Norman and Transition styles the mouldings themselves are constantly found sculptured and carved: it is needless to refer to the cable moulding, the billeted, the chevron, and numerous others; and if we look to the decline of Gothic architecture we shall find that one of the first symptoms of its debasement is by its obtaining a classic taint by the introduction of carving on the mouldings, as may be observed in the oriel windows of Hengrave Hall, and other examples of a similar date. How was it that during a period of nearly 400 years this system was so entirely set aside that no instance can be produced of the slightest approach to the classic system, unless it was the result of a principle laid down and acted upon by the freemasons? Even when they sought richness of effect by painted decoration, the general usage was to colour the mouldings, or, if decorated, the paintings upon them did not follow or indicate the contour, but were distinct in pattern.

The difficulty of foregoing or avoiding the classic system of ornamentation, and the merit therefore of adopting this peculiarity by the Gothic architects, may be more fully appreciated by examining the works of other nations, where a recollection of the classical styles has always lingered. Thus, in Italy, the Gothic architecture, associated with the Byzantine and Lombardian styles, constantly presents this feature of carving on the mouldings, and which gives to an artist accustomed to the English school a vague feeling of dissatisfaction, notwithstanding its pointed arches, traceried windows, and groined vaultings. It is this also which, in the modern productions of the French and German schools, produces upon us a similar harshness and revulsion of feeling, and shows at once that they have not appreciated the true principle of Gothic architecture. They

redeem themselves from the imputation of being mere copyists, but they show themselves unacquainted with one of the leading features of the style.

As I am not aware that this view of the subject of decoration in Gothic architecture has been taken previously by any writer on the art, and as every suggestion for elucidating its theory may lead to a fuller investigation of its principles, and will give confidence to the designer, I trust these remarks will not be unacceptable.

THOMAS LITTLE.

THE SEVEN PERIODS OF CHURCH ARCHITECTURE.

HAD your correspondent "F. S. A." commenced the discussion between us in a spirit of friendly controversy, he would have been answered in the same spirit. But when, in his first letter, he ventured to quarrel with you for admitting a notice of a work which I had published into your pages, and proceeded to assert my incompetency to treat of the subject arising from my ignorance of the dates of buildings, and pronounced a conclusive judgment on the absurdity of my attempt, he forfeited, in my opinion, all title to be treated with that indulgence of which the subsequent discussion has proved him to stand so much in need.

It is evident, indeed, on the very face of the correspondence, that whilst the wish of the other three writers who have taken part in it is to *inquire and to discuss*, his sole object is to *suppress and to condemn*. With such an antagonist I must hold myself excused from following the example of your accomplished correspondent of last week, who bestows his approval and scatters his compliments with an universality and a liberality so peculiarly his own, as to render it not only impossible to take umbrage at his censures, but somewhat difficult to arrive with certainty at the result of his conclusions.

To the main proposition contained in the first letter of "F. S. A." I have endeavoured, as far as the discursive nature of his subsequent remarks would permit me, hitherto to confine myself: that question is essentially one of *dates and examples*, and has an important bearing upon the more general one of *classification*: and, as it appears to me that if "F. S. A." had proved the correctness of what he alleged in that proposition, it would have gone far to invalidate the division of the History of our National Architecture into seven Periods instead of four, I am not disposed to leave it until it is worked out.

To the remarkably small number of instances that he has advanced to support his rather broad assertions, he has in his last letter added two, namely, Barnham Abbey, which he says was founded A.D. 1265, and in the precincts of which he asserts there exist lancet windows; and the circular window in the north transept of Lincoln Cathedral, which he asserts agrees with my definitions of the "Geometrical Period," but was built by Bishop Hugh, before A.D. 1200. Of the first obscure example I confess I know nothing, and am therefore unable to point out where his error lies. As regards the second, I deny the correctness of both his assertions; for, 1st, it does not correspond with my definition of a Geometrical window; and, 2nd, it was not built by Bishop Hugh. For proof of the first I must refer him to my definition of Geometrical Tracery, as given in Part I. of my *Treatise on Decorated Windows*, with which he will find the window in question no more corresponds than the circular window of Barfreston Church does—built half a century earlier. The truth is, that this window exhibits one immense flat surface of stone-work, pierced with circles and trefoils, but containing no tracery of the kind defined by me in the treatise referred to. It is, in fact, not a window of the Geometrical Period. Secondly, I contend with Professor Willis that Bishop Hugh built only the Eastern Transepts of Lincoln Cathedral, the Choir, and the parts of the central transept immediately adjacent; and that his work, which is clearly marked, stopped short of that portion of the building in which this window

is situated, which belongs, in all probability, to the middle of the first half of the 13th century.

With the date of Wymington Church, as now corrected by "F. S. A." to A.D. 1370, I have no fault to find: and it only remains for me lastly to notice his authority for the date of the Five Sisters of York. I admit at once that his quotation, the one upon which most previous writers have already attributed the construction of the North Transept to Johannes Romanus, the treasurer, is strong evidence of his having contributed towards its building, or assisted in its completion: for more than this "F. S. A." does not contend, inasmuch as he agrees with Mr. Browne in believing it impossible that such a large work was constructed entirely as the chronicle states, "*sumptibus suis propriis*." Now it was Godfrey de Ludham, who was archbishop, not John le Romain who was treasurer, as "F. S. A." states, "from 1258 to 1264;" nor was this John le Romain the treasurer, the John le Romain, who was afterwards archbishop, as "F. S. A." states, from 1286 to 1295, but his father. (See Britton, p. 30.) It is not at all improbable therefore that John le Romain, the elder, completed in 1260, the North Transept, which may have been, and most likely was begun soon after the completion of the South Transept in 1227, that is to say, in the Lancet Period; a supposition which the close resemblance in details of the two buildings greatly confirms. In order to prove this position untenable, two things must be established:—1st. That Johannes Romanus built the entire Transept; and 2nd, that he did not commence it until after A.D. 1245; and until this is done I shall continue to hold that the North Transept of York Cathedral belongs to the close of the Lancet Period.

I have now examined the whole of the instances which "F. S. A." has adduced in support of his proposition, and I leave his facts, with my comments upon them, in the hands of those interested in the matter, to be hereafter referred to as occasion may require. Meanwhile, I shall now consider myself at liberty to enter upon the consideration of some of those questions, arising naturally out of this discussion, which may probably possess a higher interest for the general reader than the establishment of a few historical facts, however important such facts may be as the basis of classification.

I, therefore propose, with your permission, on a future occasion, to consider some or all of the following points:—1st. The meaning and use of the terms "Transept" and "Transitional;" 2nd. The meaning and use of the terms "Style" and "Period;" and, 3rd. The value and use of "Dates."

EDMUND SHARPE.

I AM extremely sorry to find that a controversy on such a subject as that in which Mr. Sharpe and "F. S. A." are the main combatants (the field of battle being only slightly diversified by the side shots of Mr. Cox and myself), should have given rise to so many hard words as it has done. I have so high a respect for both writers, and have derived so much benefit from the labours of both, that I cannot feel otherwise than grieved at seeing them brought into an antagonism of this kind, when all might have been done in a spirit of courteous and amicable controversy. If Mr. Sharpe be right in his conjecture—I confess to having made the same conjecture myself—as to the person lurking under the designation of "F. S. A.," I am the more grieved, as the only time that I have ever had the pleasure of meeting the author of the "Seven Periods" was in the company of the author of the "Glossary," when we examined together the church of St. Cross, near Winchester.

I differ from the author of the "Glossary" on many points, on many more than I do from Mr. Sharpe: for that very reason I cannot sit still and see the former unduly depreciated by the latter. I may freely speak my mind that I have learned far more of the facts and detail of architecture from the writings and conversation of Mr. Parker—there is no harm in speaking plainly after Mr. Sharpe's

allusions, whether Mr. Parker be the real "F. S. A." or not—than from any other source. At the same time I cannot but regret that one who has laid so admirable a foundation should occasionally seem disposed to object to others attempting to erect a superstructure, and positively to discourage those who, like Mr. Sharpe and myself, have endeavoured to enter on a wider and more philosophical view than his own. But that is no possible reason for disparaging the pre-eminent merit of his book—too well established in public favour for even Mr. Sharpe to disturb it—whenever it keeps to its own line. If I wished to know the exact date of an unusual moulding, I should apply to Mr. Parker before any man living: to ascertain what constitutes a distinct style of architecture I had rather confer with Mr. Sharpe or Mr. Pett; but it is beneath a man of Mr. Sharpe's reputation and ability to employ the style he does with regard to a letter which, though it evidently displayed an incapacity to grasp Mr. Sharpe's arguments, and was altogether weak and inconclusive, certainly did not in any respect transgress the bounds of literary courtesy.

I suppose I may be considered as occupying the intermediate position between Mr. Sharpe and "F. S. A.," so that I ought to expect but little favour from either. Still, perhaps, I may be able to show that there is no such necessary difference between them as they suppose, inasmuch as I find it quite possible to agree with both. I employ, as I before said, Mr. Sharpe's, or rather my own, division for theoretical purposes, the ordinary one for the description of particular buildings. My general view is this: there are two, and only two, really distinct types of Gothic buildings—the Early and Continuous of my own division; the Early Complete and Late Complete Gothic of Mr. Pett. This main division is one common to England, France, and Germany. But the particular course of the development differed widely in each. Thus, except in England, we have no prevailing Lancet style of Gothic, the architecture of the continent nowhere stopping to attain perfection between Romanesque and Geometrical. So probably England alone can produce a distinct Flowing style, separate both from Geometrical and Flamboyant; and our form—the Perpendicular—of fully developed Continuous Gothic is different from that of any other country. But all agree in possessing an Early and a Continuous style in some form or other. Looking now to England alone, we find a pure Early style, the Lancet; a purely Continuous style, the Perpendicular; two points at which the respective ideas of each are thoroughly carried out. Between these we have a period of transition, longer and more remarkable than any other transition: this period is that of the Decorated style,—a style which to me seems entirely wanting in that full development of an idea which distinguishes its predecessor and its successor. It has no meaning or leading principle, and has to be defined by minute details. That is to say, Early and Continuous notions were for a long time in antagonism. But, amid this chaos we can detect two ideal forms, one still essentially Early, yet not identical with the past Lancet; the other already essentially Continuous, yet not identical with the future Perpendicular. These are respectively the Geometrical and Flowing styles; a sort of *post-Lancet* and *ante-Perpendicular*; no less distinctly marked in idea, as styles, than any others, but so perpetually jumbled together in practice that we want a name to denote this period of confusion or transition. And for this purpose I can see no objection to retaining the established term, Decorated, absurdly meaningless as it is, simply because it is the established term, and there is nothing to be gained by a change.

I think Mr. Sharpe is wrong in talking of seven periods, because Geometrical and Flowing (his Curvilinear) are not periods, but merely styles. Periods must be simply consecutive; styles may be, as in this case, contemporaneous. But it would not do to substitute "the seven styles," because the transition from Romanesque to Gothic is not a style but merely

a period. On the other hand, I must confess that "F. S. A." seems to me unable to grasp the difference between a style and a period. Mr. Sharpe seems too anxious to convert our philosophical theory into an external fact; "F. S. A." seems not to care for anything beyond the external facts.

In my fourfold nomenclature, I divide according to Window Tracery, because that is the feature in which the principles of the successive styles appear at once earliest and clearest. The tracery draws more directly than any other feature upon the leading principle of the style, and it is consequently that on which a philosophical nomenclature may be most appropriately grounded. But I am fully aware that no guide is so unsafe in fixing the date of buildings. Our guide to individual dates must be the mouldings, the very feature on which the general principles have least influence. Mouldings must always be a professional matter, and were doubtless always open only to professional fashion or whim. We may conceive the founder, whether now or four centuries back, giving directions for an important window to be made after a favourite pattern: we cannot conceive him, unless technically versed in the art, giving directions about ogees and cavettoes. Hence it is that mouldings are our best guide to dates, because they were not so open as tracery to external influence: Decorated tracery was more or less in use during the whole Perpendicular period, but we do not find it bringing with it the mouldings, with which it might be thought to be more familiar.

I would not be understood to say that the distinction between Geometrical and Flowing exists only in the tracery. It extends to piers, mouldings, everything; only as the forms of tracery are very much mingled together, the other details are much more so. I would undertake to design, strictly after ancient models, a purely Geometrical and a purely Flowing building: I would not undertake, offhand, to find such actually existing.

In piers we find the distinction marked only a little less clearly than in tracery. The clustered and channelled pier belong to the Early and the Continuous Gothic respectively; the former occurs in the Decorated of Dorchester and Exeter; the latter in that of Bristol and Ely. Yet, as if we were never to reach our ideal specimen of either style, in these two last cases, the tracery, which is generally a-head of the piers, has lagged considerably behind.

If I can persuade Mr. Sharpe and "F. S. A." that they mean the same thing, I shall have done a great work: if they will only believe, on my testimony, in the existence of some one who thinks they are both right, they will be at least on the road to so happy a consummation. Till then, I would ask them to accept a piece of counsel veiled in a dead language:—

ὁ δὲ μὴ πρὸς ὁμοίαν, ἀλλὰ πρὸς ἑκάστην ἑξῆς, διὰ τὴν ἀπορίαν δὲ οὐ βίβηται ἀντὶ τῆς ποικιλίας ὡς ἀπὸ ἀπορροιαίας.

EDWARD A. FREEMAN.

P.S.—While writing the above I have seen the excellent letter of my friend Mr. Scott, in THE BUILDER of August 2. I have really had as yet no time to do justice to it, yet Mr. Scott will find that even a very cursory perusal has not been lost upon me.

REPEAL OF THE WINDOW DUTY.—The new Act (14 & 15 Vict. c. 36) to repeal the window duty and to substitute a house duty, has been printed. This Act has a retrospective operation. The new house duty will date in England and Wales from the 5th April last, and from Whit Sunday last in Scotland, from which time the window duty will cease and determine, after a continuance from 48 Geo. III. The new duties are to be under the care of the Commissioners of the Inland Revenue. The new law is entitled, "An Act to repeal the Duties payable on Dwelling-houses, according to the number of Windows or Lights, and to grant in lieu thereof other Duties on inhabited Houses, according to their Annual Value." There, then, at all events, is an end of the detested light and health tax.

* See "History of Architecture," pp. 364, 369.

NOTES IN THE PROVINCES.

Chester: Gas.—The old Chester Gas Company have just announced that they will reduce the price of gas from 5s. 6d. to 4s. per 1,000 cubic feet from the 1st July last. This is in consequence of the corporation having granted the use of the streets to a new company, who gave a guarantee that the future supply of gas for the city should not exceed 4s. 6d. per 1,000 cubic feet. We understand it is the intention of the new company, who have commenced their works, to lay their mains immediately; and we also understand that the old company intend to contest the ground, inch by inch, and will submit to a reduction even to 3s. and 2s. 6d. per 1,000 cubic feet, rather than be extinguished by a rival company. It is to be hoped that under the new and improved arrangements, this ancient and venerable city will cast off the reproach of strangers, of a love of darkness scarcely rendered visible by the present miserable lights, like farthing rushlights, few and far between.

Wroughton, near Swindon.—The parish church has been for some months undergoing extensive repairs, having become much dilapidated from its great age and the injudicious meddlings, not only of the churchwarden beautifiers of the last century, but from mediæval ignorance and superstition, a staircase to the roodloft having been cut out of an originally solid pier, which, with other mutilations, rendered the entire rebuilding of this arcade necessary. This is much to be regretted, as it was a very interesting specimen of early Anglo-Norman architecture, square massive piers, with narrow semicircular arches, and a clerestory of circular windows. The church, as now re-edified, presents examples of the prevailing styles of several centuries, from the simple arch and zig-zag mouldings of the Anglo-Norman, to the rich tracery and fluted pinnacles of the Perpendicular period. The sedilia and piscina are in good preservation. The walls appear originally to have been covered with polychromatic decorations, which the abominable whitewash has completely destroyed.

Romford.—A new British school-room was opened at Romford on 31st ult. The plan was presented by Mr. Charles Dyson, of Stratford, and the building was erected by Messrs. Curtis and Hammond, of Romford. The whole cost, with site, &c. will be about 500*l.*, only part of which has yet been realised.

Thorpe (Norwich).—The new church at Thorpe hamlet, according to the *Norfolk Chronicle*, is now completed. The design was furnished by Mr. John Brown, architect. The building stands on the ground rising from the river opposite the precincts of the cathedral. It will be capable of accommodating 500 and upwards, two-thirds free. The seats are uniform, without separation by high partitions. The church will be dedicated to St. Matthew.

Salisbury.—The cathedral is about to be improved, it is said, by the removal of the organ, which now stands over the screen separating the nave from the choir, and placing it on the north side of the choir. By this arrangement an entire view of the interior of the building would be obtained, as in the case of Canterbury, Winchester, and Ely. A new Wesleyan chapel is to be built in Milford-street.

Plymouth.—The foundation stone of a new church in the district of Sutton-on-Plym was laid on Tuesday in last week. The edifice is to be erected from a design by Mr. B. Ferry, and will be constructed to hold 550 adults and children. It will consist of a nave and two aisles of four bays each, a chancel, and a tower at the east end. The tower is to carry a spire, if the funds permit. The roof will be open, and the decorations will be in the Pointed style. The windows are to be chiefly couplets. The seats in the body of the church will be open benches. Messrs. Borey and Matcham are the contractors for executing the work.

Grassmere.—The monument to Wordsworth to be set up in the church here is now completed by Mr. T. Woolner. The likeness of the poet, sculptured in relief, is said to be good. Surmounted by a band of laurel leaves is the inscription, written by Professor Keble.

Halesowen.—The strike of the nailers here and in the neighbourhood of Lye, Rowley, Old Hill, &c., still continues, and is said to be daily gathering strength. Several of the masters are willing to give the list price, but as they are the exceptions, the men are disinclined to commence work for them, fearing that they would supply the firms who refuse the price.

Covenry.—The repairs in the nave of St. Michael's Church have been completed for the present. The plaster, dirt, and whitewash have been removed from the pillars, some of which have also been restored. Those of the arch opening to the basement of the tower, have also been scraped and restored, but the opening is being bricked up in the mean time.

Preston.—A considerable extension of the water-works, including a system of thorough filtration, is to be carried out in order to meet the increasing requirements of this town.

Bamburgh.—A memorial window of stained glass, to be placed in the church, has been executed by Mr. John Gibson, of Newcastle. In niches, with highly decorated canopies, from the church of St. Jacques, Liege, are three figures, the Saviour, St. James, and St. John, standing on pedestals, with ornamental panels, on which are legends or scrolls. In the tracery are angels and the Paschal Lamb.

Dundee.—A monument to Watt has been erected by the Messrs. Baxter, Brothers, on the summit of the engine-house of their extensive power-loom factories in the Wallace Feus. The monument is of wood, as the wall was not sufficiently strong to support one of more durable material. It is upwards of 8 feet in height, and painted white. The figure is seated, and represents the engineer engaged with a pair of compasses.

Nearby.—The stonemasons employed at the Crnigmore viaduct, near Newry, have struck work to obtain higher wages. Upwards of 300 have left employment. They were receiving, on an average, 3s. 8d. a-day: they claim 4s.

Thomastown.—The *Kilkenny Moderator* says, that Mr. Ryan, the contractor for the erection of Thomastown Workhouse, having disemployed one of the men, the great majority of the rest turned out and refused to work unless the dismissed operative was re-employed: the consequence was that the works were stopped for the day. On Monday morning some men fell into their work as usual, when they were immediately assailed by the rest with all sorts of abuse, and threatened with violence if they did not desist until the disemployed man of Saturday would be taken into the work. The contractor not only refused, but was about to take the necessary steps for prosecuting the ringleaders; when at length about mid-day the workmen seemed restored to reason, and there was a general return of all hands to work. Over 100 men have been employed for some time past at this building, which is fast progressing.

Miscellaneous.—It is proposed to enlarge the Newcastle Infirmary.—Gas works are about to be erected at Corsham.—A new cemetery is in course of formation near Leamington.—The works for the erection of the Monster Hotel, in connection with the Britannia Bridge, are to be suspended for the present, the shareholders of the line being indisposed to sanction the expenditure of so large a sum of money in connection with the railway.—We are requested to say that the monument at Wigan, ascribed in our last number to Mr. Gibbs, was designed by Mr. Truefitt. Mr. Gibbs was the carver.

CAERLEON ANTIQUARIAN ASSOCIATION. The annual meeting of this association was held at Caerleon, on Monday in last week, and was attended by Lord Talbot de Malahide, and a numerous meeting of archaeologists and others. The report congratulated the Society on the advances made towards the completion of the museum. The Society had invited the members of the Archaeological Institute to inspect the local antiquities, and to take luncheon in the Roman amphitheatre. A party of one hundred and ten met according to invitation.

IMPROVE THE PARKS.

WHAT is to be done with the clear 400,000*l.* to be produced by the Great Exposition, is not within the province of private judgment—the authorities seldom find any difficulty in disposing of a surplus;—yet as the fund may be considered public property, possibly a little of the amount might be applied to the accomplishment of the Sanitarium—and as some complaints have been uttered about the abstraction of eighteen acres from Hyde-park, perhaps the considerate commissioners may take into consideration the propriety of demolishing and utterly abating the unseemly and useless enclosures called the ranger's (deputy sub-ranger's) lodge, the vegetable garden, the hovel and rubbish yard, the fire-engine shed, and mayhap the sergeants' guard-house, that now so senselessly defile the most sylvan and beautiful as well as central portion of the whole *encinte*! THE BUILDER'S "Blots on the Park" put this forward before, as yet without effect; however, as strictures published some years back on the New, Hainault, Epping, and other royal forests, are now working their object, the removal of these, and the powder-magazine, to Wormwood Scrubs, or some private location, may eventually be considered expedient, in deference to the most populous (and may I add civilised) city on earth.

It would be equally rational to build watch-boxes or police-stations in Trafalgar-square as to leave these relics of barbarism where they now stand—five acres of neglected parterre, a garden for three beds of leguminous pot-meat, and a tumble-down, ill-kept, and nearly desert villa, for the occupation of some old servant of a ranger—the latter official, too, being an *employé* as uncalled-for as useless and ridiculous.

The merit to the prince as the harbinger of the great and successful enterprise of the Exposition, will be enhanced by his enlightened patronage of the Sanitarium; and the awakening commissioners who rased the unauthorised shed of Ann Hicks, will rise in public estimation if they dispark the intramural sub-ranger's poles, and station the serjeant's piquet near one of the royal palaces: the people dont want them.

QUONDAM.

MUSEUM OF BUILDING MATERIALS AND CONTRIVANCES.

You were good enough to give publicity to my proposal for establishing a school of art for workmen, and I hope you will insert the following communication, as intimately connected with it. Very many suggestions have been made on the subject of the building in Hyde-park, if it be allowed to remain, viz., what to fill it with, and in what way it can be made most interesting and useful to the public. I would suggest one or two things to "THE BUILDER'S" public.

There is now scattered all over the building almost every description of material used in the builder's art, from almost every country in the world—from the Russian malachite (wasted unfortunately, in doors, chairs, and book-covers, for which such a material is obviously not suitable), to the commonest stone—from tulip wood to common deal—metals in almost every form—bricks, solid and hollow—cements, concretes, and contrivances without number. All these things are now arranged according to the places they come from, as was necessary; but such arrangement takes away not a little from their usefulness as exemplifications of *building materials*: to be useful to the architect they should be arranged according to their value as *building materials*. They would, if thus arranged, form a museum of the greatest interest and value to the architect, the student, and the builder, and all others who deal in the materials used in building. To the architect and student it would form a constantly increasing storehouse for *reference*, where they could at all times go for information as to the *qualities and prices* of all stones, woods, metals, &c. &c., and where they could at once, and conveniently, fix upon the materials best adapted for any required purpose. And to builders, and all others *dealing* in building materials, it would be a place wherein might

be deposited specimens of the best materials or otherwise they severally dealt in. I cannot but think that a museum thus formed would be found not a little useful.

It is proposed to convert the building into a winter garden, in which case I would propose that the galleries should be used for the purposes of this museum—at all events till a more fitting place can be found for it, or till a distinct part of the building could be set apart for it: this would, no doubt, soon be the case, as its value and importance became known and appreciated.

I trust you will urge this on the attention of those connected with the Exhibition, as it would seem to be a great pity, and will be an infinite loss, if the many valuable specimens of marbles, stones, woods, metals, and contrivances, now collected together, be again dispersed. If each bit of it, marble or wood, be returned to its owner, it will be but of little use, and in many cases thrown aside as having accomplished its purpose, and never thought of again; but if kept together in the way proposed, they would form a collection of infinite value to the student.

I have been led to this idea by seeing a prospectus just issued by the executive committee, having for its object a record of what the building contains. Now if, to this, the museum I propose were added, a permanent record and exemplification of what the world contains would be preserved, worth, to practical men, most of the books ever written, and to the student, of the greatest value; any thing seen and handled impressing itself on the mind far more certainly and effectively than drawings and written descriptions.

C. B. A.

*** Our readers will remember that we, long ago, pointed out the desirableness and importance of forming such a museum. We shall greatly regret if the fine opportunity that now presents itself be allowed to escape unemployed.—Our publication of the proposal to establish an Art School for Workmen, may be remembered. In connection with what was then and previously said on the subject, we may quote the following accordant remarks by the *Athenæum* on the proposal:—"The idea would seem to have been suggested by the obvious difference which may be traced, in many of the art-manufactures now exhibiting at the Crystal Palace, between the work of the conceiving mind and that of the executing hand. Receiving no systematic education in art, our workmen almost of necessity fail to carry out the ideas set before them,—and indeed aim only at a prosaic adherence to the forms of the model. Formerly the artisan was himself an artist. The assistants of Gibbons, the workmen of Wren and Inigo Jones, evidently wrought with their heads as well as with their hands. The masons who built York Minster and Canterbury Cathedral certainly stood on a higher level in intelligence than workmen of the present day. The pedestal of Charles I. at Charing-cross was carved by a stonemason. Metal workers, wood carvers, decorative painters, stonemasons, and many other classes of workmen would obviously increase the value of their labour by passing through such a course of training as the prospectus before us suggests."

BUILDERS' CONTRACTS: UNSTAMPED AGREEMENTS.

WE think it right to bring the following case, reported in the *Windsor Express*, under the notice of our professional readers generally. The Treasury, it appears, have a special interest in the passing of bungling Acts, full of uncertainty of meaning, such as the Stamp Act seems to be, and while the Treasury and the lawyers reap a rich harvest in consequence, law and injustice, as is but too often the case, are identified, to the loss of the honest tradesman and the gain of his dishonourable employer: it is really astonishing how cunningly devised the law so often appears to be for the plunder of the simple and unsuspecting and the advantage of the cunning and the rogue.

This was an action to recover 21*l.* 10*s.* for breach of contract.

The plaintiffs, who are builders at Windsor, had contracted to do certain works for the defendant, a brewer. They prepared certain portions of the building, but the works were not executed, and at the end of fifteen months they were abandoned. The plaintiffs claimed 21*l.* 10*s.* for breach of contract, and in estimating the damage they had simply calculated the loss upon the materials worked up. The defendant had paid 12*l.* into court.

William Fryer, one of the plaintiffs, deposed that in March 1850 he made a tender to the defendant to execute certain works, and received an answer authorising him to prepare the necessary materials. The defendant wished witness to get the things ready as soon as possible. In consequence of that witness purchased a quantity of foreign timber, and had certain labour performed, which amounted to 47*l.* odd.—Counsel for plaintiffs here proposed to put in the tender, and letter accepting the tender. For the defendant receipt of the documents was objected to, on the ground that they were not stamped. For plaintiffs it was contended that the payment of the 12*l.* into court was a virtual admission of the agreement. Counsel for defendant cited the case of *Kingham v. Roberts* in reply.

The Judge considered the difficulty had arisen from the multiplicity of counts introduced into the bill of particulars. The defendant was at liberty to object to the reception of the unstamped document. A payment of money into court was merely an admission that such sum was due upon some or one of the counts. Then the question would be,—did the letters which formed the agreement require a stamp?—Counsel for defendant apprehended that the plaintiffs must, in the first place, prove the basis of their claim, which was the agreement. The Judge said that if compelled to allow the objection, he should leave the objector to pay his own costs, and the plaintiffs would have to pay a penalty of 5*l.* or 10*l.* for having a 2*s.* 6*d.* stamp put upon the agreement—money completely thrown away. Defendant's counsel said it was extremely important to the revenue that all documents should be stamped.

The Judge declared the Stamp Act a public nuisance. The money paid was only one portion, and not the largest portion, of the imposition it entailed upon the public. The establishment of County Courts would immensely increase the demand for stamps. Few men would neglect to have their agreements on a 2*s.* 6*d.* stamp. Westminster Hall was closed against litigants for small amounts. The County Courts were open to every claimant for damages, under agreements. In the present instance, he was sorry to see the objection pressed.—Plaintiffs' counsel said the agreement, when first executed, was not of the value of 20*l.* Had it been broken within a week after it was signed the damage to the plaintiffs might not have been 5*s.* Counsel for defendant said this was a positive contract for 238*l.* An agreement and a guarantee were very different things. The action was brought for more than 20*l.* For plaintiffs: Had we laid our damages at less than 20*l.* would the agreement then have been liable to a stamp? For defendant: Certainly. The matter of agreement was of a much greater amount than 20*l.* The Judge: Is there any instance of a tender being on a stamp? For the defendant: The proposal and the acceptance constitute an agreement, and must be on an agreement stamp. For plaintiffs: After what had fallen from his lordship, they should feel inclined to submit to a nonsuit without costs. Defendant apprehended that if his Honour ordered a nonsuit, it would be on the usual terms, with costs.

The Judge said he should certainly not give costs to the defendant. He thought it a monstrous hardship that the objection should be persevered in. The difficulty had arisen from over caution on the part of the gentleman who had drawn the particulars. Such difficulties, it would be satisfactory for the public to learn, would be obviated for the future. All that the plaintiff had to do was to state his ground of action. There would be no occasion for an elaborate bill of particulars. There was still, however, the difficulty of the Stamp Act, for it was impossible to say what did, and what did not, in some cases require a stamp. The safest way was to incur the expense, and the Treasury reaped a plentiful harvest in consequence of the uncertainty of the law, and the conflicting nature of the decisions.—Plaintiffs nonsuited, each party paying their own costs.

LONDON ANTIQUITIES.—We are glad to observe, that an illustrated catalogue of Mr. C. Roach Smith's extensive collection of London antiquities is to be published by subscription, and that the list of subscriptions of 7*s.* 6*d.* to 10*s.*, to assist in defraying the expense of engraving and printing, is in a fair way of realizing so desirable an object.

ADDITION TO ORDNANCE OFFICE, PALL MALL, LONDON

MR. PENNETHORNE, ARCHITECT.



ORDNANCE OFFICE, PALL-MALL.

THE addition to the Ordnance Office, recently erected in Pall-mall, is of brick, with Anston-stone dressings. Annexed is a geometrical view of the front. The window dressings have some of the members enriched with sculptured mouldings, and the first string course is ornamented with a fret, not shown in the engraving. The ground-story is boldly treated.

RAILWAY JOTTINGS.

THE traffic on the leading lines still continues enormously high. The receipts on the London and North-Western for the week ending Saturday before last, show an increase in the receipts of the corresponding week last year of no less than 14,200*l*. The increase on the Great Western is 11,600; on the South-Western, the addition exceeds 7,000*l*; and on the Great Northern 10,500*l*; and although doubtless the metropolitan excursion traffic has mainly contributed to this

end, it does not appear that this particular branch of such traffic has absorbed all the rest; for there are numerous local and provincial excursions, as there were last year, to swell the returns.—“MM. Amberger, J. Niklès, and Cassal,” says the *Literary Gazette*, “have discovered a mode of overcoming that great obstacle to the full development of railway locomotion—the lack of friction—the common notion of friction as a force which prevents the motion of bodies, being just the reverse of the fact. The problem to be solved

was, how to increase the pressure without increasing the weight of the mass to be moved; and it has been elegantly done by M. Niklès, who has contrived to convert every point of the locomotive's wheel as it comes in contact with the rail into an artificial magnet and thus to obtain the requisite adhesion. A galvanic coil with a battery attached, rigidly connected with the fixed parts of the carriage, surrounds horizontally the lower part of the wheel close to the rail, so that the wheel turns freely inside, and without touching the coil. Accordingly, the lower parts of the wheel may be compared with a bar of soft iron in the midst of an electro-helix; it becomes magnetic, and thus, without any increase of weight, the pressure, and consequently the adhesion, may be increased at will. The influence of the adhesion is unaffected by the state of the rails, whether they be dry or wet, and thus the magnetised wheels are placed beyond the reach of atmospheric changes. By means of a handle, the magnetism can be turned off and on at will, and thus an electro-break, possessing a great advantage over the break-jacks in use, in not interfering with the rotation of the wheels, is brought into play, depending for its efficacy upon the power, capable of being called into instantaneous exercise, of making the rails smooth or adhesive at the discretion of the engine driver. The experiments have not been confined to models, but have been conducted on a great scale, and with perfect success, under the superintendence of an officer of engineers holding a high position in the practical administration of railway affairs in France, and who, we are given to understand, is so completely satisfied with the results, that he has embarked a large portion of his fortune in promoting the undertaking."—An examination of the late census of Great Britain, as remarked by the *Times*, will show that the numerical prosperity of our towns is very closely connected with the possession of railway advantages. The remarkable illustrations of this truth, which are obtained from a careful inspection of this document, may be regarded as indicating in some cases the commercial intelligence and energy of the population, which did not fail to perceive and secure the benefits derivable from a railway connection with other parts of the country, while in other instances towns have been benefited by being placed in positions which secured for them those advantages unsought, or even in the face of opposition.—"Railways are weaving like a spider's web over the continent, so that speedy communication will soon be available in all directions, as in England. The railroad from Berlin to Bromberg has been opened, according to a Berlin correspondent of the *Globe*. The line between Reichenbach and Plauen being finished, there is now direct communication between Munich and Leipzig. Railway contracts have been concluded between Austria, Parma, Modena, Tuscany, and Rome. The railway connecting the Austrian and Tuscan lines will run *viâ* Mantua, Borgoforte, Modena, Bologna, and Porreta, to Pistoja. Thus, in a short time there will be direct and speedy communication between the Mediterranean and the Black Sea on the south and the seas on the north of the continent. The following lines are also about to be undertaken:—From Wiesbaden to Deutz (opposite to Cologne); from Giessen to Coblenz; and from Neustadt to Weissenburg, in the Palatinate.—"We are about to have locomotives among the pyramids of Egypt, too, it seems. Recent communications announce that the viceroy had made final arrangements for the construction of a railway between Cairo and Alexandria, and had signed an agreement for that purpose with Mr. Borthwick, who was there on the part of Mr. Robert Stephenson, and who intended returning to England by the next steamer to send out a staff of engineers to commence operations forthwith. It is calculated that the line will be completed in about two years and a half. The whole length will be about 130 miles, and it will cross the Nile at the barrage, where a substantial bridge is already nearly finished, having been made by French engineers with the object of damming the Nile for the better irrigation of the land;

an attempt in which, it is said, they have signally failed, after having spent an immense amount of money. Eight thousand francs a mile is mentioned as a guess at the expense.—"From a statistical account of the Prussian railways at the end of last year, lately issued, it appears that the lines, twenty-two in number, had, at that time, a length of 394 German miles. The capital of the companies devoted to their construction was 151,459,584 thalers.—"A table has recently been published containing an account of the railways in the United States. The whole number of railways is 335, measuring 10,287 miles in length, and constructed at a cost of 306,607,954 dollars.—"It appears that a project has been started for forming a line, to be called the Great Western Railroad, from Niagara river to Detroit river, as a link in the great trunk railway from the Atlantic to the Mississippi, which, it is said, will be not only the shortest route, but more level in grades and straight in linear arrangement than any other trunk line can be made for the same route of travel. At present the case stands thus:—"The Canadians have taken one-half of the 40,000 shares of 20*l.* each—the Americans have taken the 10,000 shares offered to them; and the question now is asked—will the mother country take the remaining 10,000 shares? The *Liverpool Standard* announces a meeting in Manchester for the purpose of inaugurating the movement.

ALAS! WESTMINSTER BRIDGE.

ANOTHER session is over, and still nothing settled with respect to this bridge. How much longer is this to continue? By the evidence of the engineer examined before the Committee of the House, it appears by no means an improbable event that a severe winter, with heavy accumulation of ice in the river, may carry away the present shoring, and send the whole into the river. So sure as that happens, Blackfriars will follow, and thus two great thoroughfares be cut off. Of all this we have had warnings for years past. How the City Authorities and the Westminster Bridge Company could sanction such wasteful outlays, after the opportunity they had offered them of seeing the nature of the bed of the river, and the action upon the same since the removal of London bridge, as shown in the plans accompanying the reports, is really past belief: such blunders and waste might have been looked for a century ago; but, with all our experience, to commit them at this time of day, certainly reflects no credit on the engineer under whose management the work of both bridges has been carried on. It is all very convenient to condemn Labelye; but in what respect is that engineer his superior who attempts that which, judging from the evidence of the first men of the day, never could succeed.

ARCHITECTURE IN MALTA.

A FIRST attempt has been made to introduce the old English domestic style of architecture into the island of Malta, where the Italian palatial mostly prevails. This edifice was built, at the expense of an English gentleman resident in the island, by a Maltese architect. A castellated centre covers a lofty hall, which communicates with and ventilates every part of the house, by means of windows near the ceiling at the back. Such a centre hall is adapted to the climate, and serves for the assemblage of the family during the heat of the day. And this purpose is expressed in its massive architecture, the walls being three feet thick, with few apertures, in order to resist the rays of the burning sun of the south, which is the aspect of this front.

In the left wing is a drawing-room, with its oriel window, 24 by 16 feet; and a smaller drawing-room, or library, behind. Below the principal drawing-room is the dining-room, opening into the garden, by the descent of a few steps through a Tudor door-way, under the oriel window. The entrance to the house is under the porch, which supports an open balcony in the centre of the building, and is approached by steps on each side of the porch.

The whole is built of the free-stone of the country, rusticated, with the exception of the open balcony and porch, which are of smooth ashlar.

That indispensable, and sometimes ornamental, object, a stack of chimneys, which forms a conspicuous and comfortable-looking feature in buildings of this character in England, would rather be deemed an excrescence in Malta, where cooling and refreshing associations are looked for. Some chimneys, however, are necessary; but they are here rather concealed from than obtruded upon the eye. For the information of those who may be acquainted with the island of Malta, the situation of this building is on the high land overhanging the road to the village of *Siema*, which borders the *Marsamuscetto Harbour*, commonly called the Quarantine Harbour, a position advantageous to its outline and general effect.

VICTORIA-STREET, WESTMINSTER.

THE *Times*, in the course of an interesting article on the state of London town,—what has been done, and what is wanted,*—speaks of the new street through Westminster just now opened, and the writer says he must "in fairness add, that all parties appear to have displayed the greatest energy in furthering this great onward movement towards the improvement of the metropolis." If the commissioners feel that "praise undeserved is censure in disguise," this good-natured remark will sting them. So far from energy having been displayed by them, some say there has been the greatest want of it; with much mismanagement, and fearful waste of time and money.

If the statements that have been made to us from time to time be correct, an order of the House of Commons for the production of minutes of all proceedings, and accounts of moneys received and spent by the commissioners, would put a curious face upon the matter.

IRISH ENGINEERING AND ARTISTIC INTELLIGENCE.

THE board of guardians of the Dungarvan Union intend erecting a wing or additional buildings to the present workhouse; also to raise to a height of two stories the main body of the house, containing master's and matron's apartments. The designs for these have been furnished by the architect to the Poor-Law Commissioners.

The churches at Kilcowriola, county Antrim, and Ballyorie, county Mayo, are to be rebuilt, and various works executed at the churches of Killead, Clonallen, Clonduff, and Ternoumaguirke, according to the plans of the Ecclesiastical Commissioners' architect.

Sundry works are to be executed at the barrack-master's house, Carlow, by her Majesty's Board of Ordnance.

A new pier is to be erected at Queenstown, and the Board of Admiralty has declared Messrs. Rigby and Co. the contractors.

* With the exception of the police, and possibly of a few gentlemen connected with one or other of the Sanitary Commissions, it would, we suspect, be very difficult to find within the circuit of the metropolis a single individual who has studied its various districts with any very minute attention. Some few among us know the secret history of one locality—some, of another—one has grasped the subject as a whole; and yet it well deserves all the attention and all the inquiry that can be bestowed upon it. There are still districts within the circuit of this great city teeming with vice and misery, whose must be purified, physically and morally, if we would see the calendar at the Old Bailey reduced to decent proportions, and any permanent improvement in the condition of the metropolitan population. It will never do to leave hot-beds of vice here and there, and content ourselves with erecting equestrian statues of George IV. That will never mend matters. Public buildings of considerable pretension have been erected on the smoking embers of others which redounded but little to the national credit. Great squares have been opened, and wide streets have been cut, to the manifest advantage and ornament of the metropolis. Better still, some of the most vicious and wretched quarters of the town have been effectually purified. But here comes the point. Simply to transfer a vicious district from one quarter of the town to another is no real improvement. It may, no doubt, be a satisfaction to the inhabitants of western Bloomsbury and Oxford-street to know that such a hot-bed of vice as the old Roebury of St. Giles no longer contaminates their neighbourhood; but of what advantage is this removal in a public sense, if we remain at the same time perfectly aware that the mass of vice and crime which had been previously concentrated at this given spot is now transferred bodily to another quarter; or, as the alternative, has been disseminated and scattered throughout the whole of the metropolis?"

The Poor-Law Commissioners intend erecting a new union workhouse at Borrisokane, according to the drawings furnished by their architect, Mr. Wilkinson.

Alterations and additions are to be erected at the church of Coleraine, by the Ecclesiastical Commissioners.

The alterations to Miltown Church, county Dublin, are now entirely completed.

Adjoining the battery of the Royal Cork Yacht Club-house at Queenstown, an extensive building, containing a spacious hall-room, dining, and retiring rooms, is being erected under the direction of Mr. Benson, county surveyor.

A new Presbyterian Church is to be erected at Stewartstown, the designs for which have been furnished by Mr. J. M'Nea, architect, Belfast. Proposals for the execution of the works are being received.

The Board of Superintendence of City Prisons, Dublin, have determined upon the erection of additional buildings at Grangegorman Penitentiary, consisting of bath-rooms, clothes stores, fumigating rooms, &c. Messrs. Butler and Drake are the contractors for the execution of the works, under the Board's architect, Mr. Mulvany.

A new school of design is to be erected at Limerick, and a model agricultural farm at Nusnagret, for both which purposes sites have been determined upon by the Government.

The firm of Messrs. Todd, Burns, and Co. have lately added considerably to their establishment in Dublin. The old building formerly known as Ball's Bank was taken down, and a new one, 60 feet long by 50 feet wide, was erected to a height of 62 feet in less than nine weeks; for which expedition the contractors, Messrs. Cockburn and Son, received a premium of 150*l*. In the centre portion is the haberdashery department, with a lantern 40 feet by 25 feet, lighting same. A shawl and cloak-room, 55 feet 6 inches by 14 feet; a tailoring-room, 45 feet by 23 feet; millinery-room, 28 feet by 23 feet, are also added. Over the shop is a wholesale-room, 120 feet by 30 feet; a Manchester-room, 70 feet by 30 feet, &c. Seventy bed-rooms, lighted with gas, are provided. The establishment is 120 feet square. The expense of erecting the new building was 7,000*l*. Mr. William F. Caldback was the architect.

The Midland Great Western Railway was opened the entire way to Galway on the 1st of August. The inauguration was strictly private, which was contrary to general expectation. The works were commenced early in 1850. The Shannon-bridge, 500 feet in length, is entirely of iron. In the centre bay is a swivel opening for the passage of vessels. There are two spans of 165 feet each, one of 50 feet, and another of 40 feet. The quantity of iron weighs 1,200 tons. The bridge over the river Suck consists of three bays of 75 feet each, formed with Fairbairn's patent box-girders. In the Lough Athalia bridge is a swivel opening 160 feet in length by 34 feet in width, forming two passages for vessels of 60 feet each. The moving portion of the bridge weighs 200 tons, and is worked by a hand gearing. In eighteen months the seventy-seven additional miles were completed. Mr. Hemans is the engineer-in-chief, and Mr. Dargan the contractor. The terminus of this railway at Dublin is situated at the extremity of Upper Dominick-street. The front of the building, which is the director's house, faces Constitution-hill. According to our correspondent, it is a composition of Egyptian architecture intermingled with Grecian. The entire frontage of the house is 131 feet 6 inches. At a distance of about 51 feet from rear quoin of director's house are two gateways at either side, which form the connecting link between the director's house and the station offices. Those on the east wing are the entrances to booking and parcel offices, and those on the west are intended for the entrance and exit of vehicles in conveying passengers from arrival platform. The gateways are 12 feet 6 inches wide, and 20 feet high, and in the centre of a massive pier 13 feet in width, with a centre projection 9 feet wide. The entire length of the side elevation, inclusive of gateways at terminations of colonnade and director's house, is about 390 feet. The

exterior of the building is entirely erected of finely-chiselled granite, supplied by Mr. Patrick Ollagan, of Ballynocken, county Wicklow, from whose quarries the stone lately used in the erection of the Great Southern and Drogheda Railway termini were procured. The interior of director's house is approached through a hall 27 feet 6 inches square, with four ante, 14 feet 6 inches high at either side, having semicircular-headed niches on a pedestal in the intercolumns. Total height, from floor of hall to top of dome, is about 58 feet. Behind the hall and gallery are vestibules leading to the principal staircase, 25 feet 6 inches by 19 feet. The entire buildings have been contracted for by Messrs. Cockburn and Son; and the total expense of erection will be about 24,000*l*. Mr. Mulvany is the architect.

THE RISING ARCHITECTS OF BRISTOL.

SIR,—I attended the meeting of the Archaeological Institute at Bristol, of which you have recently given an account, and was much vexed and annoyed by the conduct of four or five young architectural students or assistants who were present on several occasions, and whose want of modesty seemed only paralleled by their want of knowledge and good taste. Their running commentaries during Mr. Willis's paper on Wells cathedral, such as "That's another mistake!"—"I don't believe a word of it!"—"All wrong together," &c. &c. would alone prove my position to those who heard them. Do let me tell these persons that this is not the spirit with which they should listen to men striving to communicate information on subjects to which they have directed their attention, even when they may not agree with those opinions; and that when they know a little more, they will be sorry for the indications they gave of their present shallowness, and the absence of gentlemanly feeling.

AN OLD PROFESSOR.

BOOKS.

Murray's Handbook of Modern London: or, London as it is. Murray, Albemarle-street, 1851.

THERE seems to be a determination on the part of publishers and authors to render every successive book on London an improvement on all that have gone before it. For promptness of reference in the midst of multiplicity of information, we have seen nothing—by a long chalk—like the present volume. We have here the quintessence of the larger work on London by the same able and accurate author, Mr. Cunningham, with a vast quantity of new matter useful to all who visit the metropolis, instead of what was interesting only to the antiquary; and yet, although devoted to London as it is, no prominent point of olden interest is neglected; even in the very excellent idea, here carried out, of tracing on simple diagrams numerous sections of street-thoroughfare and river route, square, circus, park, and suburb, not only are the modern points of interest notified, but the ancient also. Here, for instance, lived Addison once, in a garret: there lived Grinling Gibbons; Inigo Jones was buried here—and so on: but chiefly the notes relate to the purposes and the residents of modern buildings; and, to strangers, how interesting must it be to know that here lives the Premier—there is the late Sir Robert Peel's residence—in this square or in that reside a whole list of men whose names are "familiar as household words." These diagrams, however, are but the indices to a vast omni-gatherum of detail in the body of the book, which also contains a clue map to the whole and ground-plans of many of the principal buildings. To enable visitors to "eat, drink, and be merry,"—to live in the fastest possible manner—in the better acceptance of such a phrase,—to make the most of a flying visit, in short,—there seems to be here every thing necessary in the way of guidance and advice, so that now may the stranger, by the aid of a Mentor to be trusted, have something like such an entire command of this metropolis as Galigani's, for example, gives to the Englishman in Paris.

The author, indeed, has worked in the spirit of a suggestion thrown out by the *Times*, that such a book was still a desideratum, and he has not only laid the foundation, but pretty well built up the framework, which doubtless needs but occasional touches by the same skilled and experienced hand to render it complete. The volume is, notwithstanding its varied contents, a small pocket volume, and printed in clear and readable type.

*Shall we spend 100,000*l*. on a Winter Garden for London, or in endowing Schools of Design?* By FRANCIS FULLER, one of the Executive Committee of the Great Exhibition. London: Olivier.

IF it really were a question between retaining a covered resort in Hyde-park, and extending the advantages of Schools of Design and improving their management, we should not hesitate to let the great glass building go at once, to secure the second. But surely it is not so: there is no reason in the world but the apathy and ignorance of our legislators, why we should not have increased means of obtaining knowledge of the principles of design afforded, quite irrespective of retaining or not the building in the park; nor is it by any means certain that if we were to give up that, we should obtain the other.

Mr. Fuller says,—

"The Schools of Design established in London, Birmingham, Manchester, Sheffield, and various other localities, since 1836, on the recommendation of a committee of the House of Commons, miserably mismanaged, and grudgingly and stingily supported, have already produced a number of artists of no mean merit, as several departments of the Exhibition prove. But not only are these schools much too few in number, but so ill supported, that in almost every one the study of the true principles of design, applied to manufactures, is literally a pursuit of knowledge under difficulties.

In France and in Prussia, drawing forms part of the regular course of education of every common school, while the special subject of art applied to manufactures, is taught in all the chief towns."

We cordially concur in the writer's desire, that the same advantage should be given in England. We have often urged it in times gone by.

The Traveller's Library: Pitt, Earl of Chatham. By T. B. MACAULAY. Longman and Co. 1851.

THESE shilling treats to travellers—by rail, of course, or at least by steam, for what other travelling is there nowadays—are beyond all comparison the best possible in quality as well as quantity, and we rejoice to find such wholesome provender for the mind replacing, at our railway stations, all those febrile and disgusting "Mysteries" of Paris and London—Monte Christos—and what not, wherewith the imaginations of at least the less elderly and sensible order of railway travellers, as well as others, have heretofore been polluted and their taste depraved.

Curiosities of Industry and the applied Sciences.

Part I. *Glass and its manufacture; and Iron and its manufacture.* By GEORGE DODD, Knight, Fleet-street.

THIS pamphlet, though of interest as a distinct work, forms a supplement to the "National Cyclopædia" and to the "Cyclopædia of Industry of all Nations." It contains much interesting and curious matter, especially on the subject of glass and its manufacture, matter popularly and pleasantly worked out under the superintendence of an intelligent mind, and not a mere compilation of what has been already said on the subjects of which it treats. Some remarks on the improvement of glass-staining are especially worthy of the attention of practical men.

THE MAYOR'S CHAPEL, BRISTOL.—Our view last week represented Sir John Poyntz's Chapel, as our readers, without doubt, inferred, although it was not distinctly stated. The fireplace is modern.

Miscellaneous.

SIGHTS.—Novelties are scarcely needed at any of the theatres, fresh visitors from the country filling the houses every night. At the *Royal Italian Opera House*, Covent-garden, to keep faith with the subscribers, the new opera "Saffo" has been produced, and is splendidly sung. Messrs. Grieve should not have represented two stories under the portico of the Temple of Jupiter: this is a vulgarism of modern date.—At the *Lyceum Theatre* "King Charming," for the second season, is drawing crowds every night. The scenery has lost something of its freshness, but is still wonderfully effective.—Mr. Cooper's Diorama of *Nineveh*, in Grosvenor-street, is justly making its way with the public. Although there is less art in it than in some now exhibiting, it is interesting and instructive in the highest degree.—*Vauxhall Gardens* have been singularly successful this year, owing not less to the exertions of the proprietor than the prevalence of fine weather.—The Diorama of the Nile is about to be opened again, with many beautiful additions.

DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE AT QUEEN'S COLLEGE, BIRMINGHAM.—Active steps are at length being taken to carry out an important projected branch of this institution—the department of civil engineering and architecture. A meeting for consultation as to the best mode of organising the scheme was held in the council-room, at Birmingham. Circulars had been addressed to the members of the Institution of Mechanical Engineers, soliciting their attendance to give advice on the subject; and that body was represented by Mr. Slate, of Dudley, Mr. Cowper, late of Smethwick, and Mr. Clift, of Birmingham. The Rev. Chancellor Law, vice-principal of the college, presided; and there were also present, the Rev. H. F. Gray, Mr. Sands Cox, Dr. Birt Davies, and Messrs. Piercy, Taylor, Armfield, Boucher, Newey, and Bateman. The proceedings, as reported in the local papers, were entirely conversational, consisting chiefly of suggestions. The council proposed not only to afford students collegiate residence and tutorial superintendence similar to that existing in the departments of medicine and surgery, but that the lectures should be open for the attendance of clerks and assistants in the offices of engineers, architects, &c. after office hours. These lectures would embrace civil engineering, mechanics, land surveying, practical mathematics, geometrical and architectural drawing, the arts of construction, geology, chemistry, and mineralogy. In addition to professorships for each of these studies, there would be workshops established, and a person appointed to superintend all the manipulatory processes carried on. A committee, consisting of the chairman, Mr. Sands Cox, Professor Shaw, Messrs. Slate, Cowper, Clift, Bateman, and Newey, was appointed, to consider the details. All present expressed their belief that this might, ere long, be one of the first institutions of the kind in the kingdom, especially as the establishment at Putney was broken up.

IMPROVEMENTS IN FURNACES.—Mr. G. F. Muntz, jun., of Birmingham, has patented some improvements in furnaces applicable to the melting of metals for making brass, yellow metal, and other compound metals. Mr. Muntz's invention has for its object the prevention of the loss from volatilisation which occurs when melting and mixing metals (especially when zinc is employed) for the manufacture of brass and other similar compound metals, and consists in the adaptation to the melting furnaces of two additional dampers, one in the bridge of the furnace, to shut off communication between the fire and metal; and the second between the melting-pot and the chimney. There is also an additional flue (provided with a damper), between the fire and the chimney, for carrying off the smoke and products of combustion when the bridge damper is closed. The mixing operation will be thus performed in a close chamber, and the loss from volatilisation much lessened, if not entirely prevented.—*Claim:* The construction

of furnaces for melting and mixing metals, for making brass and other compound metals, in which zinc forms a part, which will allow such metals when melted, and whilst being mixed, to be confined or nearly so from the air, by the furnace being converted into a close or nearly close chamber, thereby preventing a great deal of the loss which occurred from volatilisation in mixing such metals in the furnace in use for this purpose previous to the date of this invention.

HOLLOW BRICKS.—The old-fashioned rectangular brick, remarks the *Spectator*, had a number of disadvantages: its form offered but a poor hold for mortar and secured but an imperfect bond, while its porous texture rendered it liable to become waterlogged and permanently wet and heavy. The application of the drain-pipe die to the formation of bricks removes all these disadvantages, and secures advantages hitherto unobtainable at any but an exorbitant cost. You pour out from the drain-pipe machine an endless stream of tempered clay, shaped to any profile which affords the holding surface best adapted to catch hold of mortar and give a perfect bond: you cut off your bricks at any length or shortness you like; and by making the brick hollow, you at once economise material, get a brick of the utmost lightness consistent with the requisite strength, and are enabled to dispense with such massive foundations as a heavier superstructure would require. The hollow form of the brick enables you also to lay your courses of bricks so as to afford ready-made piping for circulating streams of air and water, hot or cold, throughout the framework of the house.

THE LAW OF PARTNERSHIP.—The report of the committee of the House of Commons on the law of partnership, lately issued, states that the committee have come to the resolution that the law of partnership, as at present existing, viewing its importance in reference to the commercial character and rapid increase of the population and property of the country, requires careful and immediate revision. They recommend the appointment of a commission of adequate legal and commercial knowledge, not only to consider and prepare a consolidation of the existing laws but to suggest such changes in the law as the altered condition of the country may require. Although the committee confine their recommendations to two points, viz., a greater facility in granting charters, under rules published and enforced by the proper authorities, and an easier mode of borrowing additional capital, without risk to the lender beyond the sum advanced, yet they anticipate many improvements in the law bearing on the varied enterprises and improvements of the country from the labours of such a commission as they recommend, and think that a more matured consideration of the important subject will be well purchased by a short delay. There is, therefore, some prospect of the establishment of those limited partnerships, the want of which we have often alluded to and regretted.

GREAT COAL BED IN AMERICA.—A wonderful deposit, it is said, at Straitsville, Ohio, exceeds anything of the kind ever discovered. "A gentleman of high standing" is reported to have attested recent borings through the stratum, which was ascertained to be 138 feet thick. About ten miles south, too, there is said to be "a vein of carbonate of iron implanted similar to a slaty structure, with an easy cleavage, and full of well-preserved leaves of the coal formation; some of them on breaking open exhibiting the green of the leaf." The ore, by analysis of Professor Rogers, it is added, contains 44 per cent. of iron.

SHEFFIELD LITERARY AND PHILOSOPHICAL SOCIETY.—A paper was lately read by Mr. Young Mitchell, Master of the Government School of Design, "On the Great Exhibition." The main object of the reader was to call attention to the important question of what shall be done with the income derived from it in the issue? Had the entire object of its more enlightened promoters been attained during the fugitive existence of the display? And was it impossible to give a large, beneficial, and permanent influence to its effects? To both these questions Mr.

Mitchell gave answers decidedly in the negative. To convert the Crystal Palace into some kind of "winter garden," he saw no objection whatever, provided that those who sought the indulgence were to pay for it; but when it was assumed that this metropolitan luxury ought to be provided or maintained out of the proceeds of the exhibition, he demurred at once to the justice and the benefit of such a course on general grounds. Why should the inhabitants of every part of Great Britain and the rest of the world be made to pay for it? Mr. Mitchell suggested the erection of a suitable building—suitable in architectural splendour and internal arrangement—to be used as a place of annual exhibition of progressive improvement, and as a grand national repository for the results of industrial art, and calculated to represent the progress of manufacturing ingenuity, somewhat in the same way that the Royal Academy illustrates the contemporary state of the fine arts. In reference to the eligibility of the Crystal Palace, as a permanent depository of valuable articles, it would occur to any one, the reader thought, that besides the enormous expense of keeping fifteen acres of glass roofing in repair, under the most favourable circumstances, it must be manifest that the risk of instant destruction from mob or elemental violence, to which so fragile an edifice would be exposed, must render it unsuitable for the purpose suggested.

STATUES AND FOUNTAINS.—WESTMORELAND LIMESTONE.—A project having been suggested for the erection, in the Infirmary pond at Manchester, of two fountains (more appropriate ornaments than Sir R. Peel's statue), a correspondent of the local *Guardian* advises that they should be constructed of Westmoreland limestone, the pure whiteness of which, he remarks, would contrast finely with the dark bronze of the intended statue. "A self-taught provincial artist, Mr. Duckett, of Preston," he says, "is now at work upon a colossal statue of Sir Robert Peel, from a block of this material, which is pronounced by several competent judges as likely to produce a statue fully equal in appearance and more durable, after years of exposure to atmospheric action with the smoky moisture and other impurities of a large manufacturing town, than the finest Italian marble. This statue will probably be erected in Preston next spring. Those who doubt the enduring qualities of the Westmoreland limestone are referred to Christ Church [the writer must mean St. Thomas's, there being no Christ Church] in that town, which has stood the test of about fifteen years, still retaining the original purity of whiteness. There are inexhaustible quarries of this stone intersected by the canal between Lancaster and Kendal, immense quantities of which have been blasted with gunpowder, and burnt into lime. Blocks of any size might be obtained and conveyed by water to all the southern parts of England, if it were not for a breach of four miles in our inland navigation, between the north and south levels of the Lancaster canal, the completion of which has hitherto been delayed by the expense of an aqueduct over the Ribbles."

BLACKFRIARS BRIDGE.—A correspondent (W. W.) suggests that to prevent the risk of danger to passengers over the sinking arch of Blackfriars-bridge a properly framed gangway, abutting at each end on sound parts of the bridge, should be thrown over the failing part.

SINGULAR OBSTACLES TO THE ERECTION OF A BRIDGE.—Among the curious facts which have turned up in the course of the Mortmain committee's rather discursive investigations, are told that a ferry across the Tiber, at Ripetta, in Rome, could not be replaced by a suspension bridge, as proposed by Pio Nono, because the penny toll belonged to the souls in purgatory, by legacy of the original proprietor; and the security of a bridge was not held by the trustees to be half so permanent as the natural obstacle of a water privilege, and hence they refused, on behalf of the disembodied spirits, their clients, the chances of increased revenue from the "work pontifical," which might some day be declared toll free.—*Globe.*

RAILWAY CHAIRS.—Mr. C. Barlow, Chancery-lane, has patented some improvements in machinery for the manufacture of railway chairs. The machine claimed under this patent is intended to effect the manufacture of railway chairs from plates or bars of metal at a single operation. A piece of metal of sufficient size for the purpose is first sheared off from the plate, and is pressed between two dies, one being stationary and the other attached to a vertical sliding head, by which the edges are bevelled off, and the holes for the spikes punched out. The partially-formed chair then passes under the action of two other dies, attached by arms to a second sliding-head, by which the lips are formed and bent up, and the operation completed; each revolution of the main shaft turning out a chair in a finished state.

PENNY OMNIBUSES.—Penny omnibuses are becoming very general in this town, and are, one and all, driving a capital business. No sooner does one arrive at the top of Dale-street and discharge its load, or rather overload, than it is beset by a crowd of new candidates for conveyance. No doubt, this pays well; but we would exhort the public authorities to exercise vigilant supervision, as well for the public safety as for the prevention of cruelty. These cheap conveyances are evidently a great public convenience, and they will be none the less remunerative or useful if they are put under systematic regulation.—*Liverpool Paper.*

FISH FARMS AND WATER COMPANIES.—Might not our water companies farm fish in their great reservoirs, to the improvement of their water? Might not the Board of Health animate their projected "gathering grounds" with spawn, and supply the metropolis, not only with pure water, but with wholesome fish? Throw little fishes into the great pool, and they become big fishes gradually. What, then, do they grow big upon? Not upon water only, but upon things—some of them very impure things—in the water, obviously. They themselves can add to the water nothing that they have not taken out. By as much, therefore, as the fishes have increased in bulk, deducting the increase due to water merely, by so much will the reservoir have been purified by its inhabitants; and that which is unsavoury to look at in a water bottle, will be very welcome to us in another form, produced at table hot under a dish-cover.—*Dickens's Household Words.* Worth a thought, unsound as the main inference is.

THE ANCIENT SCULPTURED STONES OF MORAY.—A foreign artist, employed by the Spalding Club of Aberdeen, is now engaged in taking drawings of the sculptured monuments of the district, with the purpose of publishing them with suitable descriptions among the works of the Club. "It is the opinion of some," says the *Forbes Gazette*, "that the figures on several of these monuments are a species of hieroglyphics which can be identified not only with others of Scandinavian origin, but with those in Egypt and the East. An ancient sculptured stone at Brodie has likewise been figured, and for the first time. It bears curiously-wrought figures of animals, and runic knots, and has the two orbs with the zig-zag ornament between, common to this singular class of monuments."

METROPOLITAN INTERMENT ACT.—A Bill was lately introduced by Government to amend the Metropolitan Interment Act of 1850, and to authorise the advance of 137,000*l.* to the General Board of Health for the purposes of the Act, the same to be secured with 4 per cent. interest on the future fees and payments to be received for interments. The Bill contains the following provision:—"And whereas the discontinuance under the said Act of interment in a parish may occasion the over-crowding of the burial-grounds of other parishes in the metropolitan burial district; the body of any parishioner or inhabitant of any parish in which interment is ordered to be discontinued under the said Metropolitan Interments Act shall not, after the time from which interment is so ordered to be discontinued, be buried in the burial-ground of any other parish within the metropolitan burial district; provided

nevertheless, that nothing in this enactment shall extend to prejudice or affect the provisions contained in the 17th and 18th sections of the said Act; and every person having the care or control of any such burial-ground, who knowingly authorises or permits any burial contrary to this enactment, shall be guilty of a misdemeanour."

NEW INVENTION IN BRIDGE-BUILDING.—Mr. Samuel Perks, of Emerson-street, Southwark-bridge, Engineer, has registered, under the new Act for the protection of inventions, his claims to a novelty in building timber-bridges, columns, masts of ships, &c., which consists essentially of a combination of pieces irregularly crossing, overlapping, binding, and interweaving, whereby, when secured by bolts, screws, or nails, and cemented, and made impervious to wet, &c. by asphaltum, bitumen, or other convenient cementive material, solid beams of any length, say 1,000 feet, may be made, by even unskilful hands, of far greater strength (according to his statement) than any single piece of beam timber, and at far less expense of either time or money than so much brick or stone work. There are other modifications of the same principle claimed, such as the formation of masts and keels of ships, the masts being made of concentric pieces crossed and bound together to any requisite length and girth. Specimens of the inventions are deposited in the International Exhibition.

BELLS, GREAT AND LITTLE.—In our last we copied an article from the *Morning Herald*, under the above title, in which it was stated that the largest bells in England are those of Christ Church, Oxford, weighing 17,000 lbs.; St. Paul's, London, 11,474 lbs.; and Great Tom of Lincoln, 10,854 lbs. Singularly enough, no mention was made of the largest and heaviest bell in this country—the Great Peter bell in York Minster, which weighs, we are told 24,080 lbs., and was cast by Messrs. Mears in the year 1845. This bell was purchased by the citizens of York, and presented to the cathedral in that year; and they are now making an effort to obtain a suitable clock with striking works, to attach to this finest-toned monarch of the bell-chamber.

ACCIDENT NEAR WESTMINSTER BRIDGE.—A strange accident occurred near the foot of the bridge, in the road leading to it from the Lambeth side, on Saturday last. An immense void, about 42 feet in circumference, it is said, and very deep, was discovered by the vibration of the surface and the sinking of an omnibus into the macadamized road. It was ascertained that an old sewer had broken in, and that the tide had washed away the material beneath the road which covered the void with a mere thin coating. Barriers and shoring were put up, but the roadway is clear on each side.

BRITISH ZINC.—Forty years since, when the *Vieille Montagne* was in the hands of the "alchemists" (?), Messrs. Hobson and Sylvester, of Sheffield, rendered zinc malleable, and Philip George, jun., of Bristol, perfected the discovery, and rolled it into sheets as large as copper sheets were usually made for market. The delay in its progress was by putting too much labour to it, by making coffee-pots and other trumpery instead of applying it to rain pipes, roof and gutter covering, &c., and the discountenance given by plumbers and iron founders. As soon as we had made it fully and extensively serviceable, then Mr. Mosselman, of Liège, tried his hand, and the year 1828 was about the first time his zinc came to our market. It was stubborn and difficult to work; but it bore a duty of 10*l.* or 15*l.* a ton, and so it served to cut away our supplies to our colonies by reason of the drawback. Then the market was deluged by foreign zinc: it lay in the warehouses a dead, and, being some sea damaged, it was almost a rotting stock. I believe the foreigners got sick of it, and sold all off to one man, who, by reselling to a large company (who are now rather cramped by that and other speculations), realised a large sum. One—two—three agencies were set agoing: all got sick; and the price rose, in 1841, to 40*l.* a ton: it got up afterwards to 51*l.* a ton, and now it is 20*l.* a ton for sheet zinc. Firm after firm

failed; and at this time the market is in foreign hands by bringing over at once about 3,000 tons of sheet zinc, and running down the price, allowing agents to sell only for cash retail, and thus taking away the profit of all other small manufacturers and dealers. We can cast zinc quite as well as the foreigners; but they are welcome to their mare's nest. We know it to be unsuitable: it loses specific gravity by casting, becomes brittle, and we have more suitable materials for casting.—*L.*

FALL OF A BUILDING AT HULL.—On Tuesday in week before last an accident occurred at Hull, whereby one man was killed and several others were dreadfully injured. The circumstance is thus described by the local *Advertiser*:—"There is building in Jarrett-street a large chapel for the use of the Primitive Methodists, the foundation-stone of which was laid on Good Friday by the mayor. Mr. Sissons, of Hull, is the architect, and Mr. Musgrave the builder. Great progress had been made with the building, and no accident of any importance had occurred in the course of erection until Tuesday last. At the south end of the building a recess is made for the singing gallery, and above this a beam 26 feet long was placed from each side of the recess on which to carry up the wall. The beam rested at each end upon pillars erected for the purpose, 14 inches wide, and projecting 4½ inches from the wall. Down these pillars ran pipes, for the purpose, we believe, of ventilation. The beam, it is alleged, was let into the brick work at each side to the depth of nine inches, and was also trussed with iron. Shortly after two o'clock on Tuesday afternoon several men were engaged in carrying up the wall upon this beam, whilst others were at work in the gallery beneath, when the wall upon the beam was observed to rock,—the beam itself broke out of the wall on each side,—and the men were precipitated along with the materials to the ground, a height of some 40 feet.

METROPOLITAN READING AND WAITING ROOMS, BATHS, AND REFRESHMENT ROOMS.—A joint-stock company is said to be in progress of formation for the purpose of establishing easily-accessible newspaper and reading rooms, with baths, lavatories, water-closets, and all the necessary appendages to a dressing-room, in the most prominent positions and thickly populated localities in London. It is only surprising that some such scheme has not hitherto been carried out. The want of such convenience has long been felt in the metropolis, and it only requires that they should be conducted under stringent regulations and proper control, and with due regard to economy, comfort, and respectability, to insure undoubted success.

JOHN KNOX'S HOUSE.—It appears that this venerable structure is still in so tottering and dangerous a condition as to require that a portion of it should be immediately pulled down. The following interlocutor in the case was on Thursday pronounced by the Dean of Guild Court:—"31st July, 1851.—Having resumed consideration of this case, with the report of Mr. Black, in the meantime ordains the defenders forthwith to pull down and remove the whole northern portion of the gable complained of, to the extent of eighteen feet southward, as being dangerous to the inhabitants and the public. *Quoad ultra* continue the cause. JOHN DUNCAN, D.G."—*Caledonian Mercury.*

CHRIST CHURCH, SPITALFIELDS. is about to be repaired. The following has been sent to us as a list of tenders delivered on the 9th instant, for cleansing, painting, and decorating the church; also tenders for alterations of the chambers over vestries at the east end of chancel:—

	Decorating.	Alteration.	Total.
	£	£	£
Piper	2,085	191	2,266
White	1,826	181	1,477
Hayward and Nixon ..	1,170	175	1,345
Mosley	1,170	157	1,327
Taylor	1,114	165	1,279
Ashby	1,029	161	1,190
Tolley	949	119	1,068

One of the tenders appears to have been made under some misconception.

PLASTERING AND WHITEWASHING IN THE MIDDLE AGES.—In the thirteenth century lime was sold by the bag, as at present, as well as by the hundred weight: in preparing it for mortar, it was mixed with sand, and occasionally with pounded tyle, a fact which may tend to correct the haste with which some antiquaries pronounce fragments of mortar in which that ingredient appears, wherever they may occur in mediæval buildings, to be of Roman origin. At whatever period the use of gypsum may have been introduced into this country for plastering and whitewashing internal stone-work, it was certainly known by its present name of plaster of Paris, very early in the thirteenth century. Plasterers and whitewashers (*dealbotores*) are mentioned in the London assize of the year 1212; and Necham, writing in the twelfth century, alludes to smoothing the surface of the wall by the trowel. We are not to consider the practice of whitewashing stone-work as a vice peculiar to modern times. Our ancestors had as great an objection to the natural surface of stone, whether in churches or other buildings, as any churchwardens or bricklayers of the nineteenth century. Several writs of Henry the Third are extant, directing the Norman chapel in the tower to be whitewashed: Westminster Hall was whitewashed for the coronation of Edward the First; and many other ancient examples might be cited. In fact, it seems to have been the rule to plaster ordinary stone-work: for instance, when Newgate was repaired in 1282, two new windows of free-stone were constructed in the chamber where the justices sit, yet the account of the architect has this item: "In plaster of Paris bought to plaster the windows and the chamber where the justices sit within,—13s. 4d. In the wages of a plasterer and his servant, four days, 2s. 8d."—*Turner's Domestic Architecture in England.*

VENTILATION OF THE HOUSE OF LORDS.—In reply to a recent complaint about the state of the ventilation of the House, made by the Earl of St. Germans, who recommended experiments with Mr. Goldsworthy Gurney's steam jet, the Marquis of Lansdowne stated, that in consequence of some buildings not being yet removed, great impediments had hitherto stood in the way of a free current of air in the house; but that he understood that Mr. Barry had been in communication with Mr. Gurney on the subject of ventilation, and he hoped their lordships would be in a very different position in that respect by next year.

MUSEUM OF CASTS.—At a sectional meeting of the Archaeological Institute, held previous to the close of proceedings at the Bristol congress, a resolution was passed to the effect that the formation of a complete collection of copies of the most admired and instructive sculptures of all ages is very desirable, and that a portion of the building in Hyde Park might be very properly and consistently devoted to this purpose.

ST. GEORGE'S HALL, BRADFORD.—The works in this building were let last week, when the result of the tenders gave the cost of the building complete 10,318*l.* 18*s.* The following is a list of the accepted tenders:—

Burnley and Sons	£5,550	Masons.
Crabtree	2,790	Joiner.
Barker	697	Plasterer.
Onions and Wheelhouse	427	Ironfounders.
Bollans	330	Plumber.
Joseph Hill and Son	156	Slaters.
Briggs and Measforth	87	Painters.
Mawr	270	Carver.

Total cost £10,318

The tenders for Mason's work were:—

Moulson	£6,100
Bealand and Gidhill	6,050
Wilson and Sons	6,032
Fearnley and Wainwright	6,000
Leach	5,674
Burnley	5,550

Those for the Carpenter and Joiner's work were:—

Illingworth	£3,575
Neill	3,180
Wilson	3,125
Taylor	2,997
Hill	2,887
Crabtree	2,790

ODDS AND ENDS IN NAVAL ARCHITECTURE.—A gentleman of independent means, residing in Manchester, has invented and patented a revolving sail ship, a model of which, 23 feet in length and 6 feet beam, he has been exhibiting in the Mersey. Its prominent feature, says the *Liverpool Times*, consists in the introduction of a set of revolving sails, sixteen in number, similar to the fans of a windmill, which are elevated on a wheel, and attached to a spindle. As soon as the wind touches the sails, they instantly set in motion the spindle, which, acting upon a very simple piece of machinery, propels a couple of paddles. The objects attained are greater speed by means of the paddles, and the advantage of sailing against a head wind. The sails can be pointed with ease to any point of the compass. Head or contrary winds are not recognized, a stiff breeze being all that is requisite to propel the vessel. —An instance of prompt invention in a case of necessity occurred in course of last winter on board the *Warren*, on her way to New York from Glasgow, with passengers. The ship lost her rudder, and in this critical emergency the captain, Mr. J. G. Lawton, while his vessel was in the act of driving helplessly to apparent destruction, without an article on board more eligible than pig-iron, with that and some cable formed an extempore rudder, with which he guided his vessel and its valuable freight to the port of destination. A model of the contrivance is said to have been sent to the International Exhibition. —The excursion season seems to be astonishing our inland rustic population in the meantime with those "wonders of the deep" with which it will soon familiarize them. The following instance, adduced by the *Lancaster Gazette*, is in point. Two rustics who lately arrived at Poulton, by an excursion train from Yorkshire, were rambling about the shore, when one of them discovered a large anchor on the beach. Never having seen such a thing before, he was struck with astonishment, but at last the happy thought struck him that he had discovered its use, and, turning to his companion he exclaimed, "Loo' thee, Bill, what a greet meety pick-axe!"

LONDON BATHS AND WASHHOUSES FOR THE LABOURING CLASSES.—The following is a return for the month ending July 31, 1851:—

ESTABLISHMENT.	BATH DEPARTMENT.		WASH-HOUSE DEPARTMENT.	
	Number of Bathers	Total Receipts	Number of Washers	Total Receipts
		£ s. d.		£ s. d.
The Model Whitechapel	22,411	297 2 8	3,358	7,213
St. Martin-in-the-fields	29,803	458 8 9	4,861	10,423
St. Marylebone	32,202	398 2 0	2,020	6,550
St. Margaret and St. John, Westminster	20,350	228 9 4	1,150	2,304
Totals	104,850	1389 2 3	11,389	25,991

RAILWAY TO GALWAY.—According to a correspondent, the Shannon bridge, wholly of iron, except the land abutments, is 500 feet in length; has a swivel opening in the centre, giving two passages, each 43 feet wide, for the passage of vessels navigating the river; and contains, besides two spans of 165 feet each, one of 50 feet and one of 40 feet. The total quantity of iron employed in this structure is about 1,200 tons. The river Suck is spanned by three openings of 75 feet each, composed of girders on the tubular principle, and the Lough Athalia bridge has a swivel of the large dimensions of 160 feet in length by 34 feet wide; opening at once two passages for vessels of 60 feet each. The moving portion of this swivel bridge weighs about 200 tons, and is worked by a hand gearing. Some very extensive drainage operations were necessary, in conducting the railway over numerous deep bogs intersecting its course, and these, together with the various earthworks, bridge, and other buildings, fencing, earthing, cutting timber, laying rails, &c. gave the desired em-

ployment to a staff of labourers and artisans of every description, varying from 6,000 men, in the winter months, to 9,000, and part of the time 10,000 men, during the summers of 1850 and 1851. The greatest regularity and order prevailed on the works, and with the exception of very trifling attempts now and then to extort higher wages, a uniform contentment was the general spirit of the men. Every fortnight the wages were distributed in hard cash, and no one was allowed to establish any truck system in connection with the works. The wages were from 8*s.* to 10*s.* per week for labourers, and 3*s.* to 3*s.* 6*d.* per day for masons and carpenters.

ZINC BLASTING IN AMERICA.—The miners engaged in the zinc-mines of the New Jersey Exploring and Mining Company, at Sterling-hill, Sussex county, are said to have lately put in a sand blast, by which about 400 tons of zinc ore, of pure quality, were thrown down on the bank.

THE MARQUIS OF WESTMINSTER'S GALLERY.—Every one knows the excellence of this collection of works of art, and we mention it now simply that we may bear witness, in spite of adverse statements, to the noble owner's willingness to allow an inspection of its treasures. The *coup-d'œil* of the gallery itself is very good. There are nearly 200 paintings, and those who have seen them will not have forgotten, amongst others, Rubens's portraits of himself and his first wife (the pretty creature); Guido's "Infant Jesus sleeping, with the Madonna watching;" and Salvator Rosa's portrait of his own intelligent, melancholy face; Yuccarelli's "Macbeth and the Witches;" Claude's "Golden Calf;" "Mrs. Siddons as the Tragic Muse," by Reynolds; "A Head of John the Baptist," by Carlo Dolci; a wonderful Hobbema; and the beautiful "Bit of Lance," by Von Huysum.

BOOKS FOR THE NATIONAL LIBRARY.—Mr. Chapman, the publisher, we perceive, has been charged with having neglected to furnish the British Museum with a copy of a recent work. How long are authors to be thus taxed for behoof of the public? Ought not the public rather to be taxed for behoof of authors? At least it would be but just that the public should pay for the books supplied to their national library. Justice to the library itself demands it; for under the present system the shortcomings are the rule and the supply the exception, and so will it ever be until the Legislature place the national library on a proper footing in this respect. And what would all the additional expense be when the attainment of so desirable an end as the *bona fide* and actual accumulation of copies of every work published is considered?

CLEANING OF METAL CASTINGS.—In the old process of cleansing of metal castings, by water containing sulphuric or hydrochloric acid, the coating is more or less perfectly removed, but the surfaces are left rough and unequal. Messrs. Thomas and Delisse found that the coating was removed from cast surfaces with great certainty, when, to water acidulated with sulphuric acid, organic matter, such as glycerine, artificial tannin, naphthalene, creosote, or stearine was added. This acid liquor does not dissolve the coating, but detaches it, and causes it to scale off, leaving untouched the metal below. By this process, which is peculiarly applicable to the cleansing of zinc and brass, sixty per cent. of acid is saved, and not half as much metal lost as in the old process. But the organic substances mentioned above being difficult to procure in many instances, M. Elsnar applied himself to discover some cheaper and more easily procurable organic matter which would answer as well, and he has found that both wood and coal tar answer perfectly well. A piece of iron casting was immersed in a mixture of tar and dilute acid, and was completely cleansed, without any disengagement of hydrogen gas, the surface being left of a clear, grayish-black colour, quite clean and smooth, and totally unattacked by the acid. A similar casting immersed in the solution ordinarily used in this process was almost wholly dissolved in an equal time. —*Technologiste.*

SAW-MILLS.—Wanted, by a man of experience, a SITUATION as a SAW SHARPENER. He is thoroughly acquainted with all the improvements that have been made in sawing of late years, and is capable of taking the MANAGEMENT of a SAW-MILL. A situation in the country will be preferred. Letters addressed to J. F. F., at, Balgare-street, York-street, City-road.

The Builder.

No. CCCCXLVI.

SATURDAY, AUGUST 23, 1851.



THE first incident that occurred to us when we reached PARIS the other day caused us some annoyance. Every juror for the Great Exhibition, when he accepted his office, signed a solemn declaration to the effect that he would keep secret all the awards made by the juries until these were officially announced by the commissioners. Our astonishment, then, may be guessed when we found men on all the boulevards of Paris selling, for a *sous*, a list of the French exhibitors to whom great medals had been awarded! According to this paper, fifty-five great medals have been obtained for France; and in it the appropriation of thirty-eight of these, with the names of thirty-one recipients, is given. The publication of this information, it will be seen, implies a breach of faith, not on the part of one juror alone, but of many, and shows the little importance they attached to their deliberate pledge. Their apologists will say, secrecy is constitutionally impossible with Frenchmen: they must talk:—primed with intelligence, they must either burst or "blow." For our own parts we look upon the matter as a breach of faith which deserves the severest reprehension.

Let us turn, however, to a pleasanter theme, and continue our rapid survey of such works and buildings in glittering Paris as came under our notice.

Amongst the most important recent improvements are those in the Palace of the *Louvre*, the completion of which building, by the way, still affords a subject for essay to a certain number of architects every year. The grand saloon has a new ceiling of great richness, including figures and bas-reliefs, particularly well modelled. In the frieze are the names of painters in panels: the walls are covered with painted canvas, resembling stamped leather. The light from the centre is very excellent. In the Gallery *des sept cheminées* there is also a very elegant new ceiling, with erect female figures, the size of life, in the cove, holding palm branches. This gallery is appropriated to modern French artists, and medallions of the most eminent of them form part of the decoration of the ceiling. M. Duban is the architect to whom France is indebted for these works. The painting, gilding, and cast decorations of the Gallery of Apollo were restored in a singularly short space of time, and M. Duban deserves credit for having placed conspicuously in one of the panels a portrait of Mansard, the architect who designed it. Throughout the Louvre, the ceilings have been made to afford modern artists an opportunity to distinguish themselves. Walking through our miserable whitewashed National Gallery, the contrast is somewhat striking. Even in the British Museum, although colour has been introduced, art is altogether absent. *La Cour de Louvre* has been laid out in paved ways and flower beds, protected by a low, cast-iron enclosure.

The west porch of the church of *St. Germain l'Auxerrois*, close to the Louvre, presents a singular specimen of exterior coloured and gilt decorations. The walls are covered with figure-subjects: the vaulting is coloured blue (badly executed), with gold stars and gilt groins. Some modern stained glass in the church is of indifferent character.

Among the few new buildings in progress in this same neighbourhood may be mentioned a new stamp office (*Timbre National*) in the *Rue de la Banque*, and a new *Mairie* close to it. The first, Greco-Italian, so to speak, in style, was designed by M. Baltard: there are sculptured arms in the pediment, and two medallions representing Law and Security. The *Mairie*, where the business of the elections, National Guard, *justice de paix*, &c., is transacted, is the work of M. Girard, architect. It has a turret for clock in centre: the cornice of the entablature is novel and clever. A Gothic church, too, is in progress, and the *Pont Neuf* is being lowered.

The Lady Chapel in the Church of *St. Gervais*, which exhibits some singular depending tracery, with "fretted" ribs, was decorated a short time ago very thoroughly with colours and gilding. Paintings by Delorme fill the wall spaces, and stained glass the windows.

Remembering our own proposed Winter Garden in Hyde-park, we did not fail to look in at the *Jardin d'Hiver*, near the *Rond Point*, in the Champs Elysées, and found it somewhat dirty and neglected, especially the vestibule and other adjoining apartments, which contain a number of very bad pictures. The charge for admittance here is one franc (too high): the building appears to be chiefly used for special fêtes. The *Jardin d'Hiver* is too well known to need description now, but we may say that it is of iron and glass, has a canvas awning, and is floored with a concrete in squares. M. Charentier was the architect. There is a gallery all round the inside, carried, at some distance from the sides, on light pillars which help to support the roof.

At the *Arc de Triomphe*, which is close by here, a scaffold has been erected under one of the side arches to scrape and repair it. This enormous structure when seen from a distance overtops and oppresses all around it.

St. Vincent de Paul, one of the modern churches of Paris, is near the station of the *Chemin de Fer du Nord*, and is approached by three extensive flights of steps. An Ionic portico, of six columns, coloured decorations, stained glass in all the windows, much carving, a hundred and four columns inside, and a parquetté floor are some of the features of this gorgeous temple, which cost no less than 156,000*l.*, exclusive of the terraces, which cost 9,600*l.* The organ in the west gallery is divided to permit view of a large rose window. The frieze of the order, and the semi-cupola of the absis, are now being painted by M. Flanrin and M. Picot. The first will represent the entrance into Jerusalem, with procession; and the second, illustrations of the Seven Sacraments.

As a contrast to the present good feeling towards the English, it is curious to observe that a carved figure of *St. Victoire*, on the reredos of the altar, was defaced during the last revolution, because of its approximation to *Victoria*. The great west doors are of

cast-iron, made to look like bronze: the font, too, is of the same material.

As we are now close to the railway station, and ten minutes will whisk us to *St. Denis*, let us see what the Government architects have been doing at the cathedral there,—a building rich in historical connections, and full of interest as a monument. We may note, as we pass along, the exact resemblance in all respects of the French railroads and accompaniments to our own,—a circumstance which of course lessens the feeling of novelty experienced by the English visitor in the time of the lumbering diligence, noisy postillion, long straight paved roads between appletrees, the ancient post-house, and the fortified towns through which he was rattled. We may mourn too, as we leave the city, over the miserable folly which sank, in constructing a system of not merely useless but detrimental fortifications around Paris, an amount of money that, properly applied, would have conferred advantages on its citizens through all time to come.

The cathedral of *St. Denis*, the resting-place and cenotaph of French kings, has been sadly treated by incompetent restorers, and is in some respects falsified and irretrievably injured as a monument of the art of a period. The late M. Debret was the architect, who, at a cost of seven millions of francs, achieved this destruction.

The principal, or what we should call the west, front was added to and altered without compunction: as, for example, he introduced an arcade to contain some miserable bas-reliefs of early kings. The sculpture in the magnificent portal is ruined by the new heads that have been put upon the figures. A spire was built upon the north tower, but was scarcely completed before the necessity of taking it down was made evident by the settlements in the tower below: its constituents now lumber the garden of the cathedral. One of the most extraordinary acts of the custodians of the church at this period was the treatment given to an interesting canopied monument to Dagobert, ascribed to the thirteenth century, which was actually cut in two longitudinally, and placed half on each side (to match), at the western entrance! The stained glass is, for the most part, very bad: the windows in the south transept, representing visits to the church by Napoleon and Louis Philippe, are miserable caricatures. Many of the chapels have polychrome decorations, with few claims to admiration.

M. Viollet Leduc, who succeeded M. Debret, appears to have a better idea of the duty of a restorer: the works that are going on in the eastern chapels* are of a satisfactory character: the forms of the painted decorations are somewhat staring, but are said to be authorised by the ancient remains. The aisles of the choir are painted very extensively: the columns are covered with foliage: the capitals are gilt: the vaults are blue powdered with stars; and the groins are picked in red and other colours. The glass, put in under the direction of M. Leduc, is by the late M. Gerente, and is of a superior character.

One of the great points of interest in *St. Denis* is the crypt, with its extraordinary series of royal effigies. M. Adolphe Lance, the Government inspector of the works there (and whose name is not unknown to our readers),

* Each of these chapels has two piscines.

has recently published an interesting article in the *Sécle*, maintaining that portions of this crypt belong to the church built here by Charlemagne, in 775. M. Lance says that when the Abbé Suger reconstructed the church of St. Denis, in the twelfth century, he preserved as much of the ancient work as possible as a crypt under part of the new building, and that this crypt still remains. The architects of the empire, when Napoleon determined that St. Denis should be the place of sepulture for the princes of his dynasty, disguised and dishonoured it in all ways, and left few portions visible of the old work. M. Viollet Leduc, however, has assiduously devoted himself to removing the disfigurement of the original work, and moreover succeeded in recovering some of the ancient capitals which had been removed.* Without at once assenting to this statement, we may say that the junction of early with late semi-circular work is obvious and interesting.

In addition to its mediæval wonders, St. Denis possesses two monuments of the Renaissance, which are marvellous works,—viz., the Tomb of Francis I. (1547), and that of Henry II. and Catherine de Medicis,—the first by Jean Goujon, the second by G. Pilon. The effigies of Francis and his wife are amongst the most extraordinary works ever produced, and will well repay those who obtain permission to ascend the monument to examine them. There is also the tomb of Louis XII. here, put up in 1515, whereof the architecture is better than the sculpture.

Strange changes in France has St. Denis witnessed, from despotism the most absolute, to licentiousness the least restricted.

And what is now to come there no man living can say.

REMARKS ON THE FORM, TREATMENT, AND APPLICATION OF THE DOME IN MODERN EUROPEAN ARCHITECTURE.

To the arch principle we are indebted for many beautiful features, constructive and decorative, in architecture,—as the vault, the groin, and all the charms of the Gothic ceiling; but when the dome was evolved from its noblest offspring was produced,—it had attained the perfection of its development—its artistic *ultimatum*; for among all the forms of construction or elements of decoration, the noblest—the grandest—is the dome. Add to it but another architectural feature,—let it crown the circular peristyle, and we have before us a type or model of structures that have delighted the world,—the cyclostylar monument of Lycrates,—the temple of the Sibyl at Tivoli.

The charm of the dome is not in the embodiment of exquisite artistic skill, or profound human intelligence; it is in its simple, inevitable beauty,—its naked natural grandeur, of which it is impossible to judge from those examples, corrupt in form, and false as to treatment and application, which we usually see.

The dome must be considered, and I shall in the following paper consider it, as alike important externally and internally: that truthfulness that should pervade all architecture must characterise the dome, which is false if it have but one side. It is too important a feature for mere exterior decoration, and is only justifiable as the *bona fide* roof of an apartment. In fact, it is a more important feature within than without, and is the most natural form, the noblest and the fittest that we could apply to the covering of a great interior. The ceiling that bears the completest analogy to the form that raised it and dwells beneath it is the dome: as a late writer observes—

* Amongst the subjects represented on these capitals in a rude manner are,—the Temptation of Eve, the Expulsion from Paradise, the Adoration of the Magi, the Resurrection of Lazarus, &c.

“one fancies it supported by the air.” It seems inflated to its form by the atmosphere, and looks infinitely more safe and enduring than the usual flat desert of plaster which, in large interiors, must ever have an insecure and threatening look.

The words “dome” and “cupola” are used indiscriminately, and some confusion arises in consequence: the former properly applies to the covering of circular, square, polygonal, and indeed all forms of bases whose vertical section is circular or curved, whether in one direction, as the round, or in two, as the ogee; while the term cupola is, or should be, restricted to domes of circular bases and of circular vertical section, i.e. to the hemisphere.

There are many forms of domes that may each be advantageously employed according to circumstances, and they will be found to possess various degrees of beauty: the spherical segmental dome, the octagonal dome, the ellipsoidal dome, all have their claims to admiration, though far inferior to the hemisphere. An advantage of the segmental dome is that, being low, it is less liable visually to dwarf the columns of the peristyle, along with which it may be employed. Domes rising from a square, polygonal, or other rectilinear base, are inferior to those from a circular one, as the sides have the demerit of being only of cylindrical curvature. Besides, in such forms the sight splits upon the different angles, and instead of one image, takes in two, three, or more similar ones; whereas in the spherical dome, whether inside or out, the whole idea is embraced by the eye at a glance. The octagonal dome, however, has much majesty on a large scale, and might be employed with much effect over square buildings of great divisions and rectangular composition, as it would produce light and shade in keeping with the contrasted character of that below. The parabolical and the hyperbolical contours are not pleasing in domes. The pointed dome, like that of St. Peter's at Rome, the exterior dome of St. Paul's, and that of the Duomo of Florence, the vertical section of which consists of two arcs of a circle, that if produced would meet in a point, approach too nearly to the Gothic character for employment in classic structures. The pointed ogee dome is not a classic feature, but it has much to recommend it to the Gothic, with the soaring spirit and aspiring expression of which it is a great measure sympathises; and though it does not possess the nobleness and beauty of the hemisphere, yet it looks well on a small scale: rising from square and octagonal bases it has been much used in Elizabethan and Tudor works as a crowning to towers and turrets, and is a good substitute for battlements, as an exterior feature, on buildings having no reference to military defence.

The square dome over a square apartment must yield in point of beauty to the cross vault, which is inferior only to the pendentive dome itself. The square cross vault is a light and elegant roof, and, while we have still in the diagonals of the ceiling or groins the advantage of the domical sweep, it maintains the full height and vertical effect of the walls, and admits of large windows for light and other apertures. It is also a very appropriate ceiling over the intersection of two corridors; but a series of square cross vaults over the corridors themselves, though employed by the Romans and imitated in some of the greatest buildings of modern times, appears improper; as does also the series of pendentive domes much employed in the same situation by the moderns. The simple vault, relieved by decorated belts, from pilaster to pilaster, seems the most proper for such form and proportion of plan, as well as for all oblong apartments and galleries.

The Romans certainly employed the three most beautiful forms of ceiling,—the cylindrical arch, the dome, and the groin. The coved-and-flat ceiling, however, originated by the moderns, is not without its merit: it is more quiet than the groin: it requires less height than the dome and vault; admits of considerable beauty of decoration, and has many advantages over the flat; but of course being mixed, it is inferior in beauty to the vault or dome.

We esteem too lightly the spherical surface,

though necessarily limited in its application: we may have the flat and the cylindrical all around us, but the concave spherical surface we can only have above our heads. We underrate the dome as an æsthetic feature, both within and without our edifices: oriental nations have made it the chief feature, in their most ambitious architectural enterprises, but we are cold to its charms. The Persians and Mohammedans in India had so high an appreciation of its æsthetic capabilities and pictorial effect, that they sprang it below the diameter, as if they would have had the whole orb; for the origin of the bulb-shaped dome, though suggested by the horse-shoe arch, is doubtless the desire to have the greatest possible portion of the spherical surface. This, however, was overdoing it: in the eastern lofty and bulb-shaped domes we lose the idea—or rather we never attain to the idea—of their being roofs to some noble apartment. It was a monopoly of thought for exterior effect, in which the moderns of Europe have too much imitated them.

It is to the Romans we are indebted for the dome; and they not only invented it, but made at once the most proper and beautiful application of it. However otherwise corrupt, they exhibited a redeeming taste in this: among them the dome reached its artistic perfection, never since attained; for even the church of St. Sophia at Constantinople is an extravagance—an abuse of the principle—as are, indeed, all the Turkish mosques. The conjunction of the basilica with the rotunda and dome,—the enthronement of the Pantheon on the Temple of Peace by Brunelleschi and Michaelangelo in the composition of St. Maria delle Fiore at Florence, and of St. Peter's Church at Rome, was doubtless a bold engineering enterprise, and evinced great constructive skill; but while science was illustrated, the law of fitness was violated, and the artistic and higher beauties of the former (the Pantheon) were lost in its elevation. So far from this conjunction—this hanging of the Pantheon in the air—being wanting to complete the architectural glory of the ancients, as some have supposed, nothing, as it appears to me, shows the restraining judgment of the Romans more than the fact that they never attempted to perpetrate it; for the Pantheon of Agrippa, in the majestic expanse of its dome, in its natural repose on the ground, in its truer proportions, is infinitely more imposing than any of its elevated modern rivals. Misled by the precedent of the Gothic steeple to which the aspiring principle is natural and proper, they mistook height for greatness; now true greatness exists chiefly in proportion, and the interior use and beauty of a structure is, beyond all comparison, the most important consideration. But here internal proportion and real beauty are overlooked: stand under the dome of St. Peter's at Rome, you are in the centre of a scene of surpassing magnificence: you have dimensions in every direction—height, length, and breadth; but they do not unite in one undisturbed space: it is not one grand expanse, covered as with a firmament of stone, but ramified—divided space: it is Gothic complexity, not Greek or Roman simplicity and sublimity. As to the dome, the noblest and most capable element of the whole scene, the grandeur of its concave expanse is, comparatively speaking, lost by its height from the ground, which has no relation to its diameter. In fact, the architects in these edifices have sacrificed, to a supposed exterior beauty, not only internal propriety and symmetry, but the magnitude, and, proportionately, the grandeur of the dome itself; and while they supposed that by dint of their constructive skill they were rivaling the ancients, bringing out the latent power of architecture, and carrying it to its perfection, they were violating the eternal law of fitness, which never justified their enterprise: no conceivable purpose of a church calls for it: imposing structure upon structure for mere exterior effect is against common sense, the laws of art, and all analogy of nature. I know that the imagination delights in all that evinces greatness of achievement in mechanical science and daringness of constructive enterprise;

but the judgment must be consulted and satisfied ere solid pleasure can be felt by the mind. How much more magnificent our façades and interiors might have been—how superior as works of art—if the cost of all that is shot up into the air for little except distant view had been spent in giving them nobler proportions or superior embellishment!

But this was not the only departure from the ancient practice, or the sole evidence of declension of taste: a change took place not only in the mode of application, but in the form and entire treatment of the dome. The Romans constructed the hemispherical cupola,

"And left it alone in its glory:"

the moderns would add charms to the lily, and improve the perfect. I refer to the elevation of the contour, and to the surmounting lanterns with which a Gothic predilection prompted the architects of the revival to violate the beauty of the dome; and maintain that the imposition of a lantern or other stone form on a dome, which is not in itself a structure, but the roof of one, however productive of a picturesque ensemble, is a barbarism. The dome must be considered as the spherical vault constituting the roof or ceiling of a single undivided interior or apartment, and, as such, its entire termination,—the omega of its completion: indeed, unless imagined as a solid spherical mass of stone—which is contrary to its roof character—it must appear insufficient to bear a stone superstructure. On small church domes a light finish or terminus, such as the cross, or a statue, or statuary group (which is not an unpleasing object) might be tolerated; but on a large dome any form whatever is an impertinence, an obscuration of its glory, and no more an improvement than would be a spot on the sun's disk. Any object, however symmetrical in itself, interferes with its characteristic beauty, mars the perfection of its shape, and is a neglect of the analogy of nature. Even the usual cylindrical platform round the eye of the dome is, if made perceptible from below, a mutilation that should be avoided. The dome is in itself a complete and perfect form; but when elongated and surmounted, as in the great buildings to which I have alluded, it loses its domical character altogether, and becomes a component and fractional part of a species of steeple, which seems the structure aimed at. It is constrained to a new office; impressed into a fresh service, and one foreign to its nature: it is made to contribute to an effect of height. Now such compositions may be of imposing effect, and to this the orb segments largely, if not mainly, contribute; but the dome, as a dome, is lost. To have its full effect as a dome its spherical sweep must be uninvaded: a circle has no beginning nor end, and a globe has no apex, geometrically speaking: it is contained under one single surface, and its mathematical character, in which lies its surpassing beauty, must be unmarred if its charm is to be preserved. A superstructure destroys its unity, blunts its characteristic expression, mars its significant and majestic grandeur. The dome, like beauty's self, is

"When unadorned adorned the most."

It is the ever-varying mirror of the god of day, and the glory of the solar beam renders all ornament superfluous or ridiculous: on its sunshine indeed sleeps and smiles, and the greatest possible breadth and softness of light and shade are seen on its surface. In point even of utility the lantern is a disadvantage: it obstructs the light from the eye of the dome, to say nothing of its weight, which, in most instances, can only anticipate time in the work of decay.

It should, however, be observed, that the practices of surmounting the dome and of elevating its curvature are perfectly consistent: in fact, each calls for the other, and is necessary to it. The more upright curvature is required to give support to the lantern, and the lantern to give meaning and finish to the dome, which, without it, would terminate in a Gothic point. One, therefore, cannot be condemned without the other; but there is a practice altogether indefensible,—that no consideration

can justify, viz. surmounting with a lantern the hemispherical dome, of which there are too many examples. In such the depressed arcs seem totally insufficient to bear the weight: the basement of the lantern is lost in any good view from below, and a want of union is manifest between the dome and its burden, which is not observed in the elevated examples.

A great hemispherical dome, divested of the usual incubus, depending for its effect upon the sublimity of its grand expanse, and the harmonious and beautiful play of light and shade over its unbroken spherical surface—in short, revealing all its glorious capabilities,—is an object we may perhaps find among the works of Arabian architects, but modern Europe scarce presents an example: here, I believe, its beauty has never been fully worked out: even among the magnificent works of the Moslem conquerors of India we have to regret a strange perversion of taste, for the greater portion of their domes are far from the noble simplicity of the primitive form. Round domes, indeed, characterise the Afghan architecture, but they are of very diminutive proportions. It is true that in mouldings and minor members the curves of the conic sections and others, possessing greater variety, are more beautiful than the circle; but in great structural parts the latter is the most noble, and the more complex curves are less admissible in proportion to the largeness of the scale.

The aim of the foregoing remarks, it will be perceived, is to point to the superiority in natural propriety and artistic beauty of the hemispherical dome entirely unencumbered, and placed immediately on the body of the building, of whatever form, and connected with it only by some octagonal substructure sufficient to receive the roof,—over those of elevated curvature and position, and surmounted summits. I contend for the principle which would place it immediately on the main building,—over the entire body in the case of a church or single block, as at the Roman Pantheon, or at Sultan Mahommed Shah's tomb at Bejapore; and thus give the idea, not of two buildings, one on the top of the other, but of one building both inside and out, with the noblest of all roofs; or, over the main body or chief limb of a multiform building, as a palace or college, as its roof, crowning some saloon, hall, or great central apartment, and not confined to the covering of an insignificant round tower, as at the National Gallery. The advantage of this, is that it would minister so much more largely to interior effect when it comprised the great portion of the ceiling, as St. Stephen's Church, Walbrook, will attest. But externally, as well as internally, its superiority would be manifest. A domical skyline spanning an entire edifice embraces the whole into unity,—an important quality in a place of worship: however scattered the elements of its plan, the dome makes it one. Nothing so loudly—so eloquently—breathes of one undivided interior, as the unbroken sweep of the dome. Of course, geometrical propriety prefers to see the dome on a rotunda or cylindrical building, and we should so place it as often as that form is called for; but that rotunda must be on the ground, not on the top of a square building. The Romans placed their round temples on the earth, where they have charmed all eyes: the moderns perch a caricature of them on the summit of a roof, and wonder if its beauty be not recognised.

If domed towers were proved to be an indispensable appendage, I would then inquire why they should not invariably be made of reasonable grown-up dimensions bearing some proportion to the substructure,—why they should not at least have the appearance of forming some real chamber. There is something childish in the idea of a little round building thrown up in the air merely to be looked at from without, with windows, columns, dome, all including nothing,—no inside of any use or supposed use, as frequently the case, for it has not always even the humble office of containing a bell.

The dome is not adapted to the vertical composition, oblique action, and soaring spirit of the Gothic; but no nobler crowning or more harmonious termination could be ima-

gined to the horizontal composition and majestic repose of the Greek.

I do not mean that the hemispherical dome would harmonise with the severe rectilinear and rectangular composition of pure Grecian Doric architecture: it must be prepared for below: the use of the curved line in a part so important as the roof, will call for curvature in doors and windows, and the absence of Doric severity throughout. Had the Greeks known the arch they would not, I think, have used it in their Doric temples, and they would have made a better application of it, a better association of it with the classic column than did the Romans.*

S. H.

PATENT LAW REFORM AND PROTECTION FOR INVENTORS.

ALTHOUGH it was to be expected from the practice which has, unhappily, of late years prevailed, that many important measures of reform or improvement which were introduced during the session would be "dropped," yet it was not to be anticipated by even those who have the minimum amount of faith in the "collective wisdom" of the empire, that the Bill for the amendment of the laws touching letters patent for inventions, ushered in under such favourable auspices, would have met with so untoward and untimely a fate.

The Bill as sent down from the Lords, although it contained some objectionable clauses, was the result of much patient and earnest inquiry on the part of several parliamentary committees, and embodied the suggestions of numerous gentlemen either interested in patent property or in trade and manufactures, or of great experience in the administration of the law as it now stands. It was moreover based on, or rather was produced by, the fusion of two separate Bills, one introduced by the greatest law reformer of the age, Lord Brougham, who, we fear, to our irreparable loss, has quitted the scene of his labours and his triumphs for ever; and the other by the present Master of the Rolls, who was till lately Her Majesty's Attorney-General, in which capacity he had ample means of ascertaining what remedies were required for the evils that existed. This Bill, then, from the passing of which so much was argued for the promotion of cheap or improved manufactures among us, by reason of the freedom it would give to the inventive genius of our countrymen, hitherto fettered by costly and frivolous, yet vexatious proceedings, under laws that were originally framed for monstrous and unjust purposes—the grant and maintenance of monopolies,—was introduced by a most intelligent member of the Government, with the concurrence and approbation of all parties in the House of Lords, prefaced, however, we grieve to say, with remarks against the granting of patents at all; from which we dissent *toto calo*, and to which we shall advert hereafter. The law officers of the Crown had charge of the measure in the Lower House, where it encountered, to the surprise and disappointment of members, patentees, and manufacturers, a series of objections that delayed its progress. The obstructors to Patent Law Reform, although numerically insignificant, as proved by their muster of force when they divided on one of the clauses, availed themselves so ingeniously of the forms of the House, that the Attorney-General, fearful of its being "dropped," was induced, in an evil hour, and too easily, to adopt the suggestions of his opponents, and to promise their engraftment on the original measure: for this purpose the Bill was withdrawn and almost entirely recast; some clauses omitted, some inserted, and many of the forms of procedure materially varied. On what was, for all business purposes, the last day of the session, the Bill was sent back to the Lords so altered and in such a sad state of confusion that there was scarcely time to read the amendments of the Commons,—certainly not sufficient for them to consider and debate upon them. From a desire to deal fairly with the public and the promoters, and from a conviction of what was due to themselves as the highest judicial Tribunal of the empire, and

* To be continued.

that it was ill-becoming and injudicious to legislate so hastily and ignorantly upon a measure believed to be of utmost importance to the manufacturing interest, the Lords were compelled, reluctantly, we believe, to postpone the Patent Law Amendment Bill till next session.

Although we are fully aware that in consequence of the dilatoriness with which the measure was advanced the different stages, it was perfectly competent for its opponents to prevent its passing; yet we cannot exonerate those who had charge of it altogether from blame. Would it not have been wiser for the Attorney-General to have resisted all attempts to alter the character of the Bill? to have divided on every occasion, if need be, and to have endeavoured to pass it as it came down, rather than to return it to the Lords so mutilated as to insure its loss? We imagine that, in his desire to effect some improvement, Sir Alexander Cockburn allowed his good nature to be too easily wrought upon, and adopted the suggested alterations of gentlemen who are the avowed enemies of any patent law at all.

"Timeo Danaos et dona ferentes."

We confess that we were much surprised to see so successful a barrister—one who has earned for himself the reputation of being what our American cousins would call an "awful 'cute chap'"—thus hoodwinked, and blindly led into the grievous error of invading the prerogative of the Crown, entrusted to the keeping of his superior, the Lord Chancellor of England, without previously consulting him. We allude to the acquiescence of the Attorney-General to the proposition to substitute a seal of Commissioners of Patents for the Great Seal of England, which is confided to the Lord Chancellor, and which it is his duty to order to be affixed to grants under letters patent from the Crown. That no discourtesy was intended we can readily believe, although it has every appearance of it. But it leads the world to suppose that there is not that good understanding, or that harmony of action, between the keeper of her Majesty's conscience and her Majesty's Attorney-General, both of whom it was intended should be Commissioners for Patents under the proposed Act, which, for the benefit of the public service, it is presumed should exist.

Whatever may have been the defects in the Bill, the public were willing to take it with all its imperfections, believing that time and practice would allow of their being easily and speedily ascertained. Further, that the injury they might cause until a short Act could be passed next session for their amendment would be amply compensated for by the general good—the cheapening of patents in the first instance, the security to poor inventors, and the destruction of patent pirates—which the passing of the Act would effect.

The conduct of Mr. G. L. Ricardo, Mr. Brunel, Mr. Cubitt, Lieut.-Col. Reid, and the Master of the Rolls, who, together with Lord Granville, constitute the six against all England for abrogating protection to intellectual property, is comprehensible; while that of Sir James Graham and Mr. T. Green is not, since they profess to wish to benefit inventors, and yet obstruct the passing of an Act that is to do so.

Let us, for the sake of illustration, take the case of a poor inventor, who has discovered a cheaper and simpler process of producing an article of very humble pretensions, but very general use. The idea was suggested to his mind by reflection and attentive observation. Previous study and the money spent in the prosecution of it we omit from consideration, because it appears to be the received opinion of these gentlemen that inventions are the results of accidents, like a man being born to a peerage.

Our inventor is possessed, then, of a notion, somewhat crude, for improving a process of manufacture. But before communicating it to his fellows, his employer, or the world, he is desirous of testing the truth of his conception; for men of this class and stamp are generally modest and diffident of their own merits and powers. His next step is to make the necessary experiment: to enable him to do

so funds are necessary. He therefore dispenses with his few enjoyments,—his extra pint of beer and jaunt into the country with his family perhaps,—and carefully hoards these savings, which he sometimes endeavours to increase by working overtime, or at something else when his regular day's labour is terminated. At last he has enough to commence with—the construction, perhaps, of a model apparatus. As he proceeds, according to his funds, new ideas develop themselves. He finds it necessary or more advantageous to give new shapes to some of the working facts, or to introduce some mechanical details that are employed in machines devoted to different purposes, or to effect a new combination of them. The labour of yesterday is rendered useless by the discovery of today. Still he proceeds gathering information from sources within his reach, and feeling his way, as it were, to the attainment of his object until he is suddenly arrested by an obstacle unseen and apparently insuperable. Then follows a period of sullen despair and almost heart-breaking grief, that few, save those who have experienced it, can imagine. The model is put aside unwillingly, and with many a sigh, while its maker returns to his daily toil; for he must labour to live. After a time grief yields to apathy, apathy to hope. The obstacle that appeared insuperable may be obviated, perhaps overcome. The workman takes out his model from the lumber closet, cleans and repairs it carefully,—for is it not the creature of his mind?—examines the difficulty, yet it baffles him. The cause of failure must be sought after, and when found, investigated. His spare time is now devoted to reading works on mechanics, chemistry, civil engineering, and to the inspection of machines in the neighbourhood. At last a faint glimmer of the true light breaks in upon him, which he carefully traces to its source, with caution and doubting; for he has before this been many times led from the right path by an *ignis fatuus*. On he goes, gathering strength, and storing up observation till the luminous source of knowledge is gained. Then to work again, reconstruct his model bit by bit, and day by day. Now it is completed. With what anxiety does it await the first trial. It is made. The invention succeeds. It is not for us to attempt to depict his joy; the scenes of future happiness and ease of those he loves best which crowd his dreams at night, and throng his imaginings by day. They can be better understood than described. After a time he bethinks him how to turn his invention to account. Naturally proud and wishful to show it, yet must he keep it a secret lest some patent-pirate lying in wait for such an occasion with an open patent, having a most comprehensive or rather indefinite title, pounce upon it, and clap it into his specification. Until within a few months such things were of common occurrence, and the true inventor had no redress.

The costliness of obtaining letters patent for the three kingdoms forbids him to think of doing so unaided, and he is compelled to seek assistance from a capitalist, to whom, as a *quid pro quo*, he assigns a share in the invention. Bad as is the position of an inventor under the old and unfortunately existing law, what would it be if the new order of things advocated by Mr. Ricardo and his five friends were introduced? In this case the man whom we have selected for example would, after years of actual physical and mental toil, have to trust to the generosity of his employer (!) to remunerate him for an invention which may make his fortune,—to beg for alms where he should be empowered to demand and enforce just and equitable payment. Without wishing to detract from the character of masters, they are still men, and as such liable to the commission of errors, to the perpetration of an act of injustice to an individual for their gain. Such things have been and are constantly done, and will be, we fear, until poor humanity is greatly changed,—purged of all its dross and selfishness.

Did it never occur to those gentlemen who preach the community of ideas,—the right of every one to appropriate the invention of another to his own profit without payment,—that their doctrine is identical with Communism of

the rankest, most extravagant, most *puissant* and offensive nature, worse even than what was formalised by Babeuf and practised by his followers, *des égarés*, during the excesses of the first French Revolution,—worse, infinitely worse, than the dogmas of Blanqui, Raspail, and Cabét.

It is certainly a novel, an unlooked-for, and a painful event to see *six* gentlemen of wealth, high standing, and presumed intelligence, join in the crusade against property. For we hold that one man has as clear and undoubted right to the produce of the labour of his brain as another has to that of his hands, and is as equally entitled, under wise laws, to be protected in the use and exploitation of it.

Have the enemies of intellectual property no fear that their teaching may take effect and become more extended in its application? that the poorer members of society may become so thoroughly convinced of the justice and wisdom of establishing *communautés des idées*, that they will insist upon *communautés des biens*? that they will say in the language of the reddest of the Rouges, "Take our inventions and discoveries: use them as you list. But, *aristo!* throw down thy coronet, admit us to share the privileges of thy order, and thy hereditary right to legislate for the nation. Millionaire! divide with us the wealth inherited from thy fathers, which they amassed in trade or commerce. And you who have achieved pre-eminence in your profession, as a lawyer, a builder, or engineer,—descend,—cast down the fortunes you have created and share with us in the drudgery of each occupation. Take you the pen and fag over the desk late and early,—you the trowel, and you the pick: *allons à l'œuvre!*"

The six apostles of this new doctrine never dreamt, probably, that it was capable of being so extended in its practice, and would doubtless be among the first to oppose its application in such manner. Yet, can they point out any difference between their preaching and that of the Icarians?

We have but one more fallacy in the teachings of these gentlemen to notice. It was asserted by Mr. Ricardo, and was to the effect that all great inventions were made and communicated to the world without the incentive of reward by grant of letters patent; that it is still the custom of *savans* to publish their great and wonderful discoveries gratuitously; and that it was only petty inventions, such as in the manufacture of sealing-wax, &c. that were sought to be protected by patents. It will be necessary, in the first place, to ascertain as far as practicable, what is meant by "great discoveries." If he means discoveries in abstract sciences, the revelations of the existence of a new planet, or laws of nature, properties of bodies, or any phenomenon hitherto undreamed of, such as the circulation of the blood, the principle of gravitation, the law of storms, the spheroidal property of fluids,—then is Mr. Ricardo quite correct: discoveries of this kind never have been protected, nor do we see how they could be made the subject of patents; or, even if they were, how the discoverers would be benefited thereby. But if he means to state that great inventions of practical utility for the purposes of man have not been generally patented, especially during the last three centuries, then is the honourable gentleman entirely wrong. The examples instanced of gunpowder and printing are so *mal-à-propos* as to render the introduction of them ridiculous. Gunpowder and printing were both invented before patents for inventions were granted, and at a period when intellectual property was not understood, and as unsure from lawless violence as any other description of property. Inventions then were kept profound secrets, communicated under the most solemn and fearful oaths, and for want of the very protection now deprecated, often expired with their authors. So that society lost a permanent benefit, in the shape of a better and cheaper article of consumption, rather than reward the inventor by payment of royalty for fourteen years. Why, the most cursory inspection of the list of patents granted will show the falsehood of the proposition.

Did Watt disdain a patent for his improvements in the steam-engine, which have effected the most wonderful, the most rapid, and most radical revolution in the position of men that ever occurred, lifting them from the state of mere brute hewers of wood and drawers of water into that of educated directors of an obedient and all-powerful servant?

Did Stephenson neglect to secure advantages by patent to himself from his invention of the locomotive engine? Have not Messrs. Cooke and Wheatstone, and Mr. Bain, sought to be protected in the exercise of their several inventions of the modes of applying electric currents to the communication of intelligence, by their action in deflecting the needle, or in the decomposition of certain chemical compounds, from the working of which, under monopolies secured by patents, Mr. Ricardo is endeavouring to realise something handsome, as would appear by the charges of the Electric Telegraph Company, of which he is chairman? And, lastly, did not Sir Marc Isambard Brunel patent his most important mechanical inventions?

We might go on citing fresh examples, and accumulating evidence *ad infinitum*, that what are termed great inventions, have been, with scarcely an exception, patented.

As regards what Mr. Ricardo designates petty inventions, we confess that we are surprised that he, bearing a name known and honoured as that of one who did so much for the elucidation of the true principles of political economy, should be so unconscious of the importance of "petty inventions" as may be fairly implied from the disparaging manner in which he spoke of them. Would he have us suppose that he considers the invention of a process or apparatus which effects the cheapening or improvement of an article consumed by the million, to be of little or no moment? Surely he cannot be ignorant of this first principle of political economy,—that reduced cost increases the demand, consequently the supply, and therefore the employment of persons engaged in that particular branch of manufacture or trade.

We have been induced to dwell thus long upon the justice and necessity of patent laws, as being the best means of promoting inventions by rewarding inventors with the grant, for a comparatively very brief period, of the profits accruing from their inventions, because we believe great efforts will be made next session, if not for the abrogation of all protection to intellectual property, at least to render the law under which it is to be obtained as ineffectual as possible. It has been, and no doubt will be, during the recess, industriously circulated that all monopolies are injurious to the general interest of the commonwealth, and that the wisest and most beneficial plan would be for the state to reward the inventor and throw his invention open to the world. This is another dogma of Communism, which inculcates the duty of the state to do every thing; and is as disagreeable to the ideas of Englishmen as it is impracticable. Who can determine the merit and worth of an invention? Was not Solomon de Caus doomed to wearisome imprisonment in the cell of Bicêtre, and treated as a madman, for his crude invention of the steam engine? What estimate did Napoleon form of Fulton's steam ship? or did poor Gray, the projector of railroads, find the public such generous paymasters to those that serve them? Instances of merit unappreciated and unrewarded so abound at every turn in the history of all nations, and also of the gross acts of injustice which men collectively perpetrate, but which, individually, they would blush at, that no one, after a little reflection, could fail being convinced of the folly and unfairness of this scheme.

Nor is the proposed attack to be limited, we fear, to patentable inventions alone. It has been openly suggested, and may be again for aught we know, to abolish copyright, and to give authors a Government grant, or pension, instead. We therefore think that all who live by the exercise of their intellect, spinning out the fibres of their brains,—artists, writers, sculptors, inventors, and designers, should be up and stirring in the matter; should use their best endeavours to secure for them-

selves and for those who may come after them, a wise system of legislation for the protection of their property in the works of their imaginations, and to insure that the protection may be cheaply and speedily obtained, and that it may be efficient. In short, that men of the class alluded to may have their property as well secured to them as are the paternal acres to Lord Normanrobber, or personal property to any banker, merchant, trader, or other.

To remedy the great inconvenience and serious injury which the postponement of the Patent Law Amendment Bill will inflict upon the public generally, and especially those who, trusting to the faith of Government, have exhibited their inventions in the Crystal Palace, we suggest that active steps should be immediately taken to obtain, by an order in council, a prolongation and extension of the powers of the recent Act for the Provisional Registration of Inventions.

According to this Act, which expires in May, protection may be obtained till that time for an invention, by the deposit of a model thereof in any building named by the Board of Trade for that purpose, without, however, the acquisition of any right to work the invention as under a patent. We propose to extend the duration of the Act six or twelve months longer, in order to give ample time for the framing and passing of a well-considered and digested system of Patent Law Reform, and to accord protection for that period to inventions on the deposit of models or working drawings, and descriptions thereof, in the Designs Registration Office, Somerset-house; also to extend the protection to depositors so as to enable them to "make, use, exercise, or vend their said inventions" for the term expressed, within the three kingdoms and colonies; and further to provide, when the future Patent Law Amendment Bill shall have passed, for powers to the commissioners or parties entrusted with its administration, to grant patents for all inventions that have been protected under the Provisional Registration Act, and which patents should bear date from the time when the provisional registration was effected. The fee in this case may be small, 5*l.* for instance, and would suffice to defray the additional expense in the shape of wages to clerks, which would be caused by increased business in the Designs Office, where, fortunately, the whole of the machinery for carrying out an Act of this nature is ready at hand, and thoroughly organised.

The operation of this short Act would, doubtless, afford several useful suggestions which it would be well to consider in framing the future Bill, and would determine the question whether cheap patents, in the first case, are injurious. It would, also, we presume, quicken the zeal of the law officers of the Crown by showing that no great public injury would result from dispensing with their services in these matters altogether; and, by reason of the pecuniary loss it would cause, might be considered by some as meet punishment for their neglect of as important a measure of reform as has ever been entrusted to the care of any one for years past. For we confidently believe, and unhesitatingly assert, that had Sir Alexander Cockburn resisted all attempts to destroy the integrity of the measure, or even had Lord Lansdowne and Lord Minto suggested the sinking of the dignity of the House of Peers for the occasion, and insisted on dividing on the motion of Lord Montagu, the Patent Law Amendment Bill would, by this time, have been passed, and been hailed by the inventive genius of the country as, so far as it went, a salutary act of justice, and by the manufacturing interests as one of wisdom and necessity. That such is the opinion of the public there can be little doubt, and we believe the verdict of any twelve good and true men, empanelled on a jury, would be, on hearing a statement of the birth, nurture, and death of the late proposed Bill,—“Died through culpable and wanton neglect by its promoters.”

IRON PAVEMENT.—An ironfounder at Glasgow has patented ridged and furrowed cast-iron plates for pavement.

A HINT TO ECCLESIOLOGICAL CRITICS.

EXAMPLE BETTER THAN PRECEPT.

WITH your permission I will address to you a few observations having reference to the letter of "An Old Professor," in your last week's publication. My object is not to question whether the castigation he gives some of the young architects of Bristol be well merited or not, but to suggest as probable what occurred to my own mind on perusing his very sensible observations, having as I had fresh in memory a precisely similar case, and one open also to the same strictures, enacted by certain members of his own society on their recent visit to Bristol.

I allude particularly to the manner in which the subject of the Bridgewater Church "renovation," if this *must be the word*, was introduced, and not only *encouraged*, but positively enlarged upon also by the chairman in a tone, and under circumstances, most discredit to himself.—May not this then have furnished the example, as well as the encouragement to these youngsters to express themselves without reserve upon certain passages of Professor Willis's paper, complained of by "An old Professor?" I am inclined myself to think so, and to observe moreover that if these societies so far forget themselves as openly to attack the works of the professional man, who cannot go with them to the same excess of "superstitious veneration for ancient forms and objects merely because they are ancient," it can scarcely be wondered at that these lads, who look forward to the time when they will be themselves members of this truly noble profession, should have been guilty of expressing their disrespect, *it may be indiscriminately*, for the opinions of the members of a society who countenance these attacks.

I would therefore in all kindness recommend the young *unprofessional* members of Archæological Societies to be somewhat more modest in their deportment and reserved in the expression of their opinions on the mode adopted by an architect in carrying out the renovation or enlargement of our ancient buildings; and believe that it is just possible that they may be wrong in their impressions, and otherwise mistaken in their conclusions, in paying only a hasty visit to and making but a superficial survey of work in a half-finished state.

The architect of the works in question has to thank you, Mr. Editor, for extending to him your usual gentlemanly feeling and consideration for his good name, by suppressing all mention of this matter in your notice of the proceedings of the Archæological Institute.

W. H. B.

INCREASE OF BUILDINGS.

THE increase of buildings in Great Britain will doubtless be a subject of much interest and importance to the readers of *THE BUILDER*. While the present paper points out to the curious those districts in which building has increased rapidly, it at the same time directs the attention of the speculator to those which, either from increase of population or the value of house room, would be likely to prove the best speculation for building.

In the present paper it is intended to show the increase of buildings in London during the last ten years.

The census return which has just been presented to the Houses of Parliament, forms a valuable collection of facts on this point.

In comparing the number of houses in 1841 with those in 1851, to be enabled to form fair and general inferences, due regard must be had to the number of uninhabited houses, as well as to the number building.

The following tables show the number of inhabited houses, the number uninhabited, and those building, as enumerated on the 7th of June, 1841, and the 31st of March, 1851.

TABLE I.—1841.

No. of District.	Name of District.	Houses.		
		Inhabited.	Uninhabited.	Building.
1	Kensington	10,962	445	656
2	Chelsea	5,608	178	100
3	St. George, Hanover-square	7,830	339	158
4	Westminster	6,430	268	52
5	St. Martin-in-the-Fields	2,450	70	1
6	St. James, Westminster	5,514	118	43
7	Marylebone	14,169	583	193
8	Hampstead	1,411	72	6
9	Pancras	14,798	579	311
10	Islington	5,508	293	314
11	Hackney	7,192	318	158
12	St. Giles	4,959	186	29
13	Strand	4,327	337	78
14	Holborn	4,403	340	19
15	Clerkenwell	6,319	299	79
16	St. Luke	6,335	243	24
17	East London	4,796	236	19
18	West London	3,010	337	12
19	London City	7,921	373	82
20	Shoreditch	12,632	456	199
21	Bethnal-green	11,752	390	180
22	Whitechapel	8,711	495	43
23	St. George-in-the-East	6,953	243	24
24	Stepney	14,161	557	128
25	Poplar	5,086	121	12
26	St. Saviour, Southwark	4,459	162	20
27	St. Olave, Southwark	2,421	91	25
28	Bernoldsey	5,471	263	33
29	St. George, Southwark	6,083	357	78
30	Newington	4,370	267	92
31	Lambeth	17,791	514	351
32	Wandsworth	6,459	271	80
33	Camden	6,848	236	119
34	Rotherhithe	3,420	112	16
35	Greenwich	11,995	497	186
36	Lewisham	3,996	190	84
All London		263,737	11,324	4,032

TABLE II.—1851.

No. of District.	Name of District.	Houses.		
		Inhabited.	Uninhabited.	Building.
1	Kensington	17,292	1,111	740
2	Chelsea	7,629	261	110
3	St. George, Hanover-square	8,735	452	153
4	Westminster	6,647	276	65
5	St. Martin-in-the-Fields	2,333	145	11
6	St. James, Westminster	5,460	299	6
7	Marylebone	15,655	658	266
8	Hampstead	1,719	77	29
9	Pancras	18,731	826	358
10	Islington	13,558	653	339
11	Hackney	9,881	505	193
12	St. Giles	4,773	331	21
13	Strand	3,938	252	1
14	Holborn	5,517	193	15
15	Clerkenwell	7,259	296	19
16	St. Luke	6,421	246	20
17	East London	4,755	202	8
18	West London	2,745	180	4
19	London City	7,349	1,127	17
20	Shoreditch	15,433	692	151
21	Bethnal-green	13,370	387	124
22	Whitechapel	8,832	321	21
23	St. George-in-the-East	6,521	178	23
24	Stepney	16,146	653	222
25	Poplar	6,882	336	122
26	St. Saviour, Southwark	4,913	243	12
27	St. Olave, Southwark	2,835	75	1
28	Bernoldsey	7,095	390	81
29	St. George, Southwark	7,005	427	100
30	Newington	10,468	575	273
31	Lambeth	20,599	1,214	314
32	Wandsworth	8,290	598	287
33	Camden	9,417	197	237
34	Rotherhithe	5,231	196	67
35	Greenwich	14,323	1,072	410
36	Lewisham	5,536	432	265
All London		307,722	16,889	4,817

It appears from the above tables, that the number of inhabited houses in London, in 1841, was 263,737, and in 1851 they had increased to 307,722; or at the rate of nearly 17 per cent (16.7). The number uninhabited in 1841 was 11,324, and in 1851—16,889, being an increase of 5,565, or 49 per cent.; while the number building at the same period was 4,032 and 4,817 respectively, being an increase of 785, or 19½ per cent.

The facts shown in these tables are very remarkable illustrations of the rapid growth of some districts, and the decrease, or almost stationary, condition of others. Take, for instance, the first in the tables, viz. Kensington:—we have 10,962 inhabited houses in 1841, and 17,292 in 1851, showing an increase of 6,330, or about 60 per cent. (at the same time bearing in mind that the rate of increase of all London is under 17 per cent.); while the number uninhabited in 1841 amounted to 445, and in 1851 to 1,111, being an increase of 666, or upwards of 128 per cent. (the number building, 656 in 1841, and 740 in 1851. If we add the uninhabited to the uninhabited the results will show that the total number of buildings in Kensington in 1841 was 11,447 and 18,403 in 1851, or an increase of 6,956. Again, in the City of London the

inhabited houses in 1841 numbered 7,921, and in 1851 only 7,329, being a decrease of 592!—the number uninhabited in 1841 was 573, and in 1851, 1,127, or an increase of 554, or nearly double. If, however, we add these two results together they will show in 1841, 8,494, and in 1851, 8,454, or the actual decrease of houses in the City of London to be 40; while, at the same time, the number building was 82 and 17 respectively.

But, perhaps, the most striking circumstance disclosed by these tables is the enormous increase which has taken place in Islington during the last ten years. The number of inhabited houses in this district in 1841 was 5,508, and in 1851 they numbered 13,558, being an increase of 7,050 inhabited houses, or 83 per cent. in the ten years (0.817 years, the period between the two censuses not being ten complete years). The number uninhabited in 1841 was 293, and in 1851, 653, or more than double; while 314 was building in 1841, and 339 in 1851.

With a view to further illustration, I have prepared the following table (Table III.), showing the actual increase in the number of the various classes of houses, in each district, during the period from 1841 to 1851. It will be seen that where the sign minus (—) has been placed before the figures it is intended to express the number decreased in the ten years:—

TABLE III.

No. of District.	Name of District.	Actual Increase of Houses from 1841 to 1851.		
		Inhabited.	Uninhabited.	Building.
1	Kensington	6,330	626	84
2	Chelsea	1,991	83	10
3	St. George, Hanover-square	1,165	113	—23
4	Westminster	208	68	3
5	St. Martin-in-the-Fields	—116	76	7
6	St. James, Westminster	—130	181	—
7	Marylebone	1,736	67	—167
8	Hampstead	309	5	23
9	Pancras	3,965	247	—46
10	Islington	7,050	360	225
11	Hackney	2,969	187	5
12	St. Giles	—181	145	—8
13	Strand	—369	245	—4
14	Holborn	—56	—197	—
15	Clerkenwell	313	85	—60
16	St. Luke	36	3	—4
17	East London	—11	—34	1
18	West London	—285	—157	—8
19	London City	—682	554	—65
20	Shoreditch	2,791	236	—48
21	Bethnal-green	1,359	—9	—56
22	Whitechapel	—2	—174	—23
23	St. George-in-the-East	166	—65	—1
24	Stepney	1,982	306	94
25	Poplar	1,816	155	1
26	St. Saviour, Southwark	—46	61	—17
27	St. Olave, Southwark	—16	—24	—
28	Bernoldsey	1,421	127	43
29	St. George, Southwark	342	70	62
30	Newington	1,068	318	181
31	Lambeth	2,729	651	197
32	Wandsworth	1,831	327	198
33	Camden	2,571	689	118
34	Rotherhithe	414	51	—
35	Greenwich	2,428	578	154
36	Lewisham	1,970	242	181
All London		14,985	5,565	785

London is divided into 36 Registration Districts. The number of inhabited houses of 11 of these has decreased since 1841, and the remaining 25 increased. The following is a list of those decreasing, arranged in the order of their intensity:—

No. of District.	Name of District.	Inhabited Houses.		
		Inhabited.	Uninhabited.	Building.
1	London City	—682	554	—65
2	Strand	—369	245	—4
3	West London	—285	—157	—8
4	St. Giles	—181	145	—8
5	St. Olave, Southwark	—16	—24	—
6	St. James, Westminster	—130	181	—
7	St. Martin-in-the-Fields	—116	76	7
8	Holborn	—56	—197	—
9	St. Saviour, Southwark	—46	61	—17
10	Whitechapel	—2	—174	—23

It will be observed that these districts are all in what may be called the "Heart of London." In drawing conclusions, however, from these results, it is necessary that due regard should be had to the number of uninhabited houses. Now, although the number of inhabited houses in St. James's, Westminster, has decreased 130, yet we find, by referring to the "uninhabited" column of the preceding table (col. 4), that this class of houses has increased 181; which shows the actual number of houses in this district to have increased by 51. It is also necessary to ascertain the average number of persons to each inhabited house, as well as the extent of the district. In order to supply this,

the following table has been constructed, showing the average number of persons to each inhabited house, the area in acres of each district, together with the average elevation of feet above high-water mark:—

TABLE IV.

No. of District.	Name of District.	No. of persons to an inhabited house in 1851.	Area in Acres.*	Elevation of feet above high-water mark.*
1	Kensington	6.9	7,382	14
2	Chelsea	7.4	820	12
3	St. George, Hanover-square	8.3	1,131	34
4	Westminster	9.9	832	2
5	St. Martin-in-the-Fields	10.6	294	35
6	St. James, Westminster	10.8	176	43
7	Marylebone	9.9	1,500	100
8	Hampstead	7.0	2,045	350
9	Pancras	8.9	2,380	80
10	Islington	7.0	3,073	88
11	Hackney	5.9	3,910	55
12	St. Giles	11.1	232	68
13	Strand	11.4	167	60
14	Holborn	10.9	188	53
15	Clerkenwell	8.9	339	63
16	St. Luke	8.4	260	48
17	East London	9.3	143	42
18	West London	9.3	139	28
19	London City	7.6	389	38
20	Shoreditch	7.1	646	45
21	Bethnal-green	6.8	790	36
22	Whitechapel	6.8	309	28
23	St. George-in-the-East	7.9	254	15
24	Stepney	6.8	1,160	16
25	Poplar	6.9	2,450	10
26	St. Saviour, Southwark	7.8	209	2
27	St. Olave, Southwark	8.2	125	2
28	Bernoldsey	6.8	614	0
29	St. George, Southwark	7.4	270	0
30	Newington	6.2	630	—2
31	Lambeth	6.8	3,660	3
32	Wandsworth	6.1	10,683	22
33	Camden	5.9	4,465	1
34	Rotherhithe	6.3	770	0
35	Greenwich	6.9	4,570	8
36	Lewisham	5.9	16,403	28
All London		7.6	73,715	39

For those unacquainted with decimals, it would be better to leave out all consideration of the decimal point, in column 3 of the preceding table; and the figures will then show the number of persons to ten inhabited houses.

I cannot conclude the present paper without giving one more table, showing the average annual value of houses, and the poor-rate in the pound of house rent; hence with these the poverty of the district, and the annual number of deaths to 10,000 inhabitants, which exhibits the degree of healthfulness.

TABLE V.

No. of District.	Name of District.	Average Annual Value of Houses.	Poor-rate in the Pound of House-Rent.	Annual Number of Deaths to 10,000 Inhabitants.
1	Kensington	£ 43	s. 9	211
2	Chelsea	48	10	185
3	St. George, Hanover-square	110	0 4	186
4	Westminster	36	9	280
5	St. Martin-in-the-Fields	110	0 9	240
6	St. James, Westminster	128	0 6	312
7	Marylebone	71	0 10	227
8	Hampstead	40	—	220
9	Pancras	41	0 10	222
10	Islington	35	0 7	200
11	Hackney	25	1 6	197
12	St. Giles	60	1 1	269
13	Strand	66	0 11	242
14	Holborn	32	0 8	266
15	Clerkenwell	33	1 2	243
16	St. Luke	28	1 7	276
17	East London	34	1 9	253
18	West London	65	1 4	302
19	London City	117	1 2	214
20	Shoreditch	20	1 8	251
21	Bethnal-green	9	2 9	239
22	Whitechapel	22	1 6	280
23	St. George-in-the-East	32	1 7	299
24	Stepney	20	1 4	242
25	Poplar	44	1 2	241
26	St. Saviour, Southwark	39	1 6	282
27	St. Olave, Southwark	35	1 7	291
28	Bernoldsey	18	2 8	264
29	St. George, Southwark	22	1 9	267
30	Newington	22	1 6	272
31	Lambeth	28	1 5	293
32	Wandsworth	29	1 5	198
33	Camden	25	0 10	197
34	Rotherhithe	32	1 0	277
35	Greenwich	22	1 7	238
36	Lewisham	27	1 0	173
All London		40	1 1	252

* Estimated for the Registrar-General by Capt. Dawson, R.E. of the Tithe Commission.

† From the return of real property assessed to the poor-rate, and income tax for the year ending 5th April, 1850.

‡ From the weekly report of the Registrar-General, No. 6, 1850.

§ From Appendix to Ninth Annual Report of the Registrar-General.

It is not necessary to make any comment on the last two tables, as they explain themselves.

It is hoped that the facts now brought forward will induce others to take up the subject, and analyze those given so briefly in the present paper; the results of which will not only be of interest to the builder, but also to the philanthropist and sanitary agitator.

R. THOMPSON JOPLING.

THE ROYAL ACADEMY AND THE ART-UNION OF LONDON.

THE Royal Academy closed its exhibition on Tuesday evening (the 19th inst.) with a conversation, when many of the pictures, thanks to the gas, were seen for the first time. By keeping their exhibition open beyond the usual day the Academy have caused considerable and even serious inconvenience. The council of the Art-Union of London had issued, by post, to all the members, 60,000 tickets of admission for the annual exhibition of the works of art bought by the prizeholders, commencing on the 11th of August,—the usual number of days after the date on which the Academy had always closed. The cost of this, no trifle, is of course wasted, to say nothing of the disturbance in so large an organisation. For this the Academy would probably not care, judging from the want of proper appreciation of the labours of the Art-Union which they have displayed on several occasions; but if it had occurred to them that by enlarging the time they were keeping artists out of their money, in some cases a matter of life and death, they might probably have given up the intention. We have seen two letters from artists containing pitiable statements in this respect.

It is a curious fact that the Academy were thirteen years before they resolved that the two honorary secretaries of the Art-Union should receive cards for their "private view." They came to this determination ultimately, and one of the officers of the Art-Union was actually congratulated by three different members of the Academy at different times on the honour! Strange to say, however, the cards have never been sent. This, we need not say, is a matter rather for gossip than serious complaint: the Academy have a right to issue their invitations as they please; and if a number of gentlemen do give up their time freely and continuously (and without even the shadow of a personal motive) to serve, as they fancy, the arts and artists of the kingdom, the Academy are certainly not bound to afford the slightest evidence of their recognition of these well-meant endeavours. Nevertheless there is more than one member of the Academy who in his time (to take no higher ground) has had reason to be glad that a fund was thus raised and publicity to works thus given, and some of their less fortunate brethren out of the walls could tell, and would tell if they were asked, of distress and misery averted by the operations of the Art-Union of London. Luckily the active members of this association need no extraneous stimulus to go forward with what they know to be a good work.

On the day that these remarks will appear about 4,000l. will have been handed to the artists of the metropolis by the Association for 110 pictures selected by prizeholders, and nearly 5,000l. for illustrative drawings, engravings, sculpture, &c. Of the 110 pictures 28 were obtained from the Royal Academy at the cost of 1,160l.; 36 from Society of British Artists, 1,224l.; 19 from the Portland Gallery, 660l.; 10 from the Water-Colour Society, 313l.; 13 from the New Water-Colour Society, 195l.; and 4 from the British Institution, 85l. The exhibition will open on the 1st of September, and will comprise a certain number of the works purchased in former years, besides those of the current year.

COMPETITION.—SWANSEA UNION.—The guardians of this union, on the 14th instant, selected the plan bearing the motto "Wales" for the intended new workhouse. The successful architects are Messrs. Whichcord and Ashpitel, London.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Solemn Opening of the great Art Exhibition, Brussels.—In assigning to the exhibition of the fine arts in Belgium a triennial period, the committee seems to have been well inspired. Even the exhibitions of Paris prove, that being too frequent, they lose their *prestige*. The favourable circumstances connected with this year's art-show, have rendered it especially rich and interesting; and Brussels can, at this moment, boast of being the centre, not only of Belgian, but European art-attraction! Although the edifice built for the exhibition has been completed within a few weeks' time, it answers every purpose, and its system of lighting is such, that every object exhibited enjoys the same advantages of a perfectly adequate illumination, which, however, in a few cases, is too strong. The architect is M. Cluysenaer. The gallery, nearest to the front, and parallel to the place of the Museum, is divided into three compartments. The centre is occupied by a showy and vast *salle*, in which rises the statue of Charles of Lorraine, which has not been disturbed from its original position. Doors opening on both sides of this *locale*, give access to the rooms for smaller pictures, and where the light falls from a less height than in the gallery destined for the large canvasses. This latter extends over the whole length of the edifice.

Sculpture has not been placed separately in the new edifice, but following the example of the last Paris exhibition, groups and statues have been intermixed with the paintings. The drawings, engravings, and lithographs have been placed in the Rotunda, which precedes the rooms of the Academy, and even in those of the Museum and on the staircase. This is the more to be regretted, as the exhibition of this year presents some remarkable specimens. The number of pictures, sculptures, drawings, aquarelles, miniatures, engravings, &c., sent from every part of Europe, amounts to 1479, instead of the 1187 exhibited in 1848. The jury have already selected some pictures for the prizes of a lottery organised under the superintendence of the art-committee. Amongst them are the "Harvest," by M. Tschaggeny; "A Slavian Family emigrating from Hungary," by M. Czermack, of Prague; "The Return from the Hunt," by Mosenhart, of Antwerp, &c.—On the festival opening of the Exhibition (15th inst.) M. Brouckere, President of the Administrative Commission, delivered an address to King Leopold, in which he complimented Belgium on having—like in olden times of the Batavian Republic, become the centre of European art. (?)

Sicily.—In the digging up of some foundations at Catania, the foot of a statue has been found made of *chalcodony*. It belongs to a female represented in a sitting position, and is covered with a sandal. The *chalcodony* is a semi-precious stone, very tough and hard to work, and none of the ancient authors state that statuary work has ever been made of it. Professor Camellaro, of Catania, is compiling a paper on the subject. It is most probable that, as in the times of art-decadency, parts of statues were made of different and more costly stones, the artist in this instance has chosen to make a foot of *chalcodony*.

Extension of the City of Vienna.—The exterior ramparts of this capital date from the year 1740, when they were raised hastily to defend it against the great Hungarian leader Ragocsy. It has been since often in contemplation to extend these old limitations, and thus to incorporate several adjacent villages with the town. Fiscal and political reasons have hitherto prevented it. It has been, however, decided now, that whenever the line of the Vienna-Trieste Railway runs parallel with that rampart, it shall be demolished, and the line considered as the limits of the metropolitan district, which will become thus increased by several populous villages. Unfortunately, however, the huge fortress which is now erecting at one of the barriers of Vienna, will be also drawn within the territory of that important and handsome capital.

Munich Art-Union.—M. Ludwig Thiersch, son of the archæologist, has sent hither from

Rome a picture which attracts greatly the attention of the Bavarian art-public. It represents a scene out of *Job*, the oldest amongst the sacred records, where he is derided by his wife, and consoled by his three friends in his dire misfortunes. (II. 5, 9, 13.) The grouping and colour are said to be excellent.

Egypt.—M. Latîn de Laval, a French *savant*, has lately visited Egypt and the Sinai peninsula by order of Government. He has made and collected 684 casts of basso-reliefs and inscriptions for the Paris galleries of art.

Paris Academy of Sciences: a Diving-Vessel. M. Cavé, has presented to the Academy a memoir on a diving-vessel, of which there is now a model at work in the Seine, opposite the Institute. On the deck of a dredging steam vessel, a large chamber has been fixed, 5 metres high and 7 metres broad. In the midst of this space is a circular opening, which passes through the vessel, and in which slides a cylinder, in the way of the joints of a telescope, reaching to the bottom of the river. The junction with the air-chamber is made by a slough of leather fixed at one end on the deck, and on the other to the extremity of the cylinder, which can be raised and lowered according to the depth of the water. If the tube is thus arranged, it suffices to compress the air in the chamber, the water rushes off at the under sides, a portion of the bed becomes dry, and the workmen can move about with ease. A sort of ante-chamber with two doors, and performing the function of a sluice, allows access to the main chamber without interrupting the work. The model now in operation on the Seine is but one of a reduced scale, compared with the two made by M. Cavé for the works of the barrage of the Nile.

The Statue of Hanemann.—has been inaugurated at Leipzig with great festivity, and its huge dimensions tally well with the wide spaces of the esplanade which surround the town. The concourse of people, some from distant parts of Germany, has been very great. It has been especially remarked by one of the speakers, that "it is a curious fact, that the statue of a man should be thus inaugurated in a town, from whence the living has been expelled. If history is called an avenger, art offers a more sure and harmless rehabilitation."

THE BRITISH ARCHÆOLOGICAL ASSOCIATION IN DERBY.

THE meeting of the British Archæological Association has been very successful. Sir Oswald Mosley, the president, read an able address on the first day, and was followed by Mr. Pettigrew and Sir Fortunatus Dwaris. A delightful excursion was made on Tuesday to Chesterfield, Bolsover-castle, Hardwicke-hall, and Winfield Manor-house, on which last a paper was read by the Rev. Mr. Errington. We shall give some details next week.

EXHIBITION AT THE ANTIPODES.—Accounts from Sidney, N. S. Wales, state, that some of the patriotic citizens of that distant land make preparations for establishing an exhibition like that of the great metropolis—an undertaking the more important, as Australia has not been adequately represented in the Glass Palace. Dr. Lang and his party propose that the exhibition comprehend natural objects, products of industry and art, and include all the five confederated provinces of Australia.

NEW INFIRMARY AT DUNDEE.—Of thirty designs deposited in response to advertisement offering premium of 50l. for that selected, several were submitted to Professors Christison and Syme, of Edinburgh, who previously furnished a block plan of the arrangements required, and three designs were marked out by them as best embodying their ideas. Time has been taken to consider the various designs, and the whole have been exhibited in the hall of the seminaries. The *Northern Warder* says, that in glancing over them he was "struck to find that the most enlarged charity cannot embrace above six designs at all worthy of criticism. The others are for the most part evidently the offspring of aspiring joiners, on whom the advertised premium has operated."

DETAILS OF THE CORNARI PALACE.



PALAZZO DE' CORNARI, VENICE.

This is one of the palaces at Venice built by the family of the Lombardi, in the early part of the sixteenth century: it is situated on the Grand Canal, midway between the Rialto and the Pisani Palace. It much resembles in the two upper stories the palace of the Vendramin Calergi (also by the Lombardi). The whole of the front next the canal is of Istrian stone, the lunettes and small panels being filled with verd antique and other precious marbles.

The detail exhibits the centre window in the middle or one-pair story; one of the small windows on the ground story, with a cap, &c. to same at large, and the archivolt and cornice to the door. This is one of five palaces lately bought by Madame Taglioni, and now under repair, this palace being that intended for her own residence. The palace is 64 feet high and about 74 feet long. J. T. W.

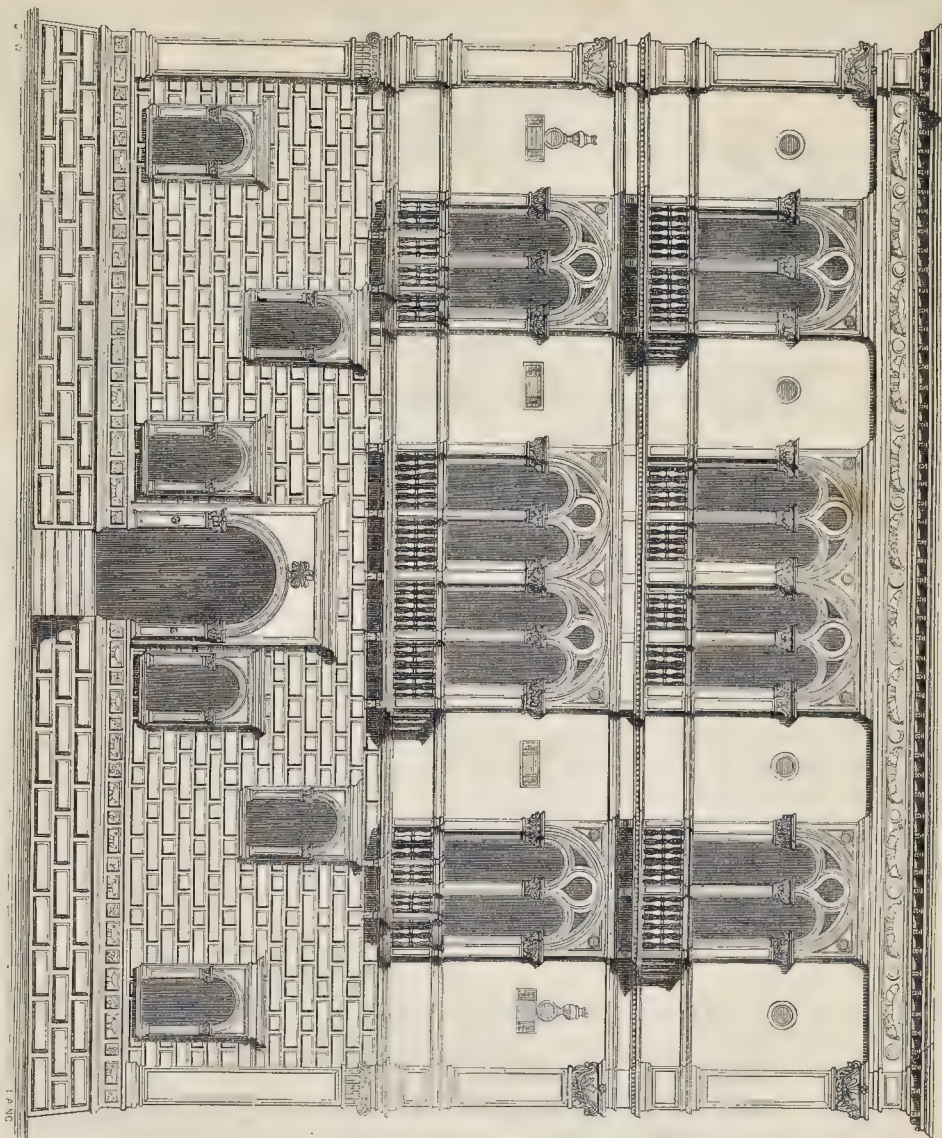
RAILWAY JOTTINGS.

THE excursion system, as we lately remarked, is by no means absorbed this season, as might have been anticipated, in metropolitan excursions. On the contrary, the provincial excursions to and fro are swelling extraordinarily, both in number and in magnitude. Think of a single train with 3,000 excursionists! Such a train, comprising ninety-eight carriages, the other day conveyed the poor hard-working, dust-breathing, close confined, cotton spinners from nine or ten mills at Preston on a life-giving trip, through the fields and villages, to Liverpool, by Bamber-bridge, and Loslock. The driving of three thousand nails into as many coffins, was doubtless thereby postponed, at least for a few days longer. "The day was spent joyfully:"

who can doubt it? and what life-giving medicine can compete with a light heart in pure air—could it only be taken in adequate doses regularly once or twice a day with a little nourishing food? A contemporary announces it as rather a strange and unlooked for fact that one of the recent "monster excursion trains" which have been spinning along from cotton mills and other workshops, and scouring across the country hither and thither, consisted of 800 members and friends of a respectable corporation at Hastings, called the "Burial Society," who started thence in twenty-six carriages, drawn by two engines, for a day's recreation, "amid the cheers of a large party of spectators." It is clear that the Hastings "Burial Society" not only "have sufficient life and spirit for such an undertaking," but that they are long-headed fellows, who know how to reduce the expenses, and thereby increase the funds and promote the prosperity of their provident corporation. There can be nothing more appropriate than the sagacious patronage of the excursion system by burial societies.—In confirmation of the truth of our former remarks on the general sustenance and extension of the excursion system, even during the present exceptional season, we have the *Times*, in a leader, testifying thus to the fact:—"This morning the railways of the kingdom will disgorge, as usual, their countless swarms of excursionists at every terminus where novelty or amusement is to be found. The power of attraction is not confined to the Great Exhibition alone. Just now all England is on the move. We verily believe that a levy *en masse* could not 'mobilize' a larger portion of our island population than is to be found at this time on the various lines of communication and traffic. The Crystal Palace secures a share, but only a share, of these extraordinary migrations.

Windsor, Cheltenham, Southampton, Dover, the ports, the dockyards, the watering-places, the universities, cathedral cities, manufacturing towns, every spot, in short, containing or promising an object of interest, is opened to visitors at a few shillings a head. Englishmen are beginning to live on railways like Chinese on rivers, or Dutchmen on canals. The rail has an architecture, a *cuisine*, and a literature of its own. At a railway station a traveller may now deposit his property, change his apparel, take his refreshment, and purchase his library. Nor does our locomotion any longer restrict itself to trips of a few hours. The system of return tickets has been so rapidly developed that a man can frank himself for weeks together. Seven days is the period now commonly allowed for London. The South-Eastern and South-Western lines offer a month or more for Paris. The lakes of Killarney are set at a fortnight, and the Scottish highlands at half as much. Even the secluded regions of Scandinavia are now brought within the sphere of commercial speculation, and the Eastern Counties offer attractive excursions to Denmark, *via* Lowestoft and Hjerling. All this too, be it remembered, is over and above the usual amount of voyaging among the wealthier classes of our countrymen. The squares and terraces of the west end, the inns of court, and the Houses of Parliament, dismiss their annual rovers as before; but the fancy, as well as the faculty of travel, has now struck wider root, and half the nation is on the rail. It is not to be forgotten that these opportunities of the poorer classes are mainly due to that wise liberality of directors which suggested so large a reduction of the original fares; nor can we deny that up to this moment the prodigious traffic of the season has been conducted without serious accident." The writer, however, most properly

THE CORNARI PALACE, VENICE.

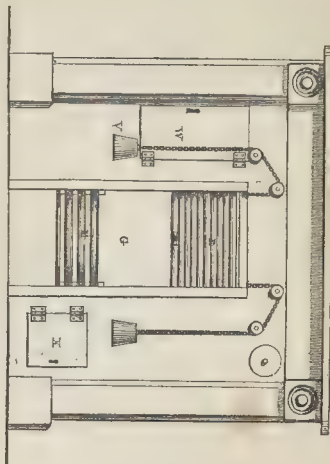
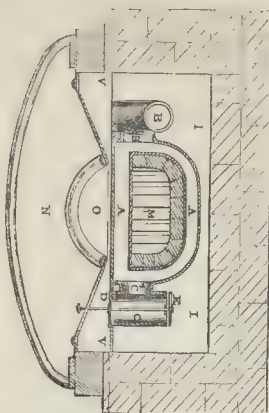
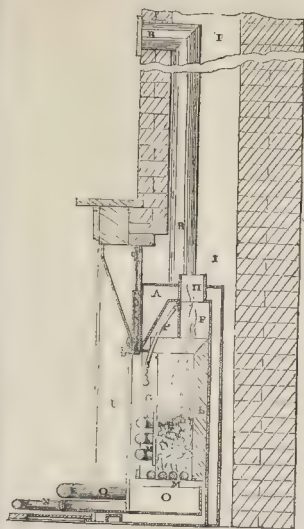


and timeously warns the railway authorities that they are risking both the public safety and their own interest by not taking more effectual means of securing order and regularity in transit, by increasing their staff to the requisite extent, and by the adoption of other precautions. To a train of two or three thousand passengers a single serious accident, such as *has* but too often happened to trains with only a few, might not only put an end to the excursion system, but involve the lives of hundreds at a blow. It appears that the workmen on the West Cornwall Railway have felt themselves aggrieved by having their wages paid only once a month, obliging them to have recourse to a shop termed by them the "Tommy Shop," where they consider they are overcharged for their victuals; and the object of the strike is to get their wages once a fortnight. The outbreak commenced at Camberne, and put a stop to all work, but the

contractor remained firm, promising to pay them off the following day. Many commenced work again, and it was expected that they would most of them resume their work on the previous terms.—The cast-iron arch bridge which spans the railway at Lough Athalia, was manufactured by Mr. Stephens, at his foundry, Galway. This Irish bridge is 40 feet 10 inches span, and 98 feet wide.—Mr. Robert Stephenson went to Copenhagen lately with his own steamer, freighted with apparatus for laying down the proposed railway in Denmark. Several engineers accompanied him. Mr. Borthwick, the engineer sent out by him to arrange with the Viceroy some preliminary matters regarding the railway between Alexandria and Cairo, has settled all things, it is said, to his satisfaction, and even received the first instalment of the sum to be paid to Mr. Stephenson.—Mr. Peto has gone over to Norway to construct the first line of

railway in that country. It will connect Christiania with Copenhagen, and bring St. Petersburg three days' journey nearer London than it is at present.—Unusual activity appears to prevail in railway matters across the Atlantic, with the view of uniting all the British provinces by railway. At a meeting held at St. John's, New Brunswick, resolutions have been passed respectfully remonstrating against the delay that has taken place in giving the royal assent to the Facility Bill for this line, and the governor has been requested to forward them to the Home-office. Meetings have been held in Quebec and Montreal, and resolutions carried in favour of the Halifax and Quebec Railway. A meeting, held in Manchester, Mr. H. Houldsworth in the chair, to meet a deputation appointed by the directors in Canada, have passed resolutions in support of the Great Western Railway of Canada, as an undertaking of national importance.

A NEW VENTILATING STOVE.



A NEW VENTILATING STOVE.

To those who have paid attention to the subject of ventilation and heating, it must appear remarkable, that in a country like England, in which the sciences have reached an extraordinary degree of development, and in which individual comfort is so much considered and ministered to, there should generally be but little care displayed in respect to one of the most fruitful sources of disordered public health, viz. the impurity of the atmosphere of dwellings. Independently of the health question, it is equally strange that a people, who are distinguished by the cleanliness of their habits, should be so indifferent to the inconvenience and annoyance of being surrounded by an atmosphere loaded with particles of soot. We must remember that this impurity of the atmosphere is not only a source of inconvenience (it begrimes the person, the clothes, public buildings, and monuments, and indeed everything exposed to its influence), but it is also destructive to delicate furniture, gildings, decorations, and pictures, and likewise to merchandise in the shops.

The noxious influences arising from imperfect ventilation are not confined to London, they are experienced at certain seasons of the year in all the large towns of England to a greater or less extent: how does it happen that the cause has remained unremedied?

Amongst the most recent attempts to heat and ventilate a room by the united effects of radiation from the fire and the rarefaction of the air, is that of Mr. Noirsain, of whose stove we give some illustrations. This is the inventor's own description of it:—

When the calorific rays are concentrated in an iron chamber, F, open at G for the emission of heat, and at H for the escape of the smoke; when the opening of the stove G is subordinate to the proportions of the passage I of the chimney; when the iron chamber F is furnished with refracting bricks L, and where the opening G is provided with a draught plate R, by means of which the intensity of the fire can be increased, the flue I acquires such a temperature that the condensation of the smoke is quite impossible, while the fire becomes so intense that the greatest part of the smoke is burned.

A receptacle, A, is obtained by fixing the iron chamber F in a second iron chamber, when a tube, B, is adapted to the left of the last chamber, the orifice of which, B', opens into the

receptacle A, and the orifice B into the room at the upper part of the flue I, and when afterwards a second tube, C, is adapted to its right side, the tube having three orifices, the first of which, C', also opens into the receptacle A, the second, E, communicates with the chimney I, and the third, D, opens on the iron plate V into the apartment: finally, when the orifices D and E are furnished with valves, so constructed that one of them closes when the other is opened, an apartment can be warmed and ventilated in a perfect manner.

In fact, if it be supposed that there is a fire in the chamber F, and that the air is rarefied in the receptacle A, and that the valve E is open, and D shut, the atmospheric pressure will be exerted in the rarefied receptacle through the orifice B, and the hot air will pass away up the flue of the chimney: if, however, the valve D be open, and E shut, the atmospheric pressure will then be exerted through the orifice D, and the hot air will pass into the apartment through the orifice B.

By the first method the apartment is warmed from the lower part of the chimney, and ventilated from above and below; and by the second, on the contrary, the apartment is warmed from both above and below, and ventilated from the lower part.

Thus, by means of two valves, D and E, an ascending current of hot air, or a descending current of cold air may be obtained at pleasure in the same tube or canal B.

M—shows the grating.

N—fender.

O—the ash-pan.

P—register to regulate the disengagement of heat from the chimney.

U—A panel ornamenting the chimney opening, like a door.

V—an iron plate used to close completely the opening of the chimney.

W—Door for sweeping the chimney.

X—Door for removing the soot.

LEICESTER.—The new market-house, Leicester, was about to be lighted with gas: the fittings were got ready: all other arrangements were made; when it was discovered that the "mains" had been forgotten! [Our "P. D." inquires if we have not written "Leicester" for "Leinster."]—*Gateshead Observer*.—Rather a blundering mode of procedure certainly.

NOTES IN THE PROVINCES.

Cumbræ.—A new college and church have been recently erected by the Hon. G. F. Boyle, brother to the Earl of Glasgow, on the island of Cumbræ, in the episcopal diocese of Argyll and the Isles. The college buildings are situated on the shores of the Firth of Clyde, on an eminence rising about 200 feet above Millport Bay; and as the ground on which they stand is a steep declivity, it is terraced, broad flights of steps giving access from one terrace to another. At the foot of the terraces a drive leads through the college grounds, which cover about 20 acres, to a suitable entrance gate, surmounted by a cross. The institution is divided into senior and choristers' departments, the former being occupied by the provost, three clergymen, and three elder and six younger students, and the latter is intended as a residence for the sub-chancellor and twelve choristers, who are to live under his superintendence. The public rooms are a library, school, hall, and oratory, the last forming a connecting link between the house apartments and the chapel. We learn from a local paper, that the chapel is of the second-pointed style, and consists of a nave 45 feet long, and a chancel 32 feet deep. An arch at the west end of the chancel, or choir, contains the organ, which is separated by an ornamental parclose of iron-work from the singers. The pipes of the organ, and the roof of the chancel are also richly ornamented. The altar-window is by Messrs. Hardman, and comprises medallion half-lengths of the four Evangelists, St. Augustine, as the patron of learning, and St. Columba, as indicating the missionary character of the college. In the tracery is represented our Lord in glory, supported by St. Peter and St. Paul; and in the head of the centre light is the dove, as the emblem of the Holy Spirit, to whom the chapel is dedicated. Another stained window, by Wailes, is inserted in the oratory. On the south side of the altar the chapel is furnished with sedilia, a piscina, and a prothesis. The sacristy is in two stages, one or two steps above the choir, which itself is three steps above the nave, and is entered through a stone screen, surmounted by a carved stone cross, and closed by a pair of brazen gates. The tower is furnished with a peal of bells. The chapel, though not yet consecrated, was opened on Whitsunday for Divine Service, under license from the Bishop in Argyll and the Isles.

Brecon.—The new Roman Catholic Church of St. Michael was opened on Wednesday week. The edifice is a plain structure in the Early English style, erected from designs by Mr. Charles Harrison, of Clifton, architect. It is 80 feet long by 22 feet wide, and is capable of accommodating about 300 people. The plan consists simply of a nave and chancel with double belfry at west end, and under which is a niche for a statue of the patron saint. The chancel is divided from nave by the usual chancel arch, and is lighted by a three-light window of a simple early tracery at the east end, and by a triplet of lancets at the north side, opposite to which is a sedile, recessed in the thickness of the wall, which throughout is of a massive character. Under the east window is the altar, upon which, and the tabernacle, all the ornament appears to be concentrated. In the centre panel is a figure of our Lord, situated on a rich throne and surrounded by angels, holding in one hand the orb, and giving his benediction with the other. On the right is a similar panel with St. Michael (the patron) in conflict with the Devil, and on the left is St. David (the patron of Wales) in the act of baptizing the ancient Britons. The three panels are sculptured. Messrs. Lane and Sons, of Clifton, executed them under the architect's direction. The lateral windows of the nave are single lancets, and at the west end is a two-light window with a quatrefoil. The roofs are open, rafter beams, &c. stained and varnished. The walls are built of local stone of a green tint, the dressings of Bath stone. The western belfry rises to the height of 50 feet, and, like the gallery, is surmounted by a floriated cross. The entire cost of church and priest's house is 1,600*l.* The builder is Mr. Strawbridge, jun. of Bristol. The brass work was supplied by Messrs. Evans, Thomason, and Brown, of Birmingham.

Liverpool.—A proposal to extend the bath accommodation in Cornwallis-street has been under the consideration of the committee. A report has been made by Mr. Newlands, as to the cost which would be incurred in removing the washhouse fittings from Cornwallis-street to Frederick-street, and fitting up the latter establishment as a washhouse only. Four estimates and plans were embraced in the report; and the fourth, though more expensive than the others, the engineer recommended as most complete and advantageous. It would involve an expense of 4,350*l.* The new arrangements, if adopted, will afford a largely-increased number of baths of the lowest class, including a spacious plunge-bath.

Doncaster.—A design for a memorial window adapted to the three large windows in the south side of the chancel of the parish church, has been prepared by Mr. Wailes, and it is intended that future memorial windows in this part of the church shall be required to adhere to the general design thus prepared in accordance with the architectural character of the chancel. The first of the series, according to the local *Gazette*, has been subscribed for.

Worcester.—The contracts for the new market-house, on the plan of Mr. Armstrong, architect, have been taken by Mr. R. Walburton, of London, for the general work, at 1,150*l.* and Mr. John Walker, also of London, for the iron and smith's work, at 870*l.* The present building is to be given up to the contractors on 13th October, and they have undertaken to complete the new market on 28th November.

Cardiff and Dowlais.—It is computed, says the *Cardiff Guardian*, that about 300 houses are now vacant in Merthyr and Dowlais. A considerable number of these unoccupied dwellings are situated in the main streets, while many more are cottages and cellars in the back streets. The slackness of trade is, doubtless, the cause of so many shops and other houses of business being untenanted; while the erection of a superior class of cottages, in healthy situations, is rapidly throwing the "human pigsties," which have too long disgraced the town, into becoming desolation.

Manchester.—The presentation of a plan-map of the township of Manchester, on the

unprecedented scale of eighty inches to the mile, it is said, has just been completed by Mr. Adshead, in a series of twenty-four maps, including an index map, filled with reference tables to the streets and public buildings. At Owen's College, a chemical lecture-room and laboratory have been completed from designs by and under the superintendence of Messrs. Travis and Mangnall, architects. The dimensions of the building, which is apparently of two stories, are 81 feet in length by 36 feet 10 inches in width. Its two principal rooms occupy the whole of the two stories in height, consisting of lecture-room and laboratory. The lecture-room for the chemical classes is 34 feet 6 inches by 26 feet 4 inches, with seats arranged octagonally so as to enable all the students to face the lecturer, and having accommodation for about 150 students. The adjoining laboratory is 51 feet in length by 21 feet wide, and 30 feet in height. It is to be fitted up with separate tables, &c. for 42 students. Both rooms are lighted by windows in the second story, and by skylights. Both are to be warmed and ventilated. The ceiling of the old Hall of Science, now in the occupation of the free library, having given way during the formation of the museum overhead, the architect, Mr. Pickard, has prepared plans for a new one, which is to be carried out at a reduced expense of 180*l.*

Bradford.—The Bradford Gas Light Company have resolved to reduce the price of their gas from 4s. 6d. to 4s. per thousand, the same discounts to be allowed as previously. "There is one point, however," says the *Bradford Observer*, "the justice of which is questionable, even if its policy be not equally doubtful: we refer to the new rule for charging 4s. to all small consumers whose half year's consumption does not amount to 1,000 feet. Why should they be compelled to pay for what they have not used? Why should the poor consumer have the rate of his gas increased, just at the very moment when the price is being lowered to his wealthier neighbours?"

Montrose.—The Peel statue committee here have arranged to take in proposals from artists for a statue of the late baronet, and to apply to the Town Council for a suitable site.

Armagh.—During a recent flood in this district eight bridges were swept away, mainly by the force of turf stacks washed against them.

CHURCH NEWS.

Ely.—A new church for a section of the parish of Dodington was consecrated on the 14th inst. by the Bishop of Ely. This church has been erected at the joint expense of Sir Henry Peyton, Bart., and the Rev. A. Peyton, the rector of Dodington, under the direction of Mr. Teulon, architect. It is a Decorated or Middle Pointed building, consisting of a nave and north aisle, with a tower and spire at the west end of the aisle: it has also a chancel. It is built of Caen stone from Downham, in Norfolk, with Caen stone dressings. The roofs are covered with Staffordshire tiles. It is calculated to accommodate 350 persons. The cost of erection was about 1,400*l.*, exclusive of the concreting of foundations. Mr. Cushing, of Elmham, Norfolk, was the contractor.

Rissholme.—On Thursday week the new church at Rissholme was consecrated by the Bishop of Lincoln, who has been at the sole expense of its erection,—1,306*l.* Mr. Roebuck, of Louth, was the builder; and Mr. Teulon the architect. The building consists of a nave, chancel, and transeptal chapel. The style is Decorated, and it is built of local stone, with dressings of Caen stone. The roofs are of open-framed English oak of the period, and covered with Staffordshire tiles alternated. The fittings are also of English oak, the reading-desk presenting some specimens of carving by Mr. Morland, of Lincoln. The nave is paved with Broseley tiles, red and black, placed triangularly, and the chancel is paved with Minton's encaustic tiles. The east wall of the chancel is decorated in polychrome, comprising the decalogue, &c. There are no pews, but the nave contains two rows of open seats, capable of holding about 130 persons.

The eastern window was painted by Gibbs, of London, and was presented by the archdeacon and clergy of the county of Lincoln: it is a five-light window, the centre compartment representing the "Crucifixion." The two south windows of the chancel are also painted by Gibbs, one presented by the archdeacon and clergy, and the other by the Rev. W. F. J. Kaye, and other members of the bishop's family.—the easternmost one, a two-light window, representing the Ascension and Descent of the Holy Ghost on the Apostles. The westernmost one is a three-light traceried window, the centre representing Christ instituting the Lord's Supper. The remaining windows are quarry-lights of pale-green, with white marginal glazing. The font is of Caen stone, carved. The church stands on an elevated platform.

Cambridge.—An ornamental Gothic font has lately been placed in Eton College Chapel, on the north side of the ante-chapel, as a memorial of a late resident master in Eton College. There is a suitable inscription on it.

Sherborne.—The nave of St. Mary's Cathedral Church having now been restored, the edifice was reopened on Wednesday week. The great west window has been glazed with ornamented glass, in imitation of the stained glass in use when the church was mainly erected. The principal figures are those of Jewish kings and prophets. The four middle-pointed windows of the north aisle are also restored in stained glass, with figures chiefly apostolical. The glasswork was executed by Messrs. Hardman and Co., of Birmingham. The roof is groined and highly decorated, with bosses and shields emblazoned. "The embellishments of the bosses and shields," says the *Sherborne Journal*, "cost, we believe, about 120*l.*: nearly all of them are said to be heraldic: even the basket-work, which occurs several times, is said to be a grotesque device of one Mr. Baskerville, who was a contributor to the building. At the spring of the arches of the north and south rows of windows, and at the crown of the arches of the aisle, are several larger shields. That with a ram and scroll is the device of Peter Ramsam, the abbot, to whom the principal part of the restoration of the western part of the church is ascribed. His device is repeated in other shields with a quaint conceit of the time—a ram with the word 'Sam,' intended to form his complete rebus. Over the first and third arches are seen the arms of Sherborne Abbey—a cross and crozier. The other shields bear the arms of Abbotsbury Abbey, of Cerne Abbey, of Milton Abbey, of Canterbury, of St. David's, and the device of a dragon in a tun, with the letters T. L., is another ingenious attempt to make a name apparent, and is intended to commemorate Thomas Langton, who was bishop of Sarum in 1484." The flooring of the nave is of patent tiles of a warm colour. The porch, which has also been restored, has been freed from the iron gates which formerly stood below it. Most of the zig-zag work consists of the original stones. The doors are of oak, studded with iron bolts, and quite plain. The Horsey monument, which formerly rested in the north transept, has been removed to the chapel on the north side of the chancel. The mutilated figures have been restored. The sum spent on the nave, according to our authority, is 7,000*l.* and 5,000*l.* more have been expended upon the central part of the church, and the north and south transepts. To this total amount of 12,000*l.* already expended, Earl Digby has contributed—towards the nave 2,500*l.*, in the restoration of the south transept (effected entirely at his Lordship's expense), 2,500*l.*, towards the tower, 1,500*l.*, total 6,500*l.* The parish by rate have given 2,000*l.*, and upwards of 4,000*l.* have been subscribed by the public. These amounts, added to Mrs. Toogood's legacy of 500*l.*, with interest, leave a balance of about 1,000*l.* to the credit of the works. The total additional expense to be incurred in the completion of the edifice is 8,000*l.* leaving about 7,000*l.* more to be raised.

Leighton.—At Leighton, near Welshpool, Montgomeryshire, the foundation-stone of a new church, to be called the Church of the Holy Trinity, was laid on the 7th inst. by the

Rev. C. Awdrey. After the ceremony, Mr. J. Naylor, of Leighton Hall, at whose expense the church is to be erected and endowed, entertained the Earl of Powis and a number of the clergy and gentry of the neighbourhood, together with his tenantry, and about 500 of his workmen. The church, erecting after designs by Mr. Gee, architect, is to be in the Decorated English style; with broach tower and spire, and small octagonal chantry attached. All the dressings, groins, &c., are to be of white stone from the Minera Quarries, worked in with native blue flint (the latter in 3 to 6-inch courses). The main roof will be of English oak, and open; that of the chancel will form a pointed vault, broken into panels by arched and horizontal ribs, moulded. The following are the principal internal dimensions of the church:—Nave, 59 feet 10 inches by 21 feet; aisles, 52 feet 6 inches by 10 feet 6 inches; chancel, 20 feet by 15 feet; tower, 13 feet 6 inches square; chantry, 12 feet in diameter. Height of nave from floor to wall-plate, 27 feet; ditto of roof, from wall-plate to ridge-piece, 20 feet; total height of nave, 47 feet. Height of tower and spire, 130 feet. The church will be pewed to seat about 250 persons, as the congregation will consist, almost wholly, of the tenantry on the Leighton estate. The aisles will be left open. A peal of six bells will be set up in the tower. A parsonage-house, in connection with the church, is also in course of erection. The builders are Messrs. J. and W. Walker, of Birkenhead.

Louth.—Sutton St. Mary's is to be restored. The bricked-up windows and patches of brick, it is to be hoped, as well as the present makeshift for a chancel window, will be replaced by suitable restorations.

Leeds.—St. Matthew's Church, Little London, was consecrated on Wednesday last week. It consists of a nave, aisles, chancel, organ chapel at end of south aisle, vestry, and north-west tower. The latter, however, is only carried at present to the height of the ringing-loft, and a sum of about 400*l.* will be required to complete it. The style is Middle-pointed, or Decorated. The east window is of five, the west window of four lights; the side windows of two lights. The windows of the clerestory are spherically triangular, double foliated, with two orders of mouldings. The pulpit is of stone. The church is calculated to seat 700 persons. The cost of the building is estimated to have been about 2,400*l.* The architect was Mr. W. C. Burleigh.

Keyworth.—The old churchyard has been lowered below the level of the church floor, whereby the latter has been made drier and more comfortable than it has been for many years. The churchyard has also been extended by the removal of the old Free-school, and by the addition of a portion of a garden.

Christ Church, Kensington.—I have just seen your notice of our new church (Christ Church), and as one of its clergy beg to send you some more detailed information concerning it. The style is that of the Transitional Period, from Geometrical to Flowing. Mr. Ferrey is the architect, Meyers the builder. The ground plan consists of a chancel 30 feet long, nave, 60 feet, with aisles of equal length under separate gables. A tower and broach spire at the east end of the north aisle, of a total height of 120 feet, opens by an arch into the chancel and a north porch. The pillars are octagonal, with drop arches. The arcade is of five bays; the east window, of five lights, with a circle, containing six trefoiled triangles, is all filled with stained glass by Messrs. Powell; all the other windows in the church are filled with three-flowered quarries; the wood work is of the same style as the rest of the church; the chancel is filled with longitudinal stall-like benches for the choir, the organ being on the north side under the tower arch, and behind an oak parclose, as at St. Stephen's, Westminster. The pulpit is of stone; the altar-cloth was furnished by Mr. French, of Bolton. The organ is by Holdich, and is to have its front pipes diapered. The church is paved throughout with tiles.

JOHN H. SPERLING, M.A.

ARCHITECTURAL COMPETITIONS.

ALTHOUGH I hold the system of competition to be laudable in principle and excellent in theory, I freely admit that it has of late years become exceedingly vicious in practice, and fraught with glaring absurdities, as well as with grievous abuses. There are two points of view in which it has to be considered,—first, whether it be, when properly conducted, conducive to the interests of architecture itself; and, secondly, how it affects the profession. Now, it would stand to reason, that where there is a sincere desire to secure talent, and obtain the best design for an important building, such object is far more likely to be effected by eliciting the ideas of various architects than by confiding the work to any single one, be his general ability what it may. It is true, after all, the design chosen may be, if not actually the very worst, very far from being the best among those sent in. What then? Instead of proving the system itself to be erroneous, that only convicts the actual judges or choosers of incompetency for their office; and truly grievous as such mistakes are, it matters not a straw either to art or to the public, whether a wretched design has been selected from among those sent in to a competition, or was the production of some especially commissioned individual.

For condemning the system of competition *in toto*, there would be ample reason, could it be shown that its results have invariably turned out unsatisfactory; and *vice versa*, that where it has not been resorted to, but the work put at once into the hands of some individual, to do the best he can with it, security has stimulated him more than emulation would have done, and urged him on to his utmost exertions, and these most successful ones.

That competition sometimes answers its professed end must, I think, be admitted. The Houses of Parliament, the Fitzwilliam Museum at Cambridge, and St. George's Hall, Liverpool, may be adduced as instances which go far towards showing the advantages of the system. It will, perhaps, be said, that they are only exceptional cases, and therefore tell nothing against its general objectionableness. Admitting that they must be taken as exceptions, the reason of their being such is, that the competitions for these buildings were more judiciously conducted, and with greater good faith and integrity of purpose, than in the great majority of instances. So, then, I fairly grant that competition does work ill in the main: certainly, but then I contend that it does so not on account of aught radically defective or injurious in its abstract principle, but because such *concessi* are for the greater part so flagrantly ill-managed, without any competency for their office on the part of the judges—or rather, deciders,—and sometimes without the slightest regard either to decency or common honesty. I could point out more than one instance in which a competition of more than ordinary importance has been so conducted as to convict those who had the conducting of it, either of arrant blockheadism or arrant knavery. On two occasions of the kind, I was greatly in hope that the enormity of the outrage would stir up the competitors, and indeed the whole profession, to utter their solemn and public protest against it. But, oh dear! no: that was not to be thought of for a single moment: spirited it might have been, but it would have been shockingly indecorous, and, what is worse, terribly indiscreet: besides, the mischief was done, consequently exposure, remonstrances, and protests would be to no purpose. Silly and short-sighted mortals! Why, there is nothing so effectual as what Carlyle calls "making a row about things;" and had you but had sufficient *nous* or nerve to get up and keep up a good "row" on one or two excellent opportunities for so doing, you might have brought committees down upon their knees in the dust, and have made them sing out "*Peccavimus*" in full chorus; after which, future committees would have learnt—if not honesty,—prudence, and decency, and discretion, from their disgrace.

Could nothing else be urged in favour of competition, it would be no small recommendation

of it that it tends to break up monopoly, which is surely a desideratum, it being undeniable that ere now a single individual or one or two individuals have in a manner monopolised the greater part, the most important opportunities that have occurred in the course of their career, although they themselves have been far from worthy representatives of the architectural talent which it is to be hoped exists in the profession. Well, Mr. Editor, don't be alarmed: I am not going to mention names; I allude only to "X. Y. Z.," so if any leash of gentlemen should fancy that it is they who are meant I cannot help it, nor you either.

There would be good reason for denouncing competition as erroneous in principle and at variance with the real interests of the art, could it be shown not only that architectural competitions have invariably given us inferior works, but that whenever a work has been entirely confided to some one appointed individual, the talent displayed in it has always been most satisfactorily commensurate with the importance of the purpose and the occasion. If any shortcomings can be found—and it does not require to be actually lynched in order to discern them—in Buckingham Palace, the National Gallery, the British Museum, *cum pluribus aliis*, at any rate, they cannot be attributed to competition; wherefore it would seem that no-competition frequently, or indeed quite as often, works just as bad for art as competition itself does. Committees are, it is true, not always composed of Solomons; but noodleism is noodleism, and if it be inflicted upon us, the "by whom" is matter of almost perfect indifference. Nor is it managing committees alone that, either through ignorance or favouritism, commit works of more than ordinary magnitude to tasteless and incompetent architects.

I freely grant, however, that the present practice, as competitions are now managed, or rather mismanaged, calls loudly for reform—no doubt, a difficult matter to achieve, not therefore an impossible one; and towards accomplishing it one grand pre-requisite is, firm determination. Victories, as Napoleon observed, are not gained by shedding rose water; neither are inveterate abuses to be put down without making a manful struggle against them. Where there is a will there is generally a way; and I could point out a way that would go far towards considerably checking, if not entirely removing, the most serious evils and hardships now felt and complained of, and at once put an end to all those paltry ten-pound and other mock competitions. At the end of a long letter I cannot enter into explanation, so all that I will now say is that a member of the House of Peers occupies the president's chair in the Institution of British Architects.

Verbum sat.

ZETA.

A THEORY OF THE CONVEYANCE OF SOUND.

WHILE investigating the laws of nature which govern the draft of air and of smoke, by means of which a perfect ventilation may be obtained, and the smoke nuisance in every place entirely done away with, it very forcibly struck me, that there exist at present some totally erroneous theories respecting the conveyance of sound, and I shall be happy if you will give my new notions to the scientific world through your excellent medium, THE BUILDER.

The conveyance of sound in the air has very properly been compared to the ring caused on the water by throwing in a stone: the comparison, however, has, in a manner, been carried too far, or too short, just as you please. For, it must be observed, that the ring is caused almost only, if not entirely, on the surface of the water, becoming less, if not ceasing altogether, the deeper the stone sinks into it, owing to the resistance to the ring by the surrounding water, a resistance which it does not meet with on the smooth surface.

Now, it is just the same with the air: sound, like the ring on the water, is conveyed best and farthest where the air presents the smoothest and most uninterrupted surface; whilst within the body of the air it meets

every where with resistance, the air, according to the common notion, pressing equally upon it from all sides, and preventing that extension which it acquires on the surface. The air, then, presents a surface, wherever it rests upon, or leans against, any body or substance. Thus, when cannons are fired at sea, it is not the water that conveys the sound to an extraordinary distance, but the surface of the air resting on the water; when the tramping of horses is heard at a greater distance by putting the ear close to the earth, than it is in, or through, the body of the air, it is not the earth that conveys the sound, but the surface of the air resting on it; when the end of a beam of timber is scratched with a pin or nail, or gently knocked upon, it is not the wood or the beam that conveys the sound to the other end, but the surface of the air surrounding the beam, the surface round the beam forming one ring all over, and bringing it into one focus at the opposite end; hence the appearance, as if the sound had come through the beam itself. It is the same with a poker struck against any substance to produce a sound: it is not the poker that conveys the sound to the ear held close against it, but the surface of the air by which it is surrounded: the poker, like other solid substances, does not convey the sound, but gives it only its quality. I do not know whether they even may be called conductors, inasmuch as for conveyance they are entirely passive.

If in the whispering gallery of St. Paul's you speak across, you will not be heard on the opposite side, because the sound produced cannot travel the distance, meeting every where with resistance; but speak close to the wall, and the ring produced on the surface of the air resting against it will immediately carry the sound all round, there being no resistance or impediment. It is not the wall that conveys the sound, but the surface of the air resting against it. Hence it follows, that the smoother and harder the surface of the substance against which the air rests, the better will sound be conveyed. On the contrary, like the ring on the water, if on its surface you place a sponge, the sponge will absorb the ring; if you hang the wall with a soft, porous substance, woollen cloth or the like, the ring of the air will be absorbed, and the sound propagated no farther.

W. ADOLPH.

PROPOSED SCHOOL OF CONSTRUCTION FOR ENGINEERS.

In consequence of the dissolution of Putney College, Mr. Clegg, jun., proposes to establish a school for the purpose of preparing gentlemen about to enter the profession of civil engineers or architects, for the duties of the office and for field-work; to give them a knowledge of the principles of construction, and the methods of drawing structures for the use of artificers, and thus to render them useful, when articulated; to prepare them to understand the reasons for the various dimensions and dispositions of material which they will find in works intrusted to their partial charge, and so to learn practically what they have been previously taught theoretically. The instruction is proposed to be given under two divisions: the first for gentlemen becoming students without previous acquaintance with the subjects; and the senior division for gentlemen who have gone through the courses of instruction in the applied sciences at a college. He gives the following as an outline of the course of instruction to be—

JUNIOR DIVISION.—THIRD CLASS.—The nature and properties of bricks, stones, mortars, cements, timber, cast-iron, wrought-iron, and the materials used in construction. The methods of applying materials in work separately and together; the effects of position; strength of material. Rules for determining dimensions. The mechanical powers, and their application to moving and hoisting great weights. Strength of ropes, chains, &c. Cranes, scaffolding, &c. Retaining and breast walls, and the natural slopes of soils, &c. Square and oblique arches, domes, and vaults. Roof of timber and iron, floors, and fire-proof buildings. Centering. Bridges of timber, brick, stone, and iron, their site, approaches, the span and figure of the arch: circumstances regulating the choice of materials.

Common and trigonometrical surveying. Levelling and setting-out work. Mechanical drawing, plotting of surveys and sections, perspective, and the projection of shadows, will be taught at proper intervals throughout the course.

SECOND CLASS.—1. *Natural and artificial foundations* on land and in hydraulic works:—concrete, t \dot{e} ton, timber piling, coffer-dams, the screw pile, pneumatic cylinders, &c. 2. *Roads and Railways.*—Physical laws which have to be considered in establishing their routes. Theory of gradients. Formation of their surfaces. The works connected with them, as earthwork, fences, drains, culverts, bridges, viaducts, tunnels, stations, &c. Drainage of earthwork, and slips. Estimating quantities, construction of prices, specifications, and working drawings. The various detail works mentioned in the third class are considered in position, and working drawings, estimates, and specifications are made for them. Setting-out curves and side-widths; levelling for gradients, and the more intricate operations of field-work connected with setting-out the positions of bridges, &c., establishing bench-marks from which to measure their proper heights, &c., are practised.

FIRST CLASS: Draining lands, and reclaiming districts from water. Machines used.—*Drainage of Towns and Buildings.*—*Water-works:* the sources of supply. Reservoirs: distribution. Theory of the discharge of fluids through pipes. Intermitting and high-pressure systems. Water supply for detached houses.—*Well-sinking and boring.*

Artesian wells.—*Gas-works:* subjects taken from Mr. Clegg's work on the "Manufacture and Distribution of Coal-Gas," the improvements that have been made since its publication being noticed. Works connected with the sanitary condition of towns, &c. *Canals, and the improvement of Rivers.*—General laws determining the point where river navigation should end, and where canals should commence. Choice of route for canals. Feeders, reservoirs, summit level, locks, cross-section. River work: operations before deciding on means of improvement. Origin of shoals and bars. The effects of weirs, embankments, &c. on the channels of rivers. Dredging: excavating rocks. Blasting under water. Diving-bell. *Harbours and Docks.*—Effects of tides and waves upon a line of coast. Groynes, sea defences, breakwaters, the positions of harbours of refuge. Tidal harbours, piers, jetties. Docks, dock entrances and gates, effects of backwater. Surveys connected with hydraulic works. Coast surveys. Soundings. Making plans and sections of rivers. *Beacons, Floating Lights and Lighthouses.*—Choice of position, construction of towers, stone, metal and timber. The modes of lighting and arrangement of reflectors and refracting lenses.

ARBITRATION FOR LAND BETWEEN RAILWAYS.

An important arbitration was decided on Wednesday week at the Shirehall, Gloucester, in which the Great Western and the Midland were the railway companies interested. The subject-matter in dispute was the price to be paid to the Great Western Company for the land by the side of their line which is required by the Midland Company for carrying out, under their Act of 1848, the construction of a narrow gauge line between the city of Gloucester and the termination of their line at Stonehouse. In fact, it involved the carrying out of an unbroken narrow gauge line from the north through Birmingham and Gloucester as far west as Bristol.

Mr. Talbot, for the Great Western, set out by expressing the unwillingness of the company to give up the land in question, which, however, was about to be forced from them by an Act of Parliament. The Great Western Company were there for the jury to fix the price of several pieces of land on the side of their rails, containing 22a. 3r. 28p. and lying along the line between this city and Stonehouse-bridge; and also to obtain compensation for the damage they should sustain by reason of the carrying out of an Act of Parliament obtained by the Midland Company for the laying down of a new line. The question the jury would have to try was by no means confined to the physical abstraction of the land, but it likewise embraced compensation to the party for the injury and loss he sustained by reason of the abstraction of the land against his will. Mr. Talbot then entered into some narrative details, and proceeded to state that the Midland Company had offered for the purchasing of these 23 acres of land 4,600*l.*; and for the damage the sum of 1*l.*. The average cost price of land for railway purposes throughout the kingdom was about 200*l.* per acre, and therefore the 4,600*l.* would be

about the value of the land to be taken; but he contended at length that the Great Western Company, having had to pay a percentage on their purchase-money for a forced sale, and this being a forced sale likewise, that therefore the Midland Company ought also to pay a per centage for a forced sale above the total cost of the land to the Great Western Company. Mr. Talbot then contended that the Midland Company ought to pay for that portion of the works, such as the embankments, cuttings, &c., which they might take, and which would be so much of their work done, and also that a per centage should be fixed upon the price fixed for these works, this being also a forced sale. He also stated that the bringing of the new line within the 5 feet boundary of the Great Western Company's westernmost rail was as close as it could be brought with safety to the public, and would not allow even room for the signal man between the carriages. He likewise claimed compensation for the loss of the capability to make sidings on the western side of their line (which would be necessary when they obtained the mineral and increased agricultural traffic which he considered would result from the opening of the South Wales lines), and also for the loss of the power for landowners to make private lines approaching the railway, and for constructing of bridges, &c. Mr. Talbot spoke of a minute of an agreement drawn up in 1842, by which the Midland was to pay 60 per cent. of the tolls arising on this part of the line for travelling over it, but this agreement was not executed, and its terms were subsequently altered, to the payment of an annual rent of 11,000*l.* for twenty years, of which period six and a-half years had expired. When the Act empowering the Midland Company to lay down their line was passed, the Government made it binding that this annual rent should be continued till the end of the term; and it was now insisted that at the expiration of that time, if the payment of the annual rent was discontinued, the Midland Company would have to return to their old agreement of paying 60 per cent. out of the accruing tolls.

Amongst the witnesses then called on the part of the Great Western Company were Mr. Hall, of Cirencester, surveyor, Mr. Brunel, and the secretary, also Mr. Jellicoe, actuary to the Eagle Assurance Society, the last of whom stated that he had calculated what would be the present value of an annuity of 9,000*l.* a year (an amount of loss attested previously), accruable at thirteen years; it would be 93,206*l.*: twenty-three acres at 200*l.* 4,600*l.*; 30 per cent. for compulsory sale, 1,380*l.*; cost of works, 7,966*l.*; 30 per cent. for compulsory sale, 1,593*l.*; loss of side lines, 5,000*l.*; loss of communication with landlords, 3,000*l.*; together (without the annuity), 23,539*l.*

Mr. Alexander, Q.C., then replied on behalf of the Midland Company. He dilated on the nature of the claim which the Great Western had set up, and that although they were now receiving on this piece of line alone 9,500*l.* a year profit, and would continue to receive 11,500*l.* a year profit after the new line was made until the end of the period of twenty years, yet that they should have brought Mr. Jellicoe there to estimate the per-centage reversion at the end of that period at 93,000*l.* He contended that the real objection to the sale arose from an apprehension of loss of traffic. The minute of the agreement of 1842 he contended was incorporated in the binding agreement of 1843; but if the Great Western Company thought proper to try the question of the receipt of the 60 per cent. of the tolls accruing to the Midland Company on this part of the line, they could do so at the expiration of the present agreement.

In summing up, the learned Assessor gave his opinion that the present was not the time or place for that question to be considered, and the jury agreeing in this opinion, at the request of the counsel on either side, it was withdrawn. Mr. Whitmore then explained the other parts of the claim; and

The jury found a verdict for 2,500*l.* for the land, and 3,000*l.* damages.

[For a pretty full report of this case we must refer to the Gloucester Chronicle of the 16th inst.]

IRON MONUMENT.—In the Baptist Chapel at Jamaica is a monument in iron to an apostle of negro emancipation—the Rev. William Knibb. It is to be erected on a column or flight of three stone steps, the base of which will be fourteen feet, the second eleven, the third ten, and upon which will rest the base of the ironwork of the monument. The monument itself is formed by four square plates of iron, and there are four iron columns at the corner of each square, supporting an iron plate, on which rests an urn, with the figure of a flame issuing therefrom.

DOULTON'S TERRA-COTT
and GLAZED DRAIN-PIPES.
Specimens of the above may be seen in Glass XXVII., and outside the Building, West end, North side.
Also, a TERRA-COTTA FIGURE of TIME in the Transept.
Drawings and prices, on application, at the Manufactories, &c.
both

The Builder.

No. CCCCXVII.

SATURDAY, AUGUST 30, 1851.

AS we have already said, a very successful meeting has been held by the British Archaeological Association in Derby, and the greatest hospitality was shown on all sides. Complimentary breakfasts, luncheons, and dinners, followed each other in quick succession; and, better still, the kindly expressions, representatives of feelings to which these sacrifices to our grosser natures lead. And here let us give one word of advice to hospitable individuals who may feel disposed, on future occasions, to open their houses when peripatetic archaeologists visit their quarter. *Receive the whole party or none at all.* When half are admitted and half sent away, you pain the latter moiety a vast deal more than you please the first. We are not aware that any illustration occurred during the meeting of the Association at Derby, but there certainly was one at the late meeting of the Institute. The Dean of Wells provided an entertainment for a certain number of the members, and commissioned the singularly unfitted gentleman (the Rev. Mr. Hill), who manages the excursions,—that is, takes care that every body has the means of conveyance afforded him at a cost about 50 per cent. greater than he could have obtained it for himself,—to invite the right persons to partake of it. The result of this, and of the same arrangement on other occasions, changing the name of the host, of course, was, that all those who had to pay a certain number of shillings for a miserable satisfying of nature's claims at one of the worst-conducted ordinaries that ever was laid out, thought themselves very ill-used by the Dean, their *amour-propre* being touched. Again, therefore, we say to the hospitably inclined, *receive the whole party or none at all.*

And now, then, to note such portions of the proceedings in Derby and its neighbourhood as may be either pleasant or profitable to our readers.

The President, Sir Oswald Mosley, in the course of his *inaugural address*, said,—It appears to have been the design of Providence that some of the records of past empires, which once exercised almost universal sway over the earth, should be entombed, as it were, until a period when the revelation of them could be duly appreciated by learned and highly civilised inquirers, by whom the application of such discoveries could be brought forward to prove the veracity of prophetic history, and by analogy to confirm the truths of Holy Writ. Sure I am, that if such inquiries be pursued in a proper frame of mind, the more we discover the firmer will these truths be established. Had not mounds of rubbish concealed from view the sculptured treasures of ancient Nineveh, the Arab spoiler, in his mistaken zeal, would have long since demolished them. No Layard would have been required to direct, with master mind, their excavation; no Richardson to interpret

a language, the very characters of which had for ages been forgotten: until such men as Belzoni, Champollion, and Sir Gardiner Wilkinson had been born in the world, the Egyptian tombs would have been reopened in vain; the religious and domestic habits of one of the most celebrated nations of antiquity, which are still portrayed in such vivid colouring on the walls of their temples and sepulchres, would have had no chroniclers. Devoutly is it to be wished, that the efforts now making by men of science, to put us in possession of these antique treasures, may meet with better encouragement from the Government of this great nation. Will it be credited by the historians of a future age, that the magnificent monument of Egyptian art, familiarly known by the name of Cleopatra's Needle, after having been won by the valour of our brave troops under Abercromby, and subsequently given by Mehemet Ali Pasha to our King George the Fourth, should have been suffered to lie prostrate on the sands of Alexandria for nearly half a century, for fear of the expenditure of a few thousand pounds in its removal. The scientific world are under great obligations to Mr. Gould, a member of this association, for having brought this matter before the public (in *THE BUILDER*), and for having urged the Government to pursue a more liberal conduct with regard to it. We must all, I am sure, unite in wishing that his meritorious efforts may ultimately be crowned with success. How wonderfully is it ordained, that the care bestowed upon the burial of the dead should throw light upon the manners and customs of the living! Yet such is the case, both among the barbarous and civilised nations of antiquity. With regard to the original inhabitants of Britain, the page of history, as I have before observed, furnishes us with very slight information; but upon opening their tombs we find ample proofs of their ignorance and superstitions: the rude simplicity of their manners is there developed, and we begin to trace a gradual approximation to a more refined state by an examination of the different contents of the most ancient and more recent barrows. For most interesting investigations of this kind, we are under great obligations to Mr. Bateman, another of our members, who has spared neither labour nor expense in excavating many of these tumuli in the northern parts of this and the adjoining county of Stafford; the results of which he has published, under the title of "*Vestiges of the Antiquities of Derbyshire*."

Mr. Pettigrew, in the course of some remarks *On the Study of Archaeology*, with which he followed the President, said,—Curiosity alone is no longer the object of the antiquary, who is now engaged in the higher occupation of tracing the habits and manners of tribes and nations long removed. Particular spots are hallowed as those in which religion has been first promulgated,—as the site on which beneficent laws have been originated,—or the scenes on which the fate of nations has been decided,—or where have arisen those events which have given a colour to our domestic scenes and awakened our kindest feelings. A study of the memorials of such scenes, events, or emotions, enables us to trace, through the condition of their arts, the customs and manners of nations which have long ceased to exist. In tracing these conditions we are much aided by the forms of language as well

as by the more tangible remains of by-gone people. The architectural remains of cultivated nations are also of the highest interest, and will generally be found corresponding in some degree with the language of the people by whom they were executed. The architecture of the Dorians is, like their language, secure and expressive,—of the Ionians graceful and flowing,—of the Corinthians rich and luxurious. In the first, it was remarkable for power and solidity,—among the Corinthians it was characterised by delicacy,—and in the hands of the Ionians it exhibited that grace and power of style which characterise the writings of the Great Poet, and his imitators. The study of antiquities is ennobling in another way, by removing the contemplation from the petty and evanescent things of the day, and concentrating it upon the mighty achievements of those people by whom the great steps of civilization have been accomplished.

On Tuesday, in the midst of many visits, the Rev. Mr. Errington read a paper on

SOUTH WINFIELD MANOR HOUSE, which was erected by Lord Cromwell, treasurer to Henry VI., and is noted for its connection with the detention of Mary, Queen of Scots. The Lord Shrewsbury, who had the care of her here, must have had a nice time of it, through the jealousy of his wife and the suspicions of his queen.

"The carriage approach winds up the steep eastern slope of the hill, and is shaded by venerable elm, yew, and ash trees, and brings you at length to the gate-house, which has a central and a side archway, the latter being for foot passengers only, and abutting on to the porter's lodge. This gate-house is about 16 feet through, having corresponding arches on the western face. A large lateral arch opens from the footway to enable the gate-keeper stepping across to communicate with the horse and carriage passage. This arch is semi-circular; the others being obtuse pointed, except the main eastern one which, from the dropping of the key-stone and from repair, has now a semi-circular appearance. Part of the upper stage and side turrets, the roof, and battlements, are gone: there is no trace of a portcullis. Like the rest of the structure, it is built of fine hard stone, which exhibits few marks of corrosion. No date is to be found on any of the buildings. Having passed through the inner arch, you come into the first or outer court. On the left is a large portion of the manor barn: towards the right, eastwards, are remains of the stables, offices, and retainers' quarters. It was in these stables that Colonel Dalby was shot, through a hole from the porter's lodge. The barn is well battressed, and within still exhibits some fine square oak uprights supporting the roof. This outer court is nearly square, but the walls and buildings to the south and south-west are gone. There may have been a postern at the south-west corner. To the south,—the only side on which the ground does not fall,—just beyond the present stack-yards, are extensive remains of a bastion and other defensive earthworks. In the middle of the court is the well, said to have been sunk during the last siege, the water supply having been previously brought from the hills to the west. The north side of the court presents an interesting façade, which is rendered very picturesque by the tall angular chimney-shafts capped with battlemented cornices, and the bold and lofty tower which occupies the western extremity.

In the centre is a double gateway, somewhat similar to the first, leading into the second court. Above the main arch and occupying the centre is a broad projecting label returned at the ends and charged with small shields, and encompassing four escutcheons on sunk panels: on one of them are expressed pouches or purses, the emblems of Cromwell, Lord Treasurer. The side turrets are remarkable:

they were originally embattled; and like the great western tower, they are crenellated, presenting oillets or loopholes at various intervals. The different apartments in this portion of the building seem most of them to have been entered from the inner court.

The banquetting hall is about 66 feet by 36 feet: the lofty roof is gone, but the gables remain. It was lighted by a beautiful bay window, and by five large windows to the north and four to the south: at the east end is an escutcheon in a wreath of alabaster, nearly defaced, charged with the bearings of George, 6th Earl of Shrewsbury, and Gertrude Manners, his wife—impaled in their proper colours, twenty-seven in number. The staples for the arras are still fixed in the walls. Leading down from the dais at the east end of the hall is a staircase, which conducts to a spacious undercroft over which the hall is built. This apartment is remarkable in its construction, and it is difficult to say for what purpose it was intended, whether for a place for stores or as a hall for servants."

Chesterfield Church and its leaning spire, Bolsover Castle, Mrs. Hamilton Grey's collection of Etruscan remains, and Hardwicke Hall, afforded more than matter enough for the day's enjoyment. Hardwicke Hall was built in 1597 by the Countess of Shrewsbury. The legend runs that it was foretold to this lady, that so long as she kept building so long would she live. In consequence of this she erected house after house, and at last died in a hard frost, when the masons could not work. The picture gallery at Hardwicke is a great treat.

The excursion on the following day included Chatsworth, with its magnificent collections, gardens, and fountains, Bakewell, and Haddon Hall. On the latter interesting old structure Mr. Duesbury read a descriptive paper, at the close of which he said,—“Nothing remains to show that Haddon Hall ever was, properly speaking, a castle, although the Peverills' building might have had the attributes of one. The hall from the first was more of a manor-house or place, and I imagine its unfitness to be used for the purposes of war is the chief cause of its never being attacked, a very fortunate circumstance, inasmuch as the building has thereby come down to us subject to no other changes, than those produced by the ravages of time and the alterations in the mode of life of its possessors. Of course the battlements could have been defended for a time by men-at-arms, and we still see evidences of preparations for this purpose in the bow-stringing machine in the north-east tower, and in the rack to hold arms which exists in the room adjoining. After expressing a doubt as to the correctness of the legends of the place, he said they must turn to other sources for associations with Haddon, and they were to be found in the hawking parties in the adjoining meadows, the hunting parties in the chase, and the rare doings in the great hall afterwards. The iron hook on the screen is said to be a relic of these carousals, it having been used to tie up above the head the hands of any defaulter who, in the opinion of his fellows, did not do duty to his liquor, his further punishment being to have cold water poured down the sleeves of his doublet when in this position. There are no specialties in the style of the building which call for much remark, except perhaps two points. The one is the unusual purity of the Gothic of the western entrance, which was executed by Sir George Vernon in about 1547; and the other is the unusually Gothic character of the Elizabethan

work. He could not refrain from noticing the extreme artistic skill with which the irregularities of the ground were made use of, and the gardens laid out so as to harmonise with the buildings, and form an integral portion of the design.

Of Chatsworth, says the *Times*, the history is soon told. “The ancient house of that name, with the manor, was purchased by Sir William Cavendish, who soon after pulled the old hall down, and commenced a new mansion on its site. Before, however, one wing was finished, he died in 1557; but his widow, the celebrated Elizabeth Hardwicke, who contributed so much to the beauties of the county in the architectural line, continued and completed the building, which was rendered one of the wonders of the Peak. It was one of the prisons of Mary, Queen of Scots, and at a later period was taken and retaken by the Parliamentary and Royalist forces in the civil war. The older part of the modern mansion was projected about 1687 by the fourth earl afterwards first Duke of Devonshire, on his retirement from the Court of James II. The rebuilding of the south front was commenced in that year, under the direction of Mr. William Talman, afterwards controller of the King's works in the reign of William III. The great hall and staircase were completed in April, 1690. In 1692 the works were surveyed by Sir Christopher Wren. The result of a succession of pulling down and building up was the completion of the present building in about twenty years from its commencement. Mr. Talman received about 13,000*l.* for his contract. This splendid pile was ornamented by the united talents of Verrio, Sir James Thornhill, and other celebrated painters, Cibber, and other artists for the stone carvings, and Gibbons, Davis, and others, for the wood carving. The great northern wing, which is 385 feet in length, was built from the design of Sir Jeffery Wyattville under the present Duke. The stone employed is from quarries on the estate, and is a handsome variegated sandstone. The composition is Italian, and is surmounted by a very elegant tower. Further back are the stables, which form a very fine pile of buildings.”

We went stop to tell of the lunch with Mr. Bateman (who exhibited his interesting collection of antiquities), which relieved these labours, but pass on to Thursday, when Sir Oswald Mosley entertained the meeting at his seat, Rolleston Hall, Tutbury. Tutbury church was visited, and Mr. C. Baily gave an account of it. It ranges from the beginning of the twelfth century to the time of Henry V.: some excavations which were made at the east end showed that the original chancel had a semi-circular apse.

Tutbury Castle, another prison of Mary, Queen of Scots, Norbury Church, and Ashbourne Church, were examined. On the first of these churches, which has some very curious monuments, the Rev. Mr. Broughton read a paper. Ashworth Church contains the celebrated Cokayne monuments, and these were discussed upon by the Rev. Mr. Errington.

Melbourne, with its interesting Norman church, was visited on Friday, and the Vicar described the latter. Melbourne Hall has gardens of great beauty, though of peculiar character.

Mr. Briggs read a paper on the antiquities of Melbourne generally.

Repton, the seat of a Saxon monastery, was examined. The church here has an ancient crypt, and Mr. Ashpitel, in the course of a paper which he read on the church, urged that it was undoubtedly Saxon.

A lunch with Dr. Peile, and the public dinner at Derby afterwards, closed the day.

On Saturday, after a breakfast given by the Mayor (Mr. Douglas Fox), papers were read by Mr. Mayer and Dr. Lee, and Morley Church, which has some fine painted glass, was visited. On the return of the party, some routine business closed the pleasant week. We ought to have said that, as opportunities offered, sectional meetings were held, whereat papers were read by Mr. Bateman, Mr. Heywood, M.P., Mr. Reed, Mr. Halliwell (on some of the ancient monastic institutions of Derby), Mr. Planché (on the armorial bearings of Ferrars and Peverill), Mr. Jewitt, Mr. Mosley, and others. Mr. Henry Stevens, architect, acted as the local secretary.

REMARKS ON THE FORM, TREATMENT, AND APPLICATION OF THE DOME IN MODERN EUROPEAN ARCHITECTURE.

THE dome is certainly a far nobler feature in a classic or Italian church than the spire, which so frequently usurps its place. It has infinitely more architectural meaning, more constructive propriety, and must consequently receive more of mental approbation from the spectator than the spire, which, though it originated in the high-pitched roof, has lost the roof character, and cannot be justified on the roof principle. The spire, in most cases (I refer exclusively to its Italian or Anglo-classic examples), might be removed, and would not be missed; whereas the dome appears an essential part of the edifice, and the simplicity and perfection of its form must render it a suitable feature for a building dedicated to the Deity. It would, moreover, placed either on the main building or crowning a vestibule or ante-chapel, be less expensive than our Chinese-pagoda-like steeples.

Such an application of the dome would tend sufficiently to a general pyramidal outline—to a picturesque massing and grouping externally. Indeed, by embracing at its base a greater portion of the building, it would do so better than the dome-tower, which, like the central spire of the Gothic cathedral, is often too slender to give a pyramidal character to the composition. In fact, most buildings where it is so used, as the mosques of Constantinople and elsewhere, are admirable as compositions, while they show a superior feeling for proportion, as the height of the circumscribing pyramid is better proportioned to the base for an architectural pile. The great domed buildings of India partake sufficiently of the pyramidal character, and are not lacking in the quality of picturesqueness, though the dome is not elevated on towers as in Europe. The pyramidal principle is one which must never be lost sight of, however the dome be applied. On a rotunda it should always be in retreat, the projection of the surrounding peristyle, without the relief afforded by which, it must ever have a top-heavy and unpleasing appearance; and the omission of the peristyle is altogether unpardonable when colonnades are employed below in the body of the building, if the rotunda surmounts one, as in the Custom-house, Liverpool. The pyramidal principle, however, for general composition, must not be overrated: the pyramid is not the only general form or outline of good composition in architecture, any more than it is in painting and sculpture, though the principle itself is of universal application, and may be said to pervade all good architecture, applying less, however, to the classic than to the Gothic. Bartholomew, in his “*Essay on the Decline of Science, &c. in Modern English Building*,” says, “the most perfect architectural composition is that which forms one immense pyramid of decoration, consisting of many minor sub-

servient pyramidal masses;" a doctrine that must be received with some reservation, as it would place the Greek temples, as well as various palatial and other buildings justly considered models of architectural beauty, in an inferior rank of architectural production. To make a complete pyramid of decoration there must, in most buildings, be large extraneous and useless features, having no relation, and being non-essential, to internal proportion and beauty: "a beautiful thing" and "a beautiful building," it should be remembered, are different ideas. Architectural beauty is beauty decorating the essential forms and proportions of architecture; and perfect architectural beauty is the highest combination of fitness and beauty, or the highest abstract beauty compatible with the destination of the highest class of buildings. But even in the highest class of buildings, the pyramidal outline may not be called for by fitness and due proportional beauty of internal distribution: nay, it may be inadmissible, as æsthetic beauty in an architectural exterior must always be subordinate to internal beauty and fitness.

Buildings, however, containing a single apartment, or embodying a single idea as to use, such as places of worship, theatres, mausolea, &c., may advantageously be so composed; but to those of complex use containing many divisions or parts, as colleges, the principle cannot so well be applied.

There is another principle, however, near akin to this, which should be observed in all buildings pretending to architectural character, viz., that which demands delicacy of line and surface, and minuteness of division to increase towards the summit; and the proper arrangement, vertically, of the geometrical forms. Some otherwise beautiful buildings we meet with transgress this geometrical law of composition, having grave unbroken lines and square forms above more elegant ones; a fault of St. George's Hall, Liverpool, the solemnity of whose upper story, or attic order, which looks flat and heavy, is more suited to Doric severity than to Corinthian lightness and elegance. On the same principle are condemnable the long harsh lines of the pyramidal spire above the colonnade in classic or Italian steeples; a fault not to be laid to the charge of the Gothic steeples, with whose square buttresses or octagonal turrets they perfectly harmonize.

In the application of the dome there are many points to be observed:—1st. It should be placed only at the summit of a pile of buildings, not lower down with straight inclined roofs above it, as in some Italian churches, crowning a low vestry, or other appendage; nor overtopped by minarets, as in the east. It must reign supreme among the roofs, if more than one, and be the highest skyline of the building. The propriety is obvious of so placing the feature containing the softest modulation of chiaroscuro, and where every degree of light and shade that beams from the building below is wrought into the sweetest harmony. Neither should the dome be seen rising immediately behind a large pediment, as is too often its fate, which, in front views, completely mutilates it; and if it have a glazed eye, the glazed surface should conform to the circular sweep, and not cause any break perceptible from below.

But the most important consideration is size, or relative size: a proportionate magnitude is essential to effect in the dome;—but the objection to raising domes of a large size hitherto has been the great expense of stone ones. Stone, however, is not the only suitable material. Iron might, I conceive, be used with great advantage and propriety in the formation of the dome, to the true idea of which stone is no more essential than to any other kind of roof. The use of stone in arch and dome constructions is not, as some contend, essential to real architecture: real architecture is architecture that serves our purpose, and combines truth, beauty, and stability, obtained with the least cost. If we have a material that offers superior advantages to stone, which iron does, we have a right to adopt it. Constructed of iron the dome would lose none of its æsthetic value: the man of

taste would gain as much pleasure, I conceive, from the view and contemplation of an iron dome, as he would from a stone one. We should divest our minds of prejudice against materials, enlist the elements at our command into the service of art, and apply every material to that purpose for which it is best fitted. Our architecture, when we do so, will grow: a beautiful, expressive, and powerful art will organize itself out of the varied elements of nature and requirements of life. For the dome, indeed, iron is admirably adapted, and holds out many advantages: we could cover a larger space with it than by any other material, and form a cupola that in majesty of proportions would outstrip all the foregoing; and this with less recourse to and dependance on the deductions of algebra and fluxions; and we could not only have greater choice and command of form, proportion, and curvature, which would not be limited by reference to abutment and stability, but the enormous expenditure of materials and labour employed, often vainly, to secure durability, would be saved. That we could thus cover with safety a larger space with the iron is a most important advantage,—a great boon to architecture, which has to do with the great and sublime as well as with the beautiful: we may emulate nature not only in the latter, but in the former; and there is a call for it in the soul, a craving for the sublime as well as for the beautiful. Moreover, emotions of the sublime, when raised by human works, are peculiarly gratifying and elevating to the mind: we acquire a great idea of the builder, our species, and ourselves. A sense of the power of man so to compete with nature must elevate the mind of the reflective and susceptible spectator itself, and strengthen and prepare it for vast conceptions. We must fall infinitely below nature in dimensions, but the deficiency is made up by the impress of man's power, which is associated with great architectural achievements. Imagine, for a moment, whilst walking up the nave of Amiens or Milan the whole to be a natural production, and the effect diminishes instantly, and we feel that the source of its former impressiveness was its being the fruit of the natural greatness of the soul: it was an intimation of the power and expansion of the designer's imagination, and was the clothing of a mighty human idea. Architecture has her means of producing the sublime: magnitude of scale is an element of grandeur, and is more important in architecture than in the other two arts: the temples of Egypt, the tombs of India, are calculated to fill the eye and satisfy the mind with their actual greatness and massiveness, the boldness of their parts and proportions, and their consequent grandeur of light and shadow. But great dimensions will not produce the sublime if the mass be cut up into small parts: in addition to largeness of dimensions there must be *greatness of manner*—fewness and largeness of divisions. Great cylindrical buildings, as the Roman Pantheon, exhibit it; as also great square ones, which produce, by rectilinear and rectangular planes, the greatest contrast of light and shade. The Roman Amphitheatre, its huge circumference

"Stretched like eternity around,"

must ever raise emotions of the sublime in the breast of the spectator.

With this greatness of manner as well as with greatness of dimensions, the dome will peculiarly harmonize: it is an important element of the grand style in architecture, and there is no form in which magnitude is so befitting, in which effect is so much increased by increase of dimensions: no architectural feature on a large scale, or indeed on any scale, has the simplicity of the dome. In fine, unlike most, if not all, other features, on any scale it is beautiful: small, it is graceful: magnify it, and you have grandeur.*

S. H.

GAS, LEICESTER.—The contractor asks us to contradict the statement as to the omission of mains at the market-house, which we quoted last week from a provincial journal.

* To be continued.

AIR SHIPPING AND FLYING MACHINERY.

THE strenuous endeavours of men of all civilised nations to acquire dominion over the air, really merit some little reward. They are certainly not very likely, however, to meet with it by ordinary ballooning. We happen to live at the west end, within sight of almost daily toying—and something not so harmless, sometimes—with balloons, and are convinced that the monkeys sent up in fire-balloons are just about as likely as the humans—poor unfortunate women among them too—sent up in those of larger calibre, to advance the cause of useful *aéro-motion* by the present practice, which has sunk into mere mountebankism, both here and on the continent. Even the new balloon like an enormous bolster or pillow, with little fan-wings scarcely perceptible by comparison, and which was to redeem ballooning from contempt, takes precisely the same course, with very much the same velocity, as the monkeys and the women. It is full time, therefore, that some dash were made in another direction, were it but to break through the settled-down and hopeless absurdities of modern ballooning, even though with something almost as hopeless and absurd itself. We should then have a change of idea and some novelty that might at least be suggestive of further and more hopeful experiment.

An "aerostatic society," we perceive, has been established at Sheffield.

"It is announced," says the local *Independent*, "that 'the latest scientific improvement of our age is about to be verified,' and the objects of the society are thus set forth:—'This society is instituted for the purpose of aiding and carrying out improvements of a purely scientific character. Illustrations will be given in diagrams, upon *aërostation by wings*, which will enable an athletic person to fly by a simple piece of mechanism over hill and dale through the air at great velocity, without the aid of steam or other but mechanical contrivances.' Mr. G. Cavill is secretary, and a Mr. Miers Hind, engineer. There have been so many wonders accomplished that one can hardly be surprised at the indomitable faith with which men were wont to seek the philosopher's stone, [were wont, indeed! The *Independent* does not seem to know that some of our ablest chemists are at it again!] the elixir vite, and the perpetual motion. And if we should chance to see some of our 'athletic' friends 'flying over hill and dale,' over houses, towers, and steeples, with the speed of carrier pigeons, we shall be eager to record the sublime achievement. Whether they will be able to combine in their athletic frames strength and lightness in the requisite proportions, has doubtless been profoundly considered by the engineer."

This bold, yet not very novel, idea certainly goes beyond anything ever seriously hoped for in the most youthful and most sanguine dreams of our youth—unless it were in *dreams* indeed: there we have had the supreme felicity of sailing at will, with no less majestic than magical facility, through the ambient air—buoyant as a cork in quicksilver—without any wings at all; but the nearest approximation we ever recollect of any one, till now, having made, in actual and successful practice, to such a faculty, was that of a recent aeronaut who had bounded to such immense distances while holding on by a balloon as might have made the most "athletic" flea in existence envious. We suspect, however, that the Sheffield *Aerostatic Society* are not likely to make much *motory* progress unless they "hold on by the balloon" too. We can conceive how an athlete, with his weight *so far*, but not altogether, balanced by a balloon, might manage to fly, like some winged Atlas, with the globe on his shoulders, and wings moved by mechanism worked by "all fours," though even then the balloon itself would be a formidable obstacle to advancement except with the wind; but we fear it will indeed require an athletic frame, and a small and wiry one, to work such a mechanism effectually without the help of gaseous levitation. Yet we know that an eagle can fly with the dead-weight of a lamb or child added to his own, and thus readily reach his aerie. And moreover, if half of what *La Patrie* of Paris states be true, a most unlikely success has been attained by a very apocry-

phal looking "Don Diego de Salamanca," or his daughter, rather, Rosaura, who "rose some time ago at Madrid, to the great astonishment of the Spaniards," by means of wings and mechanism alone, the wings "being 10 feet long, and made of very thin caoutchouc," and hence, though covered with feathers, rendering the dulcinea de Salamanca rather less like an angel than a bat. *La Patrie* even asserts that "the Academy of Sciences is a good deal interested by the invention," and that "Don Diego de Salamanca and his daughter are about to arrive in Paris to show the effects of his marvellous invention." The machine is even described. "It is very simple; consisting of a case 2 feet long and 1 foot wide, adapted to a band of leather round the waist, buckled behind. Two iron rods fastened to the case support a small piece of wood, on which the feet repose. The case contains a simple and ingenious mechanism, similar to that employed to set an automaton in motion. The mechanism is worked by means of a handle. It sets in work two large wings," &c.; "and the wings may be so worked as to produce vertical, perpendicular, or horizontal flying. The number of turns given to the handle determines the height to which it is desired to go. The handle has also to be turned every quarter of a league to regulate the distance: the operation of turning lasts a minute. Horizontal flying is the most difficult. The wings beat the air like the oars of a boat, or rather, as the feet of a swan when it swims. By means of this curious machine a man can go, almost as rapidly as a carrier-pigeon, from the Hotel de Ville to the Arc de Triomphe de l'Etoile in eight minutes, and in half-an-hour to Versailles. The experiments which will be made at Paris will be on a small scale, and the flights of Don Diego will not extend beyond the department of the Seine; but at a later period he proposes to go to Lyons, Bordeaux, Toulouse, Marseilles, and Tours, and to take the lines of railway. He pretends that he can travel quicker than by rail. The price of each machine will not exceed 1,200*fr.* for men and 1,000*fr.* for women. If the experiment succeeds, Don Diego will take out a patent, and will make the sale of the machines a branch of commerce. Although greatly astonished at this new invention, several members of the academy have pointed out the inconvenience of bringing it into general use. In point of fact there will be no security for any one, if by the aid of such a machine all our usages and customs be overthrown, and if malefactors can fly on the roofs of houses, afterwards get into apartments, and commit all sorts of depredations. It will be very curious to see policemen in France or England pursuing thieves in the air, in order to lock them up on earth." It appears that 1852 promises us all sorts of marvels." So, indeed, it does; but will it perform them?

While reporting progress, if we can so call it, on this side the Atlantic, we must also see what is doing beyond it; and, indeed, the experiments there in progress have a much more imposing appearance, if not a more hopeful, than any of those just recorded. The *New York Tribune* states that an immense aerial ship, "The United States," is now on the stocks at Hoboken, and nearly ready for launching into its destined, if not its native, element, the air. The *Tribune* visited this curiosity, and inspected it.

"The car," he says, "is 64 feet in length, very sharp at either end; width, 6 feet; height, 6 feet 4 inches; the whole composed of a strong, light wooden frame covered with canvas, with doors and glass windows. The boilers are of copper, on the tubular plan, and occupy a space equal to 4 cubic feet. The engines are very perfect, being composed of gun metal and cast steel: they are of 12-horse power, and are to work 20-inch stroke sixty-six times per minute, which will give 400 revolutions of the floats, which are placed in a substantial framework on the top of the car. There is sufficient room for twenty-five passengers, with fuel for four hours. The float is 260 feet in length, of a cigar-like shape, 24 feet diameter in the centre, and has a gas capacity equal to 95,000 cubic feet, which gives a lifting power equal to 6,500 lbs. The entire weight of the car, float, and fixtures, is but about 4,000 lbs.,

leaving 2,500 lbs. surplus. It is designed to run about 200 feet above the surface of the earth, at a rate of speed varying from twenty-five to fifty miles per hour. The engines are a curiosity, their weight being 181 lbs., and so perfect are they, that by the force of his lungs Mr. Robjohn caused both pistons to work a full revolution, carrying a driving-wheel of 4 feet diameter. The ship thus far has cost the inventor about 5,500 dollars, and he now requires only a few hundreds more to perfect and set afloat his air ship. It is designed to drive this vessel by steam; and, to obviate the necessity of fuel, Mr. Robjohn says he has discovered a plan for decomposing water, igniting the gasses, which again become water, which is converted into steam by combustion, and this steam is again condensed and returned for decomposition, thus securing entire immunity from waste, and a uniform weight during the longest voyages. The present arrangement of the engines is, however, on the usual reciprocity plan, driven by steam generated from coke and spirits of wine."

We have said quite enough on this new branch of engineering for the present.

MEDDLING WITH A NEIGHBOUR'S FOUNDATION.

RAWLINSON v. NICOL.

AT Liverpool, on the 20th, an action of trespass brought against the defendant for undermining the plaintiff's house, whereby it was much cracked and damaged, was tried.

It appeared that the plaintiff had built himself a house in Faulkner-square, Liverpool, in 1846, on the building of which he had expended a sum of 2,200*l.* and had given 400*l.* for the land. The house was of a very substantial character, and was handsomely decorated. The foundation, however, on which it was erected was sandy, and it appeared that the outer walls of the house were built on the very verge of the plaintiff's land. On the 21st of October last a gentleman named Robinson purchased a plot of adjoining land for the purpose of building a house upon it, and employed the defendant, who is a builder, to build it. The defendant sank the foundations lower than those of the plaintiff's house, and close up to his gable wall, and to prevent it from tumbling in the defendant underpinned it, to do which he excavated portions of the earth under the gable wall. In consequence, one night the plaintiff's wife was alarmed by hearing the walls crack. This damage proceeded until the windows broke and the doors would not shut, and the house was considerably shaken. The repairs had cost 135*l.* 7*s.*, and the house, for the purposes of sale, had been so permanently damaged as to be worth from 200*l.* to 300*l.* less than it was before.

For the defendant it was contended that had he dug straight down by the plaintiff's wall, as he had a right to do, without taking the precaution to underpin it, the plaintiff's house would have tumbled about his ears, as the foundation was of so sandy and loose a kind that it would have fallen into the deeper foundation which the defendant was digging. It was also contended that the damage done to the plaintiff's house had been over-estimated, as a portion of the cracks existed before, owing to the insufficient foundation and bad building; that the damage was not a permanent injury to the framework of the house, the vertical settlement of the wall being only an inch, and that 25*l.* to 30*l.* would repair it.

After a short absence the jury returned into court with a verdict for the plaintiff, damages 197*l.*, and leave was reserved by the learned judge to the defendant to move to reduce the verdict by the sum of 25*l.* on a point of law.

THE ART-UNION OF LONDON EXHIBITION AND ILLUSTRATED BOOK.

THE exhibition of works of art selected by the prizeholders will be opened to the subscribers and their friends on Monday next, in the Suffolk-street Gallery. A selection has been made, too, from the purchases of former years, so that the collection as a whole is large and interesting. The council have very properly kept the pictures of the year separate, giving one side and end of the large room and of a second room to the new works, and the corresponding side and end to those of previous years. A third room is filled with water-colour drawings, including some charming bits by Copley Fielding, Callow, Gastineau, Robins, Vickers, and Bennett.

Amongst the oil paintings, "The Diversion of the Moccotelli," by McInnes; "Lime Kilns," by McCulloch; "Bonnevill," by Harding; "Heidelberg," by De Fleury; "An

Autumnal Noon," by H. J. Boddington; "Poor Mariners," by Danby; and "Scene on the Exe, Topsham," by W. Williams, will be especially noticed.

"Lyn Lydan—the Lake on Snowdon," by S. R. Percy, is a singularly beautiful landscape; and "The Bull's Close, Edinbro," the Day after the Battle of Preston Pans," by J. Drummond, is a small picture of great merit. Patten, Allen, Montague, Maguire, A. Cooper, R.A., Witherington, R.A., Woolmer, Tennant, Herring, &c., are amongst the artists whose works have been selected.

We must especially praise McDowell's beautiful marble bust of "Psyche." We congratulate Mr. T. Clarke on his selection.

Amongst the old favourites will be seen, "A Mountain Chieftain's Funeral," by Francis Danby; "The Contest for the Bridge," by G. Catermole; "Preparing for the Festa," by F. Y. Hurlstone; "The Oath of Vargas, in the Conseil des Troubles (1567)," by L. Haghe; "Griselda," by R. Redgrave, A.R.A.; "Luther listening to the sacred Ballad," by R. M'Innes; "The Death of Cardinal Beaufort," by J. Gilbert; "A Camaldolese Monk showing the Relics in the Sacristy of the Convent of the Camaldoli at Rome," by W. Simson; "King Alfred in the Swineherd's Cottage, reproved by the Herd's Wife for allowing the Cakes to burn," by H. Warren; "The Departure of Charles II. from Bentley," by C. Landseer, R.A.; "The Dawn of Morning," by F. Danby, A.R.A.; "Catherine of Arragon appealing to Henry VIII.," by H. N. O'Neill; "Othello," by J. Gilbert; "Bianca Capello," by J. C. Hook; "Cornet Joyce seizes the King at Holmby, June 3, 1647," by E. M. Ward; "A Girl of Sorrento, spinning," by W. Collins, R.A.; "A Scene from the Vicar of Wakefield," by W. P. Frith; "Filatrice Sorrentina," by J. Inskip; "Venice," by W. Linton, &c., &c.

The illustrated volume just now issued by the Art-Union (Goldsmith's "Traveller") contains some capital drawings, and will, we have no doubt, be very popular. E. M. Ward's drawing from the French Revolution (xvii.),

— "Freedom taught alike to feel
The rabble's rage and tyrant's angry steel,"
is singularly good, and No. xx., by the same artist, is a fine specimen of wood-cutting, by M. Jackson. Stanfield has two beautiful conceptions, the Port in Prosperity,

"When commerce proudly flourish'd through the State,"

and the Port in Decay, when

— "Naught remained of all that riches gave,
But towns unmann'd, and lords without a slave."

Gilbert's illustration (xviii.) of the lines—

"At night returning, every labour sped,
He sits him down, the monarch of a shed;
Smiles by his cheerful fire, and round surveys
His children's looks, that brighten at the blaze,"
&c. &c.

fully carries out the poet's words (which is more than can be said for all of them), and has, moreover, much beauty. Frost has a pretty piece of Italian life (vii.), and John Leech (xxvi.) gives an illustration full of character, of the line—

"Ferments arise, imprison'd factions roar."

Amongst the landscapes is a characteristic bit, by Martin; a mountainous view, by Harding; an English view, by Parrot; and an Italian view, No. xiii. by Leitch, on the lines—

"As in those domes, where Cæsars once bore sway,
Defac'd by time, and tott'ring in decay,
There in the ruin, heedless of the dead,
The shelter-seeking peasant builds his shed;
And, wondering man could want the larger pile,
Exults, and owns his cottage with a smile."

As examples of these illustrations we select two, for their subjects, No. x. by E. H. Wehnert (engraved by W. J. Linton), a studio, where—

"The canvass glow'd beyond e'en nature warm,
The pregnant quarry teem'd with human form,
And a beautiful drawing by Hulme, on the lines—

"Have we not seen, at Pleasure's lordly call,
The smiling, long frequented village fall?"
admirably engraved, by J. L. Williams.



A STUDIO.—By WEHNERT.



THE DESTROYED VILLAGE.—By HULME.

LICHFIELD-HOUSE GALLERY OF MODERN PAINTINGS.

A COLLECTION of pictures by a number of foreign painters, whose performances are almost unknown in England, has been opened, our readers are already aware, for public Exhibition, in the mansion known as Lichfield-house, St. James's-square. The house itself is one of fine proportions, and contains an unusually grand suite of reception-rooms. It was built, if we mistake not, by Athenian Stuart. In this suite of apartments, both on the ground and on the first floor, the collection, numbering about 500 specimens of pictorial art, is placed. Although the majority of the pictures are by the artists of the various European continental schools, there are also several by English painters. The intention in forming the collection for public exhibition was to offer a kind of succursal to the Glass Palace, where Painting was the only branch of fine art excluded from its comprehensive plan.

Among the English painters whose works form a portion of this exhibition, are, Cope, F. Grant, O'Neil, Cave Thomas, Lance, P. F. Poole, J. Ward, E. M. Ward, J. Allen, Dighton, Lucy, Lucas, Middleton, Willis, Maddox, Earl, and several others. The most striking work of English art is the great cattle picture by the veteran Ward, a *chef d'œuvre* in its line, which should belong to the nation, if a truly national gallery of British art be ever formed. The foreign pictures are principally French and German, several Belgian, and others from Sweden, Norway, Denmark, Russia, Switzerland, and Italy. The French school includes the celebrated picture of the Massacre of the Innocents, by L. Cogniet, and the Woman taken in Adultery, by Signol, both well known by engravings. There is also a striking picture, on a painful subject, by Leullier: it represents the combat of wild beasts in the Colosseum, in which the Christian prisoners were devoured, in presence of the Emperor Domitian and 80,000 spectators. The other contributors of the French school are Gosse, Schopin, Biard, H. and R. Lehmann, Rossignon, Isabey, Scheffer, St. Jean, of Lyons, Felon, Ziegler, Ziem, Lapito, A. Leleux, &c. A Landscape, by Grolig, is enriched with figures by Horace Vernet, and a little cattle picture by Mademoiselle Rosa Bonheur, is admirable for its truth. In the German school, a historical subject, by Hasencleer, of Dusseldorf, of a recent event, is very remarkable. Two small studies by Schandorf, who painted the frescoes in the Basilica at Munich, in conjunction with Hess, deserve attention for their excellence. There are, altogether, about one hundred pictures from Berlin, Munich, Dresden, Darmstadt, and other parts of Germany. A small elaborate picture of a charge of cavalry by Heicke, of Vienna, has been sent from Buckingham Palace. Although the Belgian and Dutch schools are not numerously displayed, there are several good performances. The chief of the Academy of Antwerp, the Baron Wappers, is represented in three pictures, lent to the Exhibition by the King of the Belgians, Prince Albert, and Mons. De Pret, a wealthy merchant of Antwerp. A colossal picture of the Death of Nelson, by Slingeneer, of Brussels, and some examples of H. Leys, Madow, the Chevalier Eckhout, J. Van Eycken, Waldorp, Schotel, and other familiar names will be found. The triennial exhibition of modern art being now open in Brussels, has prevented this interesting school from having more extensive contributions. One of the most noticeable works of art here, as being illustrative of the modern school of Italy, is a picture by the Cavalier Podesti, of Rome, representing an episode of the siege of Ancona by the Emperor Barbarossa, in 1160, containing upwards of forty life-size figures. The Italian school, besides, comprises pictures by Schiavone, of Venice, Ippolito Caffi, Giorgetti, and others.

The architectural subjects are few, and confined to interiors of ecclesiastical edifices, by D. Dauzats, Genieson, of Louvain, and Hamman, of Copenhagen: this last-named artist exhibits among interior of the cathedral of Burgos, remarkable for its skill in drawing, good breadth of

light and shade, and extraordinary care of details.

Altogether the exhibition is very instructive of the modern foreign schools, although it would be wrong if we were to lead our readers to expect to find their great and famous *chefs d'œuvre* here. Still there is plenty to gratify a visitor; and in the evenings when the saloons are lighted, the effect is very agreeable to view the collection in promenade the splendid interior of the mansion; the grand staircase, eight large rooms, and the corridor being completely covered with pictures.

RAILWAY JOTTINGS.

THE Great Western do not seem to be the only company at loggerheads with their contractors. "We find the following," says the *Liverpool Times*, "in the *Limerick Chronicle* :—'Fox and Henderson, contractors of the Bandon and Cork Railway, refuse to give up the line, now complete, to the directors, unless they are paid 30,000*l.*, and the directors contend that they are in possession of the line, and owe the contractors only half the sum claimed.' The same paper says, 'The agents of the contractors, Fox and Henderson, of the Bandon Railway, are held to bail at Cork, on charge of the directors, for putting obstructions on the line and pulling up the rails, and the contractors have preferred an indictment against the directors for unlawful assembly!' The case was tried last week at Cork assizes, and lasted three days. It ended in the acquittal of the agents of Messrs. Fox and Henderson, and the entry of a *nolle prosequi* by the counsel of the Bandon Railway Company, or rather of 'The Crown,' in the cross case against the parties connected with that company."—A discovery has been lately made of the insecure state of an arch by which the Great Western Railway crosses a road in Ruscombe parish: the construction of the arch is upon the skew principle; but the whole, about 25 feet span, has been discovered to require under-pinning or shoring up.—A Liverpool contemporary, in reference to workmen's trips, remarks that, "To spend their spare funds in a weekly 'booze' is happily now going out of fashion with workpeople generally, and they have adopted the much more rational and healthy practice of cheap excursionizing. Within the last few days the hands of Messrs. Dawson, J. and A. Leigh, Watson and Alsop, Gratix, and Lancaster and Son (Manchester firms), numbering about 1,200 people, have visited this town. Large numbers of them went over the water to Rock Ferry. The workpeople of Messrs. Swainson, Birley, and Co., to the number of about 1,600, were conveyed to Liverpool and Rock Ferry, on Saturday. The hands of Messrs. Humber, Mr. Edge, Messrs. Horrocks, Miller, and Co., and the trustees of Mr. J. R. Postlethwaite, have made a trip to Blackpool; and those of Messrs. Ainsworth and Co. to Fleetwood. On Monday and Tuesday large numbers of country people visited our town, from Manchester, Salford, Heywood, Blackburn, and Bolton."

NOTES IN THE PROVINCES.

Melton.—A memorial window of stained glass has been placed in east aisle of south transept in Melton church. It is the gift of Mr. John Keal, of Melton, and the work of Hardman, of Birmingham. The design includes four full-length figures representing Saints Luke, Paul, James, and John, and is interspersed with Gothic tracery. A smaller new window, over the south door, shows a figure of our Saviour in stained glass.

Kenilworth.—The foundation stone of St. John's Church was laid on Tuesday in last week. The site abuts on the Leamington railway on one side, and faces the Warwick coach road on the other. It is about an acre in extent, and affords space for a parsonage, which is to be built on one side of the church, and a school, which is to be erected on the other. The cost of the land is 350*l.* The church is to be built in the Gothic style, with a tower and spire, at a cost of 2,500*l.*, exclusive of site and architect's per centage. It is to

contain seats for 800, of which 400 are to be free.

Liverpool.—The town council have sanctioned the purchase of the Exhibition model of the Liverpool docks, and collection of imports, for 700*l.*—The Gas Company have, as usual, declared a dividend for the last half-year at the rate of 10*l.* per cent. per annum—the highest allowed by Act of Parliament. Besides this they have announced the intention of bringing up certain old dividends to the same mark. The amount of profit for the last year alone has been declared to have been 45,034*l.* 13*s.* 10*d.* It ought never to be forgotten that this is the result of forced reductions of price repeatedly made in spite of an immense deal of kicking, sprawling, and outcry about ruination on the part of the company. At same meeting the usual remuneration of 500*l.* was voted to the directors.

Leighton.—A new church, designed by Mr. W. H. Gee, architect, is being erected at Leighton by Messrs. Walker, the builders of Birkenhead park villas.

Chesterfield.—A stained glass window has been erected in Trinity Church, by Mr. Robert Stephenson, M.P., in memory of his father. It is a triplet of the Early English style of thirteenth century. Each window is enclosed by a border, and the general ground is ruby, on which is displayed flowering scroll work of the character peculiar to this period, and which prevails in the A'Beckett Glass in Canterbury Cathedral. In the midst of these, geometrical forms are marginally developed, so as to create panels of various forms, all of which are filled with mosaics and monograms. The panels are, however, filled with scripture subjects.

Newcastle.—The removal of the Royal Grammar School, to make room for the Central Railway Station, remarks the local *Chronicle*, "destroyed the last remains of the old building of the 'West Spittle,' or Hospital of St. Mary the Virgin; and a church, master's house, almshouses, and school, are about to be erected in its room, upon a site purchased for that purpose at the Elswick Estate. Sir George Rose, the Master in Chancery, to whom the cause stands referred, has thrown open to competition the designs and plans for the building of the new hospital; and the collection of drawings has been exhibited in the Merchants' Court, Guildhall. Along with the competition designs, a series of plans prepared by Mr. Dobson, some time since, for the local commissioners, are exposed to view. The drawings are, some of them, quite works of art, being coloured and finished up to a high pitch, and ranking, in fact, as picturesque watercolour paintings, more than as architectural designs. There is a considerable likeness in the style of the whole. The church in every case is of the Gothic school, and of either the Early English or Decorated Period; and the roofs are of open wooden framing of a bold and striking character. Mr. Dobson's plans give also a wooden groined roof. The proprietors of property in the township of Elswick held a meeting on Friday, which emanated in a request contained in a letter from the Master in Chancery, courting an expression of opinion as to the desirability of any one of the plans for the intended new church and almshouses at Ryehill, for the Virgin Mary's Hospital. After an examination of all the plans, the meeting came to the unanimous conclusion of forwarding a memorial recommending the plans submitted by Mr. Dobson."

Alnwick.—A monument, from the studio of Mr. Carew, of London, has been lately placed in the north-eastern transept of St. Paul's Church, Alnwick, to the memory of the late Duke of Northumberland. The monument consists of an altar tomb, formed of polished Caen stone, 9 feet long by 4 feet 9 inches in breadth, and forms a pedestal 2½ feet high, on the top of which, in a recumbent position, is placed a full-length figure of the late duke, robed as a knight of the garter, with the dual coronet on his head: round his neck he wears the collar with the George suspended in full and beautiful relief: on the left breast is placed the star and badge, and on the left knee the garter and motto of the order. His feet rest

on a lion couchant. Round the pedestal, divided into Gothic compartments, are placed shields, setting forth the arms and achievements of the House of Percy and its alliances. The bearings are chiselled in relief. The whole is surrounded by a bronze railing of Gothic design. The monument is erected at the expense of the present duchess dowager. St. Paul's Church has been only recently erected by the late duke, from designs by Mr. Salvin, in the Gothic style of architecture.

Glasgow.—Buildings are being demolished to make way for the erection of a new Post-office. Improvements are in progress in the unsightly neighbourhood between Buchanan-street and Cathedral-street.

Castlewella (Newry).—A new church, from a design by Mr. Charles Lanyon, architect, in the Gothic style, is in course of erection near the seat of Earl Annesley, and chiefly at his lordship's expense. The edifice is cruciform, with tower and spire, and will contain sittings for 800 persons. The roof, interiorly, will be open and carved. The cost will be about 5,000*l.* Mr. R. Cherrey, of Loughgall, is the contractor.

Miscellaneous.—The Treasury have sanctioned an enlargement of the entrance of the new Limerick Docks to 70 feet, for and vessels drawing 20 feet of water.—The Bishop of Durham has given 300*l.* towards the erection of a church at Pantasa, Wales, to take the place of the one erected by Lord Feilding, previously to his seceding to the Church of Rome.—The new church of St. James, Lathom, in the Ormskirk parish, was consecrated, on Tuesday week, by the Bishop of Chester. The edifice was built and endowed by the late Earl of Derby.—The foundation-stone of Trinity Church, Langley, parish of Hales Owen, was laid by Lord Lyttelton, on Thursday in week before last.—An industrial school has been built at Gainsborough, and was opened on Wednesday week.

COATING METALS WITH METALS FOR BUILDING PURPOSES.

MESSRS. H. GRISSELL AND REDWOOD have patented five distinct processes for coating metals with other metals. We take from the *Chemical Record* a description of three of the processes.

First Process: Coating Iron with Zinc.—To accomplish this, a bath or vessel of iron or other suitable material is employed, in which the zinc is melted by means of heat: on the surface of the melted zinc a thick stratum of chloride of zinc is then placed. When the metal and the chloride are in a state of fusion, the iron is dipped into the metal through the covering of fused salt, and thus becomes coated with zinc. If, however, it is found in practice that a sufficient quantity of zinc has not adhered to the surface of the iron, a small quantity of powdered sal ammoniac is sprinkled on the iron, which is then again immersed in the melted zinc. Instead of chloride of zinc, a mixture composed of eight parts of chloride of zinc and ten parts of chloride of potassium may be used, or a mixture of equal parts of chloride of zinc and chloride of sodium, or a mixture of about equal parts of dry sulphate of zinc and chloride of sodium or chloride of potassium.

The patentees claim the use of chloride of zinc, applied as above mentioned in the fused state; also the use of the various mixtures enumerated.

Second Process: Coating Zinc, Zinced Iron, or other Metal with a Metallic Alloy.—For this purpose a bath or vessel of iron or other suitable material is used to melt the alloy. On the surface of the melted alloy a stratum composed of equal parts of chloride of zinc and sal ammoniac is placed, and the metal to be coated is dipped into the melted alloy, but not allowed to remain therein longer than is necessary to receive a coating. The temperature of the melted alloy must not be carried higher than is sufficient to maintain it in a fluid state. One of the alloys used by the patentees is composed of 10 parts of zinc, 26 parts of tin, and 5 parts of lead. The patentees use also the alloy called "fusible metal," which they

prefer to have in the following composition:—bismuth 8 parts, lead 5 parts, tin 3 parts: alloys in other proportions will also do, provided their melting point is below 400° Fahr.

The patentees claim the use, in the manner above stated, of the alloys mentioned or referred to, and of the methods above described for coating metals with such alloys.

Third Process: Coating Iron or other Metal with Tin, or Tin alloyed with Lead.—To effect this a bath or vessel of iron or other suitable material is employed, in which the tin or alloy is melted. On the surface of the melted metal a stratum, composed of about equal parts of chloride of zinc and sal ammoniac, is placed, and the metal to be coated dipped through the stratum of fused salt into the melted tin or alloy, until the required coating is effected. The patentees state that they find it advantageous in the use of this and the preceding process to dip the metal to be coated several times, so that it may be brought into frequent contact with the stratum of fused salt on the surface of the melted metal. They also find it advantageous in the preceding process to dip the iron or other metal into a hot solution of chloride of zinc, rendered slightly acid by excess of hydrochloric acid previous to its immersion in the bath of melted metal.

The patentees claim the use of a mixture of chloride of zinc and sal ammoniac, forming a saline compound, which is kept in a state of fusion on the surface of the melted tin or alloy, in the process of coating metals with other metals.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Academy of Inscriptions and Belles Lettres, Paris.—The annual meeting of this society took place on the 19th inst. in the great sale of the institute, and was numerously attended. The following question had been proposed as the prize thesis for 1851:—"What has been the increase of knowledge on the history of Greek sculpture from the earliest period up to the times of Alexander, obtained from ancient monuments, especially those which have been placed in the museums of Europe since the beginning of this century?" As no memoir has been received relating to this prize, it has been repeated for 1853. A report was read on the labours of the French Academy of Arts at Athens. M. de Sauley concluded the sitting by the reading of a memoir on the Dead Sea, replete with interesting notices on this historical locality.

Munich.—M. Lipp, an artist previously known by his model of the Cathedral of Cologne, is now exhibiting a similar representation of the London Palace of Industry. Its scale has been reduced sixty-one times, the model having a length of 30 feet, its breadth being 7 feet, and the height of transept 2 feet. The metal and glass are scrupulously rendered, so that the structure is imitated with perfect truth. The number of metal columns is 3,842, and that of the smaller supports 2,141. The number of the curious visiting it is very great.—King Maximilian has ordered that the family pictures of the House of Bavaria shall be collected at Schleissheim, and chronologically arranged in two saloons.

Important, if true.—The *Journal de Constantinople* states that a Polish gentleman has made a discovery very high reaching the *perpetuum mobile*. The mechanism once put in motion will continue constantly moving for twenty years without requiring any aid or repair. M. Rudwicki thinks that his mechanism will easily supersede all other hitherto known motion—manual and animal labour, water, steam, or wind, the expense of his contrivance being in the proportion of 5 to 100 compared with that of others. The inventor is gone to Paris to lay this discovery before the Academy of Sciences.

Art-Union of Linz.—This town, like so many of an equally small compass, has established a fostering institution for the fine arts. Birkel, Schleich, and Baade, of Munich; Humel, of Weimar; and Einsle, of Vienna, have sent specimens for the first exhibition,

which is now opened. A Sicilian landscape, by Humel, is highly spoken of.

Ancient Plans of Towns.—The old library of the Convent of Oliva, near Dantzic, has been sent to Berlin for sale. Amongst its contents are 224 plans of towns of the seventeenth and eighteenth centuries, amongst which are those of St. Petersburg in the year 1744, Constantinople, &c.

A Hotel garni at Jerusalem.—This world-famous resort of tourists belongs to M. Meschullam, and lies within the Damascus-gate to the left of the ascending slopes of the Besetha-hill; and while it tops over the Tyropomus ravine and the level of Solomon's Temple, commands the view against the Dead Sea and the rock of Moab. If we think of the construction of a northern inn, with all its precautions against wind and weather, the Jerusalem *garni* affords no such comforts and appliances: although it is surrounded on all sides by houses, yet if you wish to pass from one story to the other, or to the different corridors, arcades, and stone stairs, this cannot be done in bad weather without the aid of an umbrella. Most of the rooms have their own separate roofs, which imparts to the building a very original aspect; and there are some which, while offering the finest prospects, are furnished with all the ingredients of Eastern splendour. The prices at this Eastern Clarendon are moderate compared with the English standard.

SIR ROBERT PEELE'S GRAMMAR-SCHOOL, TAMWORTH.

The Grammar-school at Tamworth was founded in 1820 by the father of the late Sir Robert Peel, and 100 boys were educated in it entirely at his cost, each boy receiving a suit of clothes annually, and a shilling loaf of bread. At his death, a sum of 6,000*l.* was bequeathed to his son for the same purpose.*

The original school building being considered inadequate, the late Sir Robert built a new one in 1837, and made some alterations in the establishment. He never ceased to take a deep interest in this school, but his attention was specially devoted to it on his retirement from the government of the country.

In 1850 he resolved on rebuilding the school upon an improved plan, and on a more capacious site. The remodelling of this institution formed one of the latest subjects of his solicitude, and he was in frequent correspondence with his architect (Mr. Sydney Smirke) respecting the detailed arrangements of the interior at the period of his lamented death.

The new building has been completed by the present baronet, and is now occupied. The walls are of brick, with stone dressings. The school-room is 49 feet \times 25 feet: the roof is open, with ornamental framed trusses: the height is 27½ feet up to the ridge, and 14 feet up to the wall-plates. It is entered from an open porch. There are two class-rooms, fitted up for chemical lectures, and provided with drawings and mechanical models and mathematical instruments. The school-room is warmed by an open stove with descending flue, and it is ventilated by a louvred turret in the roof, by hopper ventilators in the windows, and by air-ducts near the floor.

* The school offers a good commercial education, at a very moderate cost, to the sons of persons belonging to the middle and lower classes, in combination with the purpose of the original endowment.

There are two classes of scholars—one consisting of boys paying a small sum for their education; the other of boys on the foundation, receiving gratuitous instruction. It being intended that the master shall train up pupil teachers, selected from the most proficient and apt scholars (whether on the foundation or not), the course of instruction embraces the following subjects (quoted from the minutes of the committee of council):—

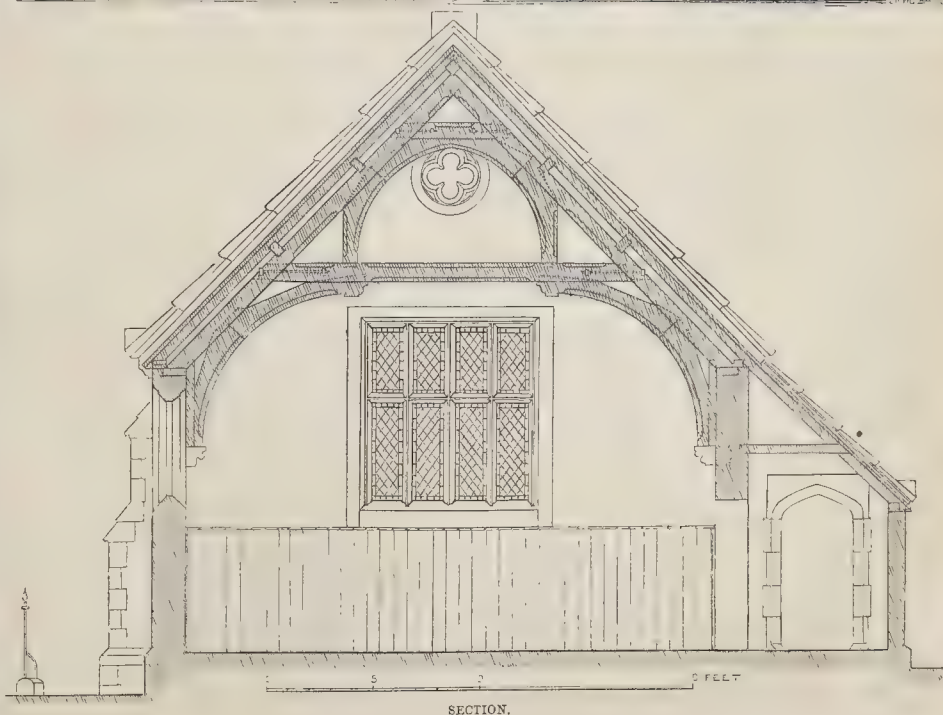
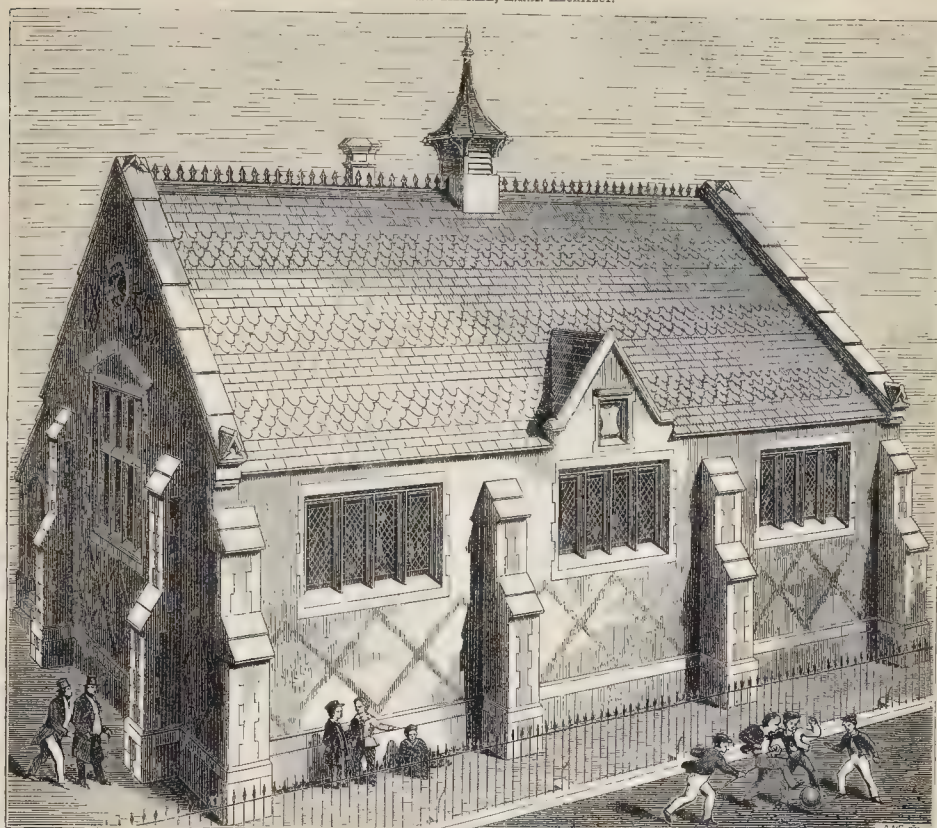
English Grammar and Composition; Geography, Descriptive, Physical, and Historical; the Use of the Globes; English History; Common, Decimal, and Mental Arithmetic; Book-keeping; the Elements of Mechanics; Mensuration; the Elements of Land Surveying and Levelling; the Rudiments of Algebra; Vocal Music; Model Drawing; and the Elements of Agriculture.

The foundation boys are provided with their education, books, and slates, free of expense, and receive a suit of clothes, and cap, annually, at Whitsuntide. The fourteenth and last of the sons of labouring or poor men residing in the parish of Tamworth, not being under eight years of age.

Boys not on the foundation pay 10*s.* per quarter.

SIR ROBERT PEEL'S GRAMMAR SCHOOL, TAMWORTH.

MR. SYDNEY SMIRKE, A.R.A. ARCHT.



HOLBORN HILL.

RESPECTED FRIEND.—Albeit many persons may consider it unseemly that a sister of the community of Friends should address the public in print, I feel that thou wilt pardon the intrusion, seeing that I belong also to the Society for the Protection of Quadrupedal Animals, and that it is for the purpose of mending our ways and of abating an evil of long hiding amongst us, which has caused much suffering to the useful, over-wrought, and noble creature, the horse.

Within the confines of the City there lieth a vale, intermediate between Holborn and Newgate-street, which I shall call the "Vale of Wails and Woes;" on one side the steep called Holborn Hill riseth at a sharp incline of pavement; on the other the no less precipitous elevation called Snow Hill: this being the greatest thoroughfare for omnibuses in the metropolis, the surface is worn to a polish so smooth that the jaded creatures harnessed to carriages of a ton weight, freighted with a load of mortality (of, say, twenty persons) equal to 30 cwt. more, are pushed downward on the descent, and drawn backwards on the ascent.

Hadst thou seen yesterday the torments inflicted under a burning sun, and in a close atmosphere, on a pair of poor over-wrought and nearly worn-out bus horses, covered with sweat and dust, their crests and withers wrung, all but fainting, when the wretched animals, protruding their fixed limbs, slipped onward, resisting the descent, and then when at the bottom (the skid having been removed) the driver flogging the struggling creatures, thy blood must have curdled like mine: they wrestled with the load against the hill, until, totally exhausted, they turned round their heads imploringly to the merciless Jehu, and were fairly dragged back: one slipped his bridle, and looked as though, in the piercing eloquence of his agony, he would have said,—*"is there no mercy?"*

This cruelty has been in practice ever since the causeway across the Fleet Ditch to Holborn was paved—shame to the corporators of London, for it is within their privileges.

Now, although a woman, and no engineer, a thought struck me that a remedy is easy for the redress of so great and constantly recurring inhumanity to beasts.

The Greenwich line of railway is the model which I would recommend for a viaduct, *central in the street*, sufficient for a double line of carriages, with a paved causeway on either side, and for such a route 30 feet would suffice. This would leave on one side, beneath, a sufficient carriage-way for a double line, and on both sides a width of footway equal to that now existing. The arches beneath might be left open for intercommunication between the present ground stories or shops, which for pedestrians might serve as appropriated to modes of business of the more retired or obscure nature; whilst those upper stories, on the level of the upper or elevated new causeway might be approached by light galleries or bridges, as from the new viaduct: thus a double value must be conferred on the houses most sunken beneath the proposed line of traffic, and in no part of the line need the altitude of the route rise above the second floor. A glance of my eye along the frontage from the top of the hill, a little below Ely-place, to the hill on the other side, at the end of Newgate-street, palpably showed me the proper level, according to my mode of, (what thou wilt call) very civil engineering.

Should my suggestion, simple though it be, be rejected for its simplicity, then will I give thee another, which, on account of the modern taste for expense and kickshaws, may find more favour with great Gothic architects. Here, then, thou hast it:—Set or lay down two double lines of exceeding smooth iron rails.

Upon each of these I would place a moving platform to receive an omnibus or any other wain (horses, carriages, passengers, and all): when the whole is barred in and secured by strong stanchions, then draw a bolt and let the convoy gravitate to the bottom, just in the manner exemplified by our ingenious neighbours the Parisians in their *montagnes Russes*: the impetus acquired by the descent will take

them in six or eight seconds of time across the dread hollow to the opposite side, where they may be freed and suffered to pursue their way rejoicing.

My plan of the arched causeway will admit of a bridge or large arch across Farringdon-street, but if any of thy scientific correspondents should hit upon some other mode of transit, as at Clifton, by a suspension duct, or by over-ground tunnel, or electric or other manner of propulsion, so that their bridge really do abridge equine suffering, then, in the consciousness of having performed a duty, thy servant shall be content, although her pet project prove abortive, as tendered by

TABITHA QUIET.

CHARGE FOR BUILDERS' ESTIMATES.

BRADSHAW V. MARSHALL.

THE plaintiff in this case is a carpenter, and sought to recover, in the Clerkenwell County Court, 14. 5s. as commission, and for loss of time in estimating for a job, which the defendant had promised the plaintiff he should do if he (the defendant) was employed to do it.

The defendant admitted that he requested the plaintiff to give him an estimate for the work, but another party did the job for 25*l.*, whereas the plaintiff's estimate was 40*l.*

The plaintiff urged that as defendant had promised him the job, he (the plaintiff) was entitled to be paid for his time in preparing the estimate.

His Honour was of opinion that a party does not enter into an implied contract by merely requesting an estimate, although, as in this case, he may promise the party the job. No person would be safe if the Court were to countenance actions under such circumstances. The plaintiff might as well have asked 50*l.* or 100*l.* as 40*l.*, and as there was a marked difference between the sum for which the work was done and that which the plaintiff required for the job, he (his Honour) considered the defendant entitled to his judgment.

THE GREAT CRYSTAL.

Blackwood has just given us an exceedingly clever article, entitled "Voltaire in the Crystal Palace," and fraught with Voltairian shrewdness, sarcasm, and satire, with far more, indeed, of those somewhat bitter, though spicy ingredients, than are likely to recommend it at the present moment. As a pendant to it, some one might now in similar manner resuscitate Thomas Hope, of "household furniture" celebrity, and let him express his opinion as to the turn, or rather the twist, which taste has taken since his time. Strongly may it be suspected, that *elegans spectator formarum* would stand absolutely aghast at some of the specimens of furniture and decorative art (?) exposed at the Great Exhibition. Hardly would he exclaim—"Well met, brave Austria," on beholding what a Bedlamite affair of a bed Austria has sent us,—one apparently concocted and patched up out of old carvings and other odds and ends, put together *secundum artem*, or in plain English, without the slightest artistic intelligence or feeling. And then such—Nay, Mr. Editor, do not knit your brows and frown so: if you think that I am talking treason, I have done. I understand punctuation: I know where to put my stops, and also where to stop. I was going to say, of course, something dreadfully shocking, but no matter now what; and, but for that awful frown of yours, should have gone on to give utterance to something far more shocking still.

You take me to be—now don't you?—a very Bedlamite subject myself. Whether I really am so or not may be left to your readers to determine, for, at all events, and be I whatever or whoever I may, I am your own

ZETA.

P.S.—Seriously speaking, Laputa seems to be by far the largest contributor of articles of taste to the Great Exhibition. What spasmodic invention, what manic imaginations, what convulsive contortions and writhings, and what truly d— grimaces may be seen in some of the furniture, which, after all, too, so far from displaying originality of design, does not possess so much as novelty, the

design being for the greater part of very second-hand, broker's-shop stamp—no better than a mere jumble of old odds and ends put together and vamped up afresh. Among other wonders, there are, it seems, some specimens of art manufacture in *multon fat*! O art! how art thou assailed! Possibly, however, there may be some bitter satire lurking there, and the exhibitor may have intended to insinuate that modern art is made of very melting stuff, and is in comparison with ancient art just what a tallow candle is to the sun. Why, zounds! he must be a much wicked dog than I am myself.

THE SURVEY OF IRELAND AND SCOTLAND.

At a time when so much is being said about the survey of Scotland, it may not be amiss to state a few facts touching the Ordnance survey of Ireland, which, in a humble way, may serve to show the people of Scotland for what they are so eagerly seeking. The Ordnance survey of Ireland was commenced, I believe, in 1823, and has not been as yet completed, it having been found necessary to revise the northern counties. The cost up to the present has been variously stated: in fact, no authentic account has been given of it, and the public are quite in the dark respecting it. As a survey of parish and town-land boundaries, it is in general correct; but it is totally unfit for estate or farm maps, or for road, railway, or any other business requiring a correct survey. As a proof of this, when plans were preparing of the various Irish lines of railway, in the years 1844, '45, and '46, all houses and premises were required to be actually surveyed, the Ordnance survey not being considered sufficiently correct for even parliamentary purposes. The survey of the lines in general was a copy of the Ordnance corrected on the ground; and in the northern counties the corrections required were so numerous as to involve much more trouble than if an actual survey had been made. It is in the revising and correcting of these counties that the Ordnance surveyors are now engaged, and it is impossible to estimate either the time or further expense of the revision.

The much-boasted survey of Dublin, plotted to a scale of 60 inches to the mile, one would think, ought to be correct, from the number of years they have been engaged at it (since 1837), and the quantity of red coats who have innumerable times paraded the streets, apparently revising it; and yet there is not a street without errors, not the less annoying because in some cases trivial.

If at the time the survey of Ireland was commenced it had been entrusted to the legitimate surveyors of Ireland, or the legitimate surveyors of the three kingdoms, it would have been creditably finished many years ago, and, at most, at one-half the expense of the Ordnance survey; but what could be expected from a party of uneducated soldiers, many of whom were by trade weavers, shoemakers, tailors, &c.,—all very good in their way, but surely far from being fitted for the profession of land or any other surveying. For my part, if I required a survey or map of any portion of Ireland, I would prefer the trouble of hunting for such maps as Ball's Mayo, Edgeworth's Longford, and Vaughan's, Byrne's, or Brasington and Gale's surveys; in fact, any survey made by a duly qualified man, in preference to the Ordnance survey.

If the people of Scotland want a faithful survey of their country, they can have it cheaper, better, and in much less time by employing their own native staff of civil engineers and civil surveyors, besides having the pleasing knowledge that they are giving employment to a class of men superior in every way to those who would over-run their country with a heavy tax for a next to useless result. For of what use is the Ordnance survey of Ireland? It is not legal evidence. It is not correct enough for any civil purpose. The only portion that can at all pretend to accuracy is the boundaries,—and who wants them? and if they were wanted even their accuracy is doubtful.

The civil engineers and surveyors of Scot-

land should at once place before the public an exact statement of what they could do, contrasted with what the Ordnance has done. It is not from raw cadets and enlisted tailors, weavers, shoemakers, and overgrown bugle boys, that a great national survey can be expected: the experiment has been going on since the first trigonometrical survey in 1813, and has been proved a failure.

There is another great evil resulting from the Ordnance survey of Ireland, to which I would draw the attention of the profession in Scotland,—namely, the enlarging of the maps for the purpose of making maps of estates, farms, &c. This system was commenced by some enterprising bookseller, who had only to furnish his bag-man with some maps and a few set phrases concerning them; these he carried about with him, and where he failed in getting an order for books he generally contrived to get an order for a map, at prices varying from 4d. to 2d. per acre. A clerk, who had been employed in the map-office in the Phoenix park, next took up the trade of enlarging, and seemed to thrive on it, especially when the incumbered estates came to be mapped: he now writes himself down C.E., although he knows nothing whatever of civil engineering or land surveying, and if he got the Crown of England for his trouble he could not survey a rectangular potato-garden. The Profession has come to a pretty pass when such men are allowed to continue such practices. How can any man judge of an estate bought and sold by such a valuation, and computed by such maps, for their computations are all from paper? Still such is the course pursued by the map enlargers (I beg their pardons, C.E.'s I should say) of Dublin. If some of the noble lords whose estates have been recently sold under such valuations were to take the pains to make proper inquiries, I think they would find that the valuator knew more about pasting Ordnance sheets on calico than valuing land.

JOHN S. SLOANE.

AMERICAN MORSELS.

Bell Tower, New York.—A new iron bell tower, to be 100 feet high, is now being erected in 32nd-street, near the North River. The bell for this tower will weigh 20,000 pounds, being about double the weight of any other bell now in use in the State. The foundation is laid 14 feet below the surface of the ground, and is supported and braced with iron shafts sunk in solid rock. Messrs. Henry N. Hooper and Co., of New York, have contracted to cast this bell.

Brooklyn: the City Hall.—This structure, which was commenced in February, 1846, and finished in May, 1849, is located in the most central part of the city. It is three stories in height, and is throughout of the Grecian Ionic order of architecture—the regularity and general effect of which, however, is marred by the windows of the upper floor. It is 182 feet frontage, 105 feet deep, and 57 feet high to the plate. A dome, raised over the front centre, is surmounted by a sculptured figure of the Goddess of Justice, to the top of which, from the ground, is 133 feet—the whole, including the entire outer walls, being formed of brilliantly white marble from the Westchester quarry. From the portico in front, which is supported by six handsome Ionic columns, a fine flight of steps (also of marble) descends to the City Hall Park. The hall itself is thoroughly fire-proof, the partition walls being entirely constructed of brick, and iron beams supporting the floor, with brick arches between them, which form the floor. These arches are laid over with narrow Georgia pine planks. The cost of the erection was about 150,000 dollars, and the ground about 50,000 dollars. In the belfry is a very fine bell containing 7,678 lbs. weight of metal, and so arranged as to serve to sound the hour, as well as to give the fire alarm. For this purpose a hammer, 663 lbs. weight, is fixed so as to strike the bell from the inside, producing a very loud, sonorous tone, and worked by a sort of lever in the "look-out" above; while the hammer in connection with the clock is much smaller, and strikes the bell on the outside, thereby causing

a much lighter and totally different sound. Above the bell is the clock, the works of which are composed entirely of brass. It was manufactured by Mr. Rogers, of New York, at a cost of 1,000 dollars. The building was designed and erected by Mr. Gamaliel King, architect.

Modern Medievalism.—A tale, in rhyme, in a recent number of *Graham's Magazine*, gives the following pathetic account of a modern mediæval mansion in America, which is not without its instruction:—

"My worthy friend, A. Gordon Knott,
From business snug withdrawn,
Was much contented with a lot
Which would contain a Tudor cot
'Twixt twelve feet square of garden-plot,
And twelve feet more of lawn.

He had laid his business on the shelf,
To give his taste expansion;
And since no man, retired with pelf,
The building mania can shun,
Knott, being middle-aged himself,
Resolved to build (unhappy elf!)
A mediæval mansion.

He called an architect in counsel:
'I want,' said he, 'as—you know what,
(You are a builder, I am Knott,)
A thing complete from chimney-pot
Down to the very ground.

Here's a half-acre of good land,
Just have it nicely mapped and planned,
And make your workmen drive on to:
Meadow there is, and upland too,
And I should like a water-view,—
Do you think you could contrive one?

(Perhaps the pump and trough would do,
If painted a judicious blue?)
The woodland I've attended to:
(He meant three pines stuck up askew,
Two dead ones and a live one.)

'A pocketful of rocks 't would take
To build a house of free-stone,
But then it is not hard to make
What now-a-days is the stone:
The cunning painter in a trice
Your house's outside petrifies,
And people think it very gaisie
Without inquiring deeper:
My money never shall be thrown
Away on such a deal of stone,
When stone of deal is cheaper.'

And so the greenest of antiques
Was reared for Knott to dwell in.
The architect worked hard for weeks
In venting all his private peaks
Upon the roof, whose crop of leaks
Had satisfied Fluelen.
Whatever any body had
Out of the common, good or bad,
Knott had it all worked well in:—
A donjon-keep, where clothes might dry,—
A porter's lodge that was a sty,—
A campanile slim and high,
Too small to hang a bell in;
All up and down and here and there,
With Lord-knows-whats of round and square
Stuck on at random every where.
It was a house to make one stare,—
All corners and all gables;
Like dogs led loose upon a bear,
Ten emulous styles, stabled with care,
The whole among them seemed to tear,
And all the oddities to spare.

Were set upon the stables.
Knott was delighted with a pile
Approved by fashion's leaders;
(Only—)

And we need scarcely describe how soon it went to pieces.

Value of Ground in New York.—More than 80 dollars a square foot have just been paid for a lot, 50 feet by 52, on the corner of Wall-street and Pearl, in New York, by the Seamen's Savings Bank. The entire cost of the lot is 80,000 dollars. This, together with the building to be erected upon it, and the value of the present bank adjoining, will amount to about 140,000 dollars.

Boundaries of the States.—Mr. Darby, a statistician of Washington, has addressed a letter to the *New York Express*, upon the boundaries of the United States. In 1793 the entire length of the boundary lines was 5,500 miles, and the area enclosed was one million of square miles. In 1851 the length of the boundary lines is 9,450 miles, or allowing for the curves and inlets of the maritime frontier, 11,000 miles, and the enclosed area is three millions of square miles.

Iron-fronted Houses.—The *Scientific American* states that Mr. L. A. Gough, of Harlem, has invented and is now applying ornamental cast-

iron plates put on the front of a house, like veneering on cabinet work. The castings are made in the plates and put on by a permanent elastic cement, which allows for the expansion and contraction of the metal.

The Railway Jubilee is to take place in Boston, during the first week of September, in honour of the consummation of railroad communication between Boston and Canada: it is expected to be one of the grandest demonstrations that has ever taken place there. The committee of the city council have the matter in hand, and have been most assiduous for some weeks past. The festival will last three days.

VIEW OF THE OPENING OF THE GREAT EXHIBITION, BY MR. SELOUS.

THE large picture which Mr. Henry Selous is painting, commemorative of the opening of the Great Exhibition in May, by the Queen, promises to be a very successful and important production. Her Majesty, on the dais, occupies the centre of the picture, and in the foreground stand the royal commissioners, executive committee, and officers, on the left, and the foreign commissioners on the right of the spectator. The majority of the portraits finished are unmistakable: we may especially mention Lord John Russell, Lord Granville, Lord Carlisle, Mr. W. Cubitt, Mr. Dilke, Mr. Fuller, and Mr. Owen Jones. The Junk Chinaman, who has succeeded in mystifying the two most acute nations in the world, occupies a very prominent position on the right. Mr. Selous should put some one more worthy before him (there are several who ought to come in), or, better still, paint him out altogether.

It is proposed to form a collection of those articles in the Exhibition which are calculated to be of use for future consultation. The building in which this is deposited will be a very proper place for Mr. Selous's picture, for which purpose we trust it will be obtained. Of course it will be engraved.

STEAM CARRIAGES ON COMMON ROADS.

BEFORE a railway locomotive ever ran, we happened to have the opportunity of riding on a steam carriage made for common roads. At that time all the chance was in favour of the latter, and as for the former they were looked on as such doubtful subjects that it was boldly maintained by many that they would not run at all, and that the wheels would merely go round on the rail without carrying forward the machine. Now, it is common road steam carriages that are looked on as not very hopeful subjects. Yet had not the locomotive of the rail gone a-head, and in doing so "stopped the way" of the steam carriage, it is hard to say what might have been the result. There might have been, by this time, no such thing in existence either as a dog-cart or a donkey, an omnibus or a cab. At least we might have now perhaps been riding in our own proper steam gig on "her Majesty's highway," open to all, in place of running in grooves, which can no longer lay efficient claim to that ancient British title. Turnpikes, however, are looking up. The fifty-six passenger omnibus, be it remembered, has dared to compete with even the iron horse and his winding rattle-snake train. But, more than that, the cause of the common road steam carriage is not even yet deemed desperate, as the following intimation by the *Bristol Mercury* will show:—

"Messrs. Clark and Motley, of Bristol, have just patented a new steam locomotive, for the conveyance of passengers and goods on common roads. The entire machine is intended to consist of an engine of from six to ten horse power, to which is attached an omnibus or long-bodied carriage, capable of accommodating forty persons and a certain quantity of luggage. With this load the patentees assert the capability of their invention to attain an average speed of ten miles per hour on ordinary roads, and the power of ascending inclines of one in six or eight. A speed of sixteen miles an hour might be checked, and the engine brought to a stand-

still, in the space of sixteen feet—an important consideration where there is any danger of a collision. The patentees felt assured that they will be able to carry passengers at a farthing per mile, and that, too, at a profit."

The inventors declare that they have conquered all the defects which marred the success of their predecessors. In the first place, they have invented a new mode of steering, whereby the steering-wheel is connected with the wheels, and moves them quite independently of the axle on which they turn. The breaking of the steering apparatus, which was a very common occurrence in the carriages where it was connected with the axle, is therefore obviated. Next, the power is said to be applied to the driving-wheels in such a manner that the springs on which the machinery is supported act efficiently in preventing the injurious effects both of vertical and horizontal concussions, whilst the driving-wheels can be made to move at different velocities to facilitate the turning of curves.

Other alleged advantages and improvements are expatiated on, and the patentees are at least as hopeful of success as every successive inventor of similar machines has been since the very outset.

PROGRESS AND PRESENT STATE OF ST. GEORGE'S HALL, LIVERPOOL.

ST. GEORGE'S HALL is still in a very incomplete state. The great hall is as yet a mere shell, and it is believed that several years will yet pass ere all be thoroughly finished. The system of the warming and ventilating apparatus would appear to be still in a very uncertain and backward state, as well as the apparatus itself, if the complaints still made in council of doings and undoings, expensive experiments, &c., be well founded. These experiments themselves, it was said, will not cost less than 4,000*l.* to 5,000*l.* Mr. Bennett "hoped than an end would be put to these alterations after alterations. A short time ago he saw the beautiful ceilings of the Law Courts pierced with large holes, and the timber cut in a way which was never intended by the architect. The clerk of the works said this had been done by Dr. Reid's order; and the other day, when he (Mr. Bennett) went through the hall, he found these walls plastered up, the woods put back, and all as before. In different parts of the building there were large holes cut close to arches, and in the vaults of the building there were four enormous steam boilers, 5 feet in diameter, and 15 feet long, and a large engine to work four fans, 5 feet broad and 10 feet in diameter."

A statue of the late Sir R. Peel, in Sicilian marble, is to be placed on a pedestal beneath the eastern portico. It was recommended that fifty or sixty men should be set to work on the building in place of four or five, as at present.

For the following general report of progress we are indebted to the local *Times*.

With the general plan of the building the majority of our readers are, doubtless, somewhat familiar, from descriptions previously given; and it will be necessary only to remind them, that in the centre is the great hall, the main entrance to which is from the east; that the *Nisi Prius* is at the northern, and the Crown court at the southern extremity; that the large concert-room extends over the north entrance-hall; that corridors, upper and lower, bound the western side of the structure, communicating with the various rooms to be used in connection with the courts, &c.; and that the grand jury-room occupies the space immediately over the southern entrance-hall. The two courts are in the most forward state, especially the Crown court. Both, though scarcely as large as might have been anticipated, are lofty and well lighted from the roof; the ceilings, which are somewhat elaborately moulded, springing from columns of Aberdeen granite, polished. The capitals of these columns are to be cast in bronze. Each court has an arched opening, supported by columns of gray granite, into the great hall; though, on ordinary occasions, sliding doors will separate the two,—space, however, being left for a gallery at the top, commanding a view of both

the courts and the hall. The ceilings of the courts contain, at intervals, iron plates, perforated in the same style as the ornamental work, and painted to imitate it, for purposes of ventilation. The fittings of the courts, which are partially put up, are of oak, plain, neat, and substantial. Gentlemen of the press will have a private mode of ingress and egress.

The grand hall is as yet merely a shell: the floor is not laid: the walls are bare, and the ceiling in an embryo state. The pillars of Aberdeen granite, twenty-four in number, which rear themselves gigantically to the roof, alone have approached completion, though the capitals of these, which are to be of bronze too, are wanting. The pillars, for protection, are encased in wood, so that only at intervals their brilliant surface can be discerned. The floor of the hall is to be laid with Yorkshire flags, like the corridors and entrances. The height and vastness of this central hall impart to it an imposing character, which few buildings of modern times possess; and the impression of its vastness is considerably enhanced from the circumstance of the area being quite clear of central columns. It will be lighted by side branches. The roof is of perforated tiles, which are considerably lighter than bricks. Along the western side, between the pillars, and approached from the upper corridors, will be a series of galleries, whence a view and an audience can be obtained of proceedings within the hall. The large semicircular openings at the northern and southern extremities, near the roof, are to be fitted with ornamental iron work.

The concert-room is slightly in advance, with regard to completion, of the great hall, though only as far as the ceiling is concerned. The eastern front, with its noble portico, its range of sixteen pillars, and its triple flight of steps, upwards of 200 feet in length at the base, now stands fully revealed in all its commanding beauty. Within the colonnade, three on each side the entrance to the great hall, are six lofty pedestals, intended for the reception of statuary.

Standing beneath the southern portico, which leads to the Crown Court, a fine view is obtained of the circumjacent streets, the effect, indeed, from the great elevation, being almost panoramic. The basement story, though less complete even than the other portions of the building, is yet sufficiently finished to give the visitor an idea of the purposes and adaptations of this nether world. During the last few months the hall has been visited by large numbers of foreigners, as well as of townspeople, during the hours set apart for the admission of strangers. From the present state of the interior, the structure, we believe, cannot be completed thoroughly in less than two years.

Books.

A Treatise on the Strength of Timber, Cast and Malleable Iron, and other Materials. By PETER BARLOW, F.R.S. A new edition. London: John Weale. 1851.

MR. BARLOW's valuable treatise has been revised and corrected by Mr. Heather, M.A., of the Military Academy, Woolwich, and is now published with the addition of an Essay on the effects produced by causing weights to travel over elastic bars, by Professor Willis—an essay which originally appeared in the report of the commissioners appointed to inquire into the application of iron to railway structures. The latter is an important contribution to the stock of knowledge, so far as it goes, and leads us to regret that the commissioners did not completely fulfil the purpose for which they were appointed.

Mr. Barlow's work may be usefully studied by every engineer and architect. It is too well known to need description (having already passed through five editions); we may briefly say, however, that the first subject treated of is the strength of direct cohesion of the fibres of timber, with an account of the experiments of Musschenbroeck, Du Hamel, Emerson, and others; and lastly, of those

made by the author, with a description of the apparatus by which the results were obtained.

The next division treats of the mechanism of the transverse strain to which timber and other materials are exposed when loaded in any part of their length, and the mechanical action of the fibres to resist this strain. The laws of deflections under all the varieties of position and fixing to which timber and iron are subjected in architectural and other constructions are investigated, and the author then proceeds to a detail of various experiments by Buffon, Girard, Beaufoy, &c., on the transverse strength of timber; and lastly, the original experiments of the author, which laid the foundation of the first edition, and on which is founded the Table of Data adopted in the subsequent part of this division of the work. Another section is employed in the detail of experiments on bent timber, as used in ship-building,—on the effect of boiling and steaming timber,—experiments by Girard on vertical pressure, and a series of illustrative problems and examples. A short chapter follows on the strength of cement and building materials, as stone, brick, &c., and on the subject of revetment walls.

The next division treats on the direct strength of cast iron and its application in the construction of hydrostatic presses; also on the direct strength of copper, brass, &c.

The following chapter treats on the transverse strength and deflection of cast-iron beams under a great diversity of forms, and on malleable iron.

A detail of experiments is then given on the strength of direct cohesion of iron bars and bolts, and the application of malleable iron to the purposes of railway bars, being the substance of two reports by the author, addressed to the Directors of the London and Birmingham Railway Company, with the addition of several subsequent experiments on railway bars of various forms and dimensions, and of miscellaneous experiments on the effect of locomotive engines and trains on the bars of the Liverpool and Manchester line.

Two Lectures on the Construction of Boilers' and on Boiler Explosions; also, a Paper on the Consumption of Fuel and Prevention of Smoke. By WILLIAM FAIRBAIRN, C.E., F.R.S. London: Simpkin, Marshall, and Co.; and Weale, Holborn. 1851.

ANYTHING that Mr. Fairbairn may say on such subjects is entitled to respectful consideration. The first two lectures, on boilers, were delivered before the Leeds Mechanics' Institution, in April last, at the request of the committee, and are by them now published, along with the Paper on Fuel and Smoke, which was originally written some years since, and read before the British Association.

In reference to the construction of boilers, Mr. Fairbairn says, by way of summary, at the conclusion of one of his lectures:—

"In conclusion, I have to recommend attention to a few simple rules, which, if carefully observed, will lead to the most satisfactory results. To construct boilers as nearly as possible of maximum strength, I have already observed they should be of the cylindrical form; and where flat ends are used they should be composed of plates one-half thicker than those which form the circumference. The flues, if two in number, to be of the same thickness as the exterior shell; and the flat ends to be carefully stayed with gussets of triangular plates and angle-iron, firmly connecting them with the circumference. The use of gussets I earnestly recommend, as being infinitely superior to, and more certain in their action and retaining powers than stay rods. Gussets, when used, should be placed in lines diverging from the centre of the boiler, and made as long as the position of the flues and other circumstances in the construction will admit. They are of great value in retaining the ends in shape, and may safely be relied upon as imparting an equality of strength to every part of the structure. With these observations, I would direct attention to the facts I have endeavoured to inculcate."

In like manner, as regards explosions, he concludes that—

"1st. To avoid explosions from internal pressure, cylindrical boilers of maximum form and strength must be used, including all the necessary appendages of safety-valves, &c.

Miscellanea.

2nd. Explosions arising from deficiency of water may be prevented by the fusible alloys, bursting plates, good feed pumps, water-gauges, alarms, and other marks of indication; but above all, the experienced eye and careful attention of the engineer is the greatest security.

3rd. Explosions from collapse are generally produced from imperfect construction, which can only be remedied by adopting the cylindrical form of boiler, and a valve to prevent the formation of vacuum in the boiler.

4th. Explosions from defective construction admit of only one simple remedy, and that is, the adoption of those forms which embody the maximum powers of resistance to internal pressure, and such as we have already recommended for general use.

Lastly. Good and efficient management, a respectable and considerate engineer, and the introduction of such improvements, precautions, and securities as we have been able to recommend, will not only insure confidence, but create a better system of management in all the requirements necessary to be observed for the prevention of steam-boiler explosions."

A Treatise on the Screw Propeller. By JOHN BOURNE, C.E. Part I. London: Longman, Brown, Green, and Loogmans.

THIS is the first of twelve similar issues, intended to complete a treatise on this curious and interesting subject. The present part is illustrated by various wood engravings, and also by an engraving on steel of the engines of her Majesty's steam yacht *Fairy*, and of the screw steamer *Foon*—a fast vessel engaged in the French mail service. It also contains the first portion of an appendix, with tables of the navy screw steamers, prepared under direction of the Admiralty; and the whole work, we may add, is published under her Majesty's patronage.

In the outset is an interesting historical account of kindred inventions, and incidentally of chimneys with smoke-jacks, windmills, &c. From this preliminary account we find—we cannot say we are surprised to find—that in China the screw propeller is said to have been known for ages! So it is with most of our cleverest and most modern inventions: if there be anything of sterling merit in them, be sure that the Chinese, or some other long-decayed inheritors of antique enlightenment, know all about it. We say this in no mere satirical vein, as most of our readers know: we are seriously assured, by innumerable instances, that "there is nothing new under the sun."

A Manual of the Differential Calculus, with Simple Examples. By HOMERSHAM COX, B.A., Jesus College, Cambridge. Weale, Holborn. 1851.

THIS little manual is designed to supply a want felt among mathematical students—that of a simple introduction to complete treatises on the differential calculus. The beginner requires every possible aid, and we trust the most limited mathematical capacities will derive, as we think they may, much solid advantage from the guidance here given, although the author has very properly made it a point not to merely conceal or shirk difficulties fairly and legitimately in the way, but to reduce them, as far as possible, within the range of the beginner's capabilities. Success in such a course depends on the student as much as on the teacher, so that experience alone can decide the precise amount of the latter's success in each particular instance.

CREMORNE GARDENS.—There is not a prettier place of its sort than Cremorne, and in the manner in which it is conducted is very creditable to Mr. Simpson. A ballet in the theatre, music in the grounds, the Bosjesmen in their tent, and Franconi's very clever troupe of equestrians in the circus, make up a heap of amusements from which all may pick out something to please them; and then, as a wind-up, they may cross the wooden bridge, which separates the gardens from the borders of the Thames, and see in quite a new light, and under very pretty colours how Gibraltar was taken, and that, too, without any danger from red-hot shot, or a great dip into the blacker.

CALCULATING MACHINES.—Without in the least wishing to undervalue the calculating machine mentioned in your number of 9th inst., I must beg leave to say that, if Mr. Babbage had been satisfied to do "sums in addition, subtraction, multiplication, and division" with rapidity and precision, and to perform "the operation of extracting the square root and the most complicated sums in fractions," he might have made such a machine some years ago; and it would also have possessed the most "singular power" of detecting the wrong statement of a question, in the manner described in the aforesaid number, by the "ringing of a small bell." At first Mr. Babbage's object was to construct a machine that would calculate and print tables of logarithms, &c. &c. in such a manner as to render errors impossible; but circumstances, over which he had no control, prevented the completion of this machine, and his views became gradually enlarged until his endeavours were directed to the contrivance of a machine that would enable the user to solve abstruse mathematical problems with perfect accuracy, by merely inserting a few perforated cards and turning a winch; and there is every reason to believe he has completely succeeded. But such a machine is unavoidably complicated, and cannot be appreciated either as to its ingenuity or importance except by men of talent and ability, nor by them without some labour. And as the machine has not been actually made, its capabilities can only be known to the comparatively few persons who take the necessary pains to understand it, and probably many disbelieve its possibility, because it cannot be manifested to their senses. Unless a calculating machine can make common calculations with much greater celerity than they are made with the pen, or perform such operations as are so complicated and laborious as to defy human perseverance and endurance to perform them correctly, it can only be regarded as an ingenious but useless toy.—G.

CAUTION TO WORKMEN.—FIRE.—Two boys were left on Tuesday last, while the men were at dinner, in charge of some houses now building by Mr. Trower, on the property of Robert Gunter, Esq., Boltons, West Brompton: one of them lighted a fire to melt some glue: the wind scattered the shavings and in an incredibly short time two of the houses were wholly destroyed, together with a large stock of dry deals deposited in the basement of one of them. To make matters worse he had accidentally allowed the time for renewing the assurance which had been effected on them in the "Phoenix" to run out, and was about to go to the office to pay the premium on the very day the accident happened. It is to be hoped that the office will take the matter into their consideration and avert what may otherwise be the ruin of an honest hard-working fellow. If they do they shall, at all events, have the benefit of our circulation to make known their liberality.

NORTHFLEET CHURCH-YARD AND INN.—Mr. Editor,—When you next go to Gravesend, and I know you rather like such trips, take a peep at an astonishing sepulchral memorial in Northfleet Church-yard, on the south side. It may be thus described:—First course—White Ipswich bricks of the best tallow hue. Second course—Scotch granite. Third course—Caen stone. A friend who accompanied me, said "he thought the builder had taken a page from a book upon architecture which contained a sketch of all the Orders, and had built them up here in one structure." It may be so! There are urns and flames—medallions with framed and glazed (?) views of "Huggen's College," and of the perpetrator's arms; the whole surmounted with a Niobian figure, weeping at the woful expenditure of cash upon the disgusting pyramidal object beneath her. One hundred pounds were paid to the incumbent for the privilege of putting this thing into the church-yard. From two points this thing utterly obstructs—nay, it hides a view of the church!!! This alone testifies to the magnitude of this mass of bricks and mortar, masonry, and glass.

Northfleet boasts of containing an archaeological house of call, yecept the Leather Bottle. A regular ancient leathern bottle swings to and fro, for its sign. No modern "house of call" built up of cement and lath and plaster is this. No—it is the regular "old original" place. In the rooms, where Thorpe and the antiquaries of the past have assembled, I have hobbled and nobbed with Roach Smith, Cureton, and others, celebrated in the archaeological walk of the present day. In this house was also held, for many a long year, the meetings of the Natural History Society of the county of Kent, of which Pocock, the historian of Gravesend, and of the Tufton family, was the chairman. Poor Pocock lies buried in the north-eastern corner of Wilmingdon churchyard—a no monumental memorial marks the spot where he lies. Northfleet has seen some queer changes since the time when Domesday Book was compiled. The fisheries (for salmon) no longer exist, but, in their stead, she has a railway station, a steam-boat pier, a public garden, a magnificent charity—called Huggen's College—the enormous cement works of Robins and Aspdin, the foundry of Horlocks, and, though I enumerate it last, not the least, Pitcher's ship-building yard—the yard where mighty monarchs from the north and south and east and west get their ocean leviathans built.—D.

SOCIETY OF WORKING BOOKBINDERS OF LONDON.—We have before now mentioned the exhibitions by this society of specimens of bookbinding. We are asked to say, and do so willingly, that a committee is appointed to carry out an exhibition for the current year, which is to take place on the 2nd of September, and they earnestly solicit persons who may feel disposed to aid them, to forward to the "Plough Tavern," Museum-street, "Rubs-off or other specimens or curiosities of the art, which would tend to make this their exhibition of 1851 surpass all its predecessors in richness and variety."

ARCHAEOLOGICAL.—Two sculptures in niches have been discovered at Holy Trinity Church, Colchester, in stripping the mortar off the outer walls.—Four stone coffins laid in form of a cross have been found in a tower at Great Yarmouth, where tradition had narrated that four monks were poisoned by an abbot for boasting of undue familiarities with her. The tradition led to the search.—The members of the Scarborough Archaeological Society on 8th inst. spent the day, on invitation, at Lord Londesborough's seat, Grimston-park.—The monthly meeting of the Bedfordshire Archaeological Society was held on Tuesday week, Dr. Parris Dick in the chair. The subject of the proceedings related principally to the meeting of the Beds and Bucks Archaeological Societies at Leighton Buzzard.—A committee meeting of the Architectural and Archaeological Society of the Archdeaconry of Northampton was held on Monday in last week, the Rev. Chancellor Wales in the chair. Mr. James stated that he had received a second letter from the Dean of Ely, respecting the proposal for making the restoration of the round part of St. Sepulchre's Church a memorial to the late Marquess of Northampton, and recommending the immediate bringing forward of the proposition. The opinion of the committee having been requested as to the removal of the carved screen-work in Wellingborough Church, it was unanimously resolved that the secretary urge in the strongest manner the preservation of so valuable a specimen of carved woodwork. Some other business was transacted before the meeting separated.

WESTMINSTER IMPROVEMENT COMMISSION.—A circular has been addressed to the inhabitants of Westminster, by Sir Edwin Pearson, the chairman of the Westminster Improvement Commission, inviting their co-operation in a proposal to erect a statue of her Majesty in that portion of the vacant space between the Abbey and Victoria-street, the new thoroughfare recently opened, connecting in a direct line the region of Belgravina with the districts surrounding the Houses of Parliament. It is proposed that the statue shall be of fine bronze, seated, of the stature of seven feet.

TESTIMONIAL TO MR. C. P. RONEY, LATE OF THE EASTERN COUNTIES.—We are glad to hear that a gratifying testimonial of respect has been presented by the officers and clerks of the Eastern Counties Railway, to Mr. C. P. Roney, the late efficient secretary of the company, in recognition of the uniform kindness which he displayed towards them during the period of his secretaryship to the company, and as a manifestation of the high esteem in which they held him. The testimonial consisted of a very elegant silver dessert service, comprising a handsome central ornament, fittingly inscribed, with two unique fruit-baskets. Never was a tribute better deserved.

BLOTS.—"G. H." would draw attention to the dilapidated houses in Skinner-street, Snow-hill, and the vacant piece of ground at the corner of Newgate-street. The houses in Skinner-street have been so long in their present state that it appears as if no change would take place, but that they are to be left as emblems of corruption and decay. There are other houses in the same condition in Stamford-street.

TRADE IN BIRMINGHAM.—The general trade is in a healthy condition. Some branches are more than ordinarily busy, more particularly the lockmakers, copper, tube, and gas-fitting businesses. The lock manufacture is extraordinarily active. The same may be said of other branches of staple manufactures. Generally, according to the *Times*, the manufacturers of the town are making for existing orders, a sure proof that the demand is equal to the supply. In brassfoundry, the Birmingham manufacturers begin to feel beneficial effects from the Great Exhibition. It is not, however, expected that much advantage to its peculiar trades will be experienced until after the receipt of winter orders, which, hitherto, the Exhibition has had the effect of retarding.

INDUSTRIABLE INK.—Take shell-lac 4 parts by weight, borax 2 parts, soft water 36 parts. Boil in a close vessel till dissolved: then filter, and take of gum arabic 2 parts, soft water 4 parts. Dissolve and mix the two solutions together, and boil for five minutes as before, occasionally stirring to promote their union. When cold, add a sufficient quantity of finely powdered indigo or lampblack, according to the colour required: lastly, let it stand for two or three hours, until the coarser powder has subsided, and bottle for use. Use this fluid with a clean pen, and keep it in a glass or earthen inkstand, as many substances will decompose it in a liquid state. When dry it will resist the action of water, oil, turpentine, alcohol, diluted sulphuric acid, diluted hydrochloric acid, oxalic acid, chlorine, the caustic alkalis, and the alkaline earths. This fluid, made in quantity, will cost about two shillings a gallon.

—*Chemical Record.*

STEAM POWER AT DISTANCE.—A new engine has been set to work at St. Helen's, Auckland colliery. The boiler is placed upon the surface, and the steam pipes are taken down the shaft, a depth of eighty fathoms, and then down an inclined plane about 1,050 yards, making the total distance from the boilers to the engine upwards of 1,200 yards, and the perpendicular depth about 882 feet. The engine can lift and force about 300 gallons per minute up the incline plane, length as stated above, and perpendicular height 342 feet.

THE METROPOLITAN SEWERS.—The new Act to continue and amend the Metropolitan Sewers Act has been printed. Her Majesty may appoint one of the Metropolitan Commissioners of Sewers to be chairman during her pleasure, and another to be deputy chairman. The salary of the chairman is not to exceed 1,000*l.* a year. The chairman or deputy is to preside at the court of sewers. Two commissioners (one being the chairman or deputy) to be a quorum, except in certain matters. No rates are to be made or mortgages authorised, except by the sanction of at least six commissioners. The Metropolitan Sewers Acts, which would have expired, are, with the present Act, to continue in force another year. The first meeting under the amended Act (14 & 15 Vict. cap. 75) was held at Greek-street on Friday in last week, Mr. E. Lawes, barrister-at-law, the newly appointed chair-

man, in the chair. Mr. Lawes stated that it was his intention to give his personal attendance daily at the office, that he might furnish information to any one desiring or requiring it as to the working of the commission. It was the anxious desire of the commissioners, he said, to promote the public interests as to drainage as far as possible, consistent with economy. They would now be able to hold their courts in various localities to suit the convenience of parties attending. Various works and payments for works done were then ordered, and some short-lease-holders were informed that the expense of drainage to their houses would probably be extended over thirty years, and made payable by the leaseholders in possession during the whole period.

BRIDGEWATER CHURCH.—Sir: Being the person who called the attention of the Archaeological Institute to the destruction of the Hagioscopes at Bridgewater, I presume I am one of those *lads* to whom your correspondent, "W. H. B.," alludes as drawing conclusions from a "hasty visit and a superficial survey of work in a half-finished state." Having mentioned the facts to the Institute, I shall not now recapitulate them, but simply state that I have known Bridgewater Church nearly *forty* years, and for great part of that time have turned my attention to ecclesiastical architecture: I may therefore, I should suppose, form and express an opinion upon the subject without any great presumption, though undoubtedly it is very possible that my opinion may be wrong. And it would certainly be a very uncommon, though I should think undesirable, privilege, if the works of architects were to be held sacred from all but professional criticism. —F. WARRE, Secretary to the Somerset Archaeological and Nat. Hist. Society. Vicarage, Bishops Lydeard.

THE HOLY LAND, AT THE EGYPTIAN HALL.—Messrs. Warren, Bonomi, and Fahey, the painters of this very beautiful diorama, have greatly increased its interest and value by adding to the exhibition a party of Syrians,—the Syro-Lebanon company,—who have just arrived in this country, to illustrate the manners and customs of their own. The party consists of fourteen persons, including ladies and boys, and they succeed in conveying a most complete idea of Eastern life. The interpreter has much quiet humour, and the hunchback story-teller, in the coffee-shop, takes one back to the "Arabian Nights," and makes one more firmly convinced than ever of the truth of every word of these charming tales. The exhibition must not be viewed as a theatrical entertainment, but as a quiet genuine illustration of the manners of an interesting race of people, and should be seen by everyone.

INSTITUTION OF BUILDERS' FOREMEN.—On Wednesday evening last a further proof of the benefits which may result from this Institution was realised by the election of an aged member to the benefits of the provident fund, viz., William Oyston, many years a foreman of masons with several eminent builders, but now, through age and infirmities, incapacitated. The board of directors for managing the funds have granted the sum of six shillings per week. This is the third person receiving a similar sum from the society, for the means of effecting which the members feel a great obligation to their friends and subscribers.

ACCIDENT WITH SCAFFOLDING AT LEEDS.—**RESPONSIBILITY.**—The *Wakefield Journal* tells of a sad accident at the works now in progress at Harewood, for the purpose of supplying the town of Leeds with water from the river Warfe. It appears that Mr. James Bray, the contractor for the works, had erected a scaffolding about 20 feet high, to support a setting crane on a moveable beam. The stone works necessary for the building of the foundation of the forcing-pump, was sublet to Joseph and Thomas Wilson. An inlet or excavation from the river to the building was in the course of being dug below the bottom of one of the props of the scaffolding. The prop had originally been let about 3 feet 3 inches into the ground, but one side of it was bared by the excavation on the edge of which it rested. The beams along the top of the

scaffolding had become uneven, and Thomas Wilson was told that they should be repaired before any more large stones were lifted, and about half-past one o'clock he was ordered by Mr. Bray not to use the crane until the prop near the excavation was shored up. About half-past two o'clock Thomas Wilson, with another man, was guiding a stone weighing upwards of a ton, which was being carried by the travelling beam to its place, when suddenly the weight caused the gravel forming the foundation of the prop to slip, and snapped a beam asunder, letting down one end of the travelling beam. Two men were unfortunately killed. The coroner's jury returned a verdict of manslaughter, in each case, against Thomas Wilson, the jury adding, that they considered that Mr. Bray and his superintendent were highly blameable in not seeing their orders for the repairs of the scaffolding carried out, for the better protection of the workmen.

MEMORIAL WINDOWS.—Extract from a Report of the Charitable Institutions of the parish of Kingston:—"The Vicar takes this opportunity to remind the parishioners of a most excellent custom often observed by parties who are desirous to erect a memorial to their deceased friends, instead of the common practice of erecting tombs in the churchyard, or monuments in the church: the reference is to memorial windows of stained glass being placed in the church. By so doing, two objects are gained, viz., the church is beautified, and the desire of the friends of the deceased is most sacredly carried out. The Vicar begs to offer every encouragement to the parishioners and others who may be desirous to avail themselves of this mode to perpetuate the memory of their departed friends, considering as he does, that the expense would be little more, if any, than the erection of a monument, or a tomb in the churchyard."

PATENT-LAWS AND POOR INVENTORS.—In reference to the sad fate of the late attempt at Patent Reform, Mr. F. W. Campin, in a communication to the *Morning Herald*, says, "At first sight it might appear that nothing could be done until the commencement of the next Session of Parliament, but this is not so: the evil may be considerably lessened by the adoption of measures which are within the power of the Government, without waiting for the formal exercise of the power of Parliament. Thus a very large portion (about two-thirds) of the patent fees and duties are payable to the Consolidated Fund, the levying of which might be suspended by an order in council, and thus inventors might at once be relieved to a considerable extent, and as time is to these persons equivalent to money, they would rather take an instalment of 10*s.* in the pound now than wait a year for a much larger dividend." The Consolidated Fund itself, too, we should think, had better take such an instalment as none at all, which, in the present uncertain state of matters, is but too likely to be the case, even as to those able to pay; for who will be fools enough to take out expensive patents at present, unless under peculiar circumstances?

IMPROVE THE STREETS.—The old house at the corner of John-street, Pall Mall, is now, I observe, in course of destruction. If this house is to be rebuilt an opportunity will be lost of widening that narrow and dangerous passage from St. James's-square to Pall Mall, which may not occur again for many years.

A READER.

WIDE ESTIMATING.—Sir, we beg to hand you a list of very wide estimates for two shop fronts, &c., at Blenheim-terrace, Regent's-park:—

Parkin	£276 0
Pritchard and Sons ..	269 0
Johnson and Pask ..	248 0
Langmead	215 0
Taylor	209 0
Collins	187 0
Williams	180 0
Knowles	164 10
Wood	120 0

A. & B.

* * We have received a dozen such recently, but cannot now insert them.

(Signed) "WESTWOOD and WRIGHTS."
Other testimonials can be had on application.

The Builder.

No. CCCCXLVIII.

SATURDAY, SEPTEMBER 6, 1851.

IN the course of our practice we were led, some time since, to give more than ordinary attention to the arrangement and construction of Farm Buildings, an interesting subject for inquiry which has not been pursued to the extent it deserves, and in going over a number of farms for information were astonished at the miserable condition in which the greater number of them were found. The buildings are ruinous; ill contrived; placed without any regard to convenience, still less symmetry; and erected in most cases regardless of known expedients for lessening labour and saving expense in the long run. Even where there has been a willingness wisely to invest money in erecting new buildings or improving old ones, incompetent persons have in many cases been employed, and the result is very unsatisfactory.

Those who would efficiently design farm buildings, or any buildings, must first make themselves well acquainted with the purpose to which the buildings are to be applied and the objects which are sought to be achieved. The aim of the architect should be to give all the accommodation required at the least possible expense consistent with sound construction,—to take advantage of all natural facilities, as for drainage, supply of water, &c., and to see that the cost of the erections be not unnecessarily enhanced, as by the construction of buildings that are useless, or by giving to those that are requisite unnecessary dimensions. In the feeding sheds, for example, the animals must not be cramped,—yet a greater width than is needed must be avoided as entailing larger scantlings than a less width would: what is wanted is the just enough and no more. Until recently farmers have been contented to go on as their fathers did, and they jeered and discouraged, rather than aided, those who made experiments or attempted improvements. Science, however, has gradually conquered prejudice, and gained a recognition of her importance. The farm is seen to be a great laboratory wherein various chemical and mechanical processes are being performed, successfully or not according to the skill of the operator. The farmer now wants sound advice, and is willing to follow it: faith has taken the place of scepticism and the disposition to scoff. He must strive to get knowledge,—at all events take care to give it to his children: and we look for the establishment of schools throughout the country specially arranged to give an agricultural education.

The Agricultural College at Cirencester has not yet produced those striking results which might have been looked for: the cause of this it might be useful to inquire into, but not now. Such institutions, however, properly managed, are much required, and might be made to do good service. Farmers, we repeat, must keep pace with the world; must obtain knowledge and use it; and this is beginning now to be felt pretty extensively.

The produce of the land might be immensely

increased. In the item of turnips, for example, we find Mr. Proctor, in some remarks on the cultivation of this root (laid before the "Chippenham Farmers' Club"), pointing out the small number grown per acre on the average,—the loss sustained through not using a full dressing of manure with this crop. Instead of trying to obtain larger and better crops, farmers have been satisfied with producing moderate crops at as little expense as possible.*

The use of machinery on farms is rapidly increasing: those who neglect the advantages it offers will find themselves behind their neighbours.

The American reaping machine, for which the great medal has been given by the Commissioners to Mr. McCormack, promises to be of great value. As at present arranged it is drawn by a pair of horses, requires two men to work it, and will cut at least 15 acres of corn in a day. The immense importance in such a climate as ours of harvesting with rapidity, at the right moment, will readily be seen. The loss which now constantly occurs through the difficulty of getting together a sufficient number of labourers at a time when all are wanting them (and which by the way keeps floating about us a loose pauper population that would otherwise, it may be expected, be absorbed into other and better courses), is well known.

Mr. Mechi, who, however his experiments may turn out in a pecuniary point of view, has done much to advance scientific farming, has given the reaping-machine a trial, and writes thus upon it:—"I have arrived at the following conclusions:—That it will act perfectly on level land, with a standing crop. That it will cut from 10 to 16 acres per day, according to circumstances. That the quantity cut depends more on the activity and strength of the man who has to remove it by rake from the board on which it falls. It is hard work for a man to remove one acre and a quarter per hour. That our open furrows and deep water furrows are much against the perfect action of the machine. That the paddle-wheels do not in any way beat out or injure the corn. That certain trifling modifications in its details will be required where (as in my case) the straw is very long. That it will cut laid corn where it falls towards the machine. That where it falls from it, it is desirable to cut such portions by hand. That a proportionate number of hands to bind the cut corn will be required, according to the crop." And he concludes by expressing his conviction that all our reaping will soon be done by horse or steam machines. McCormick's machine, as it seems to us, may easily be improved, so as to make the quantity cut not "depend on the activity and strength of the man who has to remove it by rake from the board on which it falls."

* Mr. Proctor says,—“The ploughing, sowing, hoeing, and expenses are just the same on a good and bad crop, the difference being the cost of the manure; and it would be decidedly more profitable to have a good crop on seventy acres, at the extra cost of a good dressing of manure, than to have 100 acres of middling turnips with half a dressing. You save all the expenses of working thirty acres, and can leave your seeds for a second year on that portion. The quality of a turnip properly manured is also much better than of one stunted in its growth, and you will find your cattle do better on the same weight: it is quite astonishing how much difference there is in this respect, and particularly where a portion of bone has been applied. As a general rule with manures, it is, perhaps, sufficient for me to advise that you must not plant more turnips than you manure well, and that the best application of fold-yard manure is an equal distribution of what you make over the whole of your land; and if you are short in the quantity required to properly manure your crop, it should be made up with bone, super-phosphate of lime, or guano, according to your judgment, bearing in mind that bone is a slowly decomposing but permanent manure, super-phosphate is bone in a quicker state of decomposition, and guano is more of a stimulant.”

In the Fine Arts Court of the Great Exhibition there is a very elaborate model of Mr. Mechi's farm, Tiptree-hall, made by Mr. H. S. Merrett, which may be very usefully studied. It is constructed carefully to a scale of 4 feet to an inch, and shows every detail inside correctly, including the steam-engine, which works eight pieces of agricultural machinery. The buildings, too, are all removable, so they can be closely examined.

Near to this is a model of a farm at Wark, in Northumberland, erected by Mr. Bulman, for 930 acres, where about one half of the turnip crop (200 acres) is consumed upon the ground by sheep, and the other half by cattle, in the courts and in feeding-boxes. There are generally 100 cattle fattening at one time. The threshing-machine is propelled by water collected from springs in the higher part of the farm. The steading and stack-yard occupy 3½ acres: the site was made level before the buildings were commenced, retaining only sufficient declivity to allow the water to run off.

Generally speaking, it is the most advisable course to level the ground; but where the declivity is very great the buildings may be placed across the direction of the declivity.

For the sake of comparison with others, we will give the dimensions of the principal divisions in Mr. Bulman's farm:—The straw barn is 40 feet by 18 feet. The corn barn, 61 feet 6 inches by 18 feet, including store-room at one end, with access to grinding and chaff-cutting machinery, &c. &c., over thrashing-machine wheel-pit. The cart shade is 75 feet by 18 feet, with seven openings, each made to hold two carts. The upper barn, 33 feet 6 inches by 18 feet, containing thrashing-machine, with door leading to stack-yard, whence the corn is brought from the stacks by carts. The granary, 120 feet by 18 feet, over cart-shade, tool-house, &c. The loose boxes are 18 feet by 18 feet, with granary over them for horses' corn. There is a tube through which it is passed for use into a chest in the stable. The work-horse stable, 144 feet by 17 feet, which contains stalls for twenty-four horses. There are feeding-boxes for twenty-seven cattle: each compartment is 12 feet by 10 feet. In front, the roof projects over small depôts for turnips, where the cattle are fed through openings in the wall. Each box has a turnip-manger, hay-rack, and water-trough. There are eight cattle shades, averaging 35 feet by 15 feet; the courts, 45 feet by 35 feet, including open feeding shades, 45 feet by 9 feet, with turnip houses between feeding-shades, 45 feet by 10 feet. Regulating cistern, 3 feet by 2 feet, and 2 feet deep, with ball and ball-cock, supplies water to thirty-eight troughs, throughout the steading. Such troughs must all be levelled carefully, so as to obtain a proportional quantity of water in each. The stacks are 18 feet in diameter, and are so placed that any particular stack can be taken out at pleasure.

In the same department of the Exhibition are two models of Farm-buildings by Mr. Baxter, which are on the "concentrated principle," wholly roofed over, including the dung or mixed yard. With reference to the latter the designer makes the following remarks in a printed description of his models which he has issued:—

"We think it will be found that a covered shed for the manufacture of manures, is one of the most valuable and necessary departments of modern farming. Here mould, ashes, and

other substances may be brought and saturated by means of the shoot leading from the manure tank pump, and, in inclement weather, men may be employed in turning, mixing, or drying ready for drill or general purposes. In fact, this may be the farmer's practical laboratory. There are hundreds of homesteads or farm yards in this country ill adapted for the warmth and well being of live stock. This view of the subject we see was confirmed at the meeting of the London Farmers' Club, June, 1851, that a covered yard was a necessary appendage. There perhaps may not be sufficient inducement for a yearly tenant to undertake and carry out modern improvements; but we believe, if he will refer to the models, he will see that some requisite alteration in his own yard could be easily contrived at a moderate outlay; and the profitable management that would accompany better arranged buildings would lead to still further improvements.

With an old inconvenient yard we should suggest that the bottom be put in order, if required, and made water-tight, hollow towards the centre, and that drains be laid on from the stable and stalls towards a tank for liquid manures.*

As to cattle stalls he says:—

"The divisions or partitions between the stalls may be about five feet high and made either of post and rails only or close boarding. By this arrangement the stock may be seen at a view. Some agriculturists have adopted boarded floors for neat stock, similar to that in the piggery, or perforated; but this plan is not at present much used. It would require considerable outlay to adopt it for large farms. The owners of some of those which we have seen on this plan speak favourably of them, and one gentleman with whom we are acquainted has now fifty calves on lath boards. We saw them last year, just after their purchase and confinement; since which they have been well fed, and are now, the owner says, become quite little bullocks, still confined in the same department. Brick floors, or concrete, are more generally used: we suggest that open drains at the bottom of the neat cattle stalls, as commonly employed behind the animals, will add to their cleanliness. Our arrangements, it will be seen, secure warmth, for it is an acknowledged fact that animals produce more both of flesh and fat when kept in a state of repose, and at a moderate temperature than when exposed to cold. The water is easily supplied by pipes from the tank by taps which are placed in the stalls: each tap will supply two animals, a cistern being placed between their heads. It will be seen by the model that the preparation of food, &c., may be going on in all weathers with comfort to the work people."

The writer gives the following estimates of the cost of his arrangement:—

"For a building and yards, &c., &c., of about 200ft. long, 25ft. wide, and the walls 8ft. high above ground, with all the appurtenances connected therewith, 17s. per yard super; or, 7l. 1s. 8d. per yard run of 25ft. wide or width of the building. Cost of 200ft. at the above price, 472l. 4s. 6d.

For a ditto ditto, about 150ft. long, 25ft. wide, and walls 8ft., 17s. 3d. per yard super; or, 7l. 3s. 9d. per yard run, &c., &c. Cost of 150ft., at the above price, 359l. 7s. 6d.

For a ditto ditto, about 100ft. long, 25ft. wide, and walls 8ft., 17s. 6d. per yard super; or, 7l. 5s. 10d. per yard run, &c., &c. Cost of 100ft., at the above price, 243l. 1s. 1d.

The wide building would be the same per yard super, whether covered with slate or tiles, and if thatched still cheaper."

The advantages claimed by those who advocate concentrated farm-buildings are, saving of expense in the erection, and the husbanding of time and labour through the contiguity of the different buildings. One of its advocates says—"To accomplish the due economy of time and labour, the course of the provender from the straw and turnip-house should, as far as possible, be in a straight line, and under

cover, to save the loss of fodder passing from one house to another, and increase the servants' comfort;"—and others, such as infirmaries and poultry-houses, might either be advantageously erected separately, or at least might be omitted from the main buildings without causing inconvenience. The leading idea in the plan seems to be, placing the houses for horses and cattle in a central position, with the straw and turnip house at one end, and straight passages leading between the rows of beasts, to the manure-pit at the other. The position of the barn is determined by that of the house for containing fodder."

This concentrative system seems to us to have more defects than advantages, especially with respect to ventilation, and, with wooden roofs, the difficulty of preventing the destruction of the whole should any part take fire. Extension of such buildings, too, for increase of accommodation would be difficult.

Before designing a homestead the architect must make himself acquainted with the manner in which it is intended to farm the land, as the buildings must be different, we need scarcely say, for a stock farm than for one where grain is to be chiefly grown. If it be the former, one of the first questions he will have to consider is the system of feeding that should be pursued,—a point still in dispute. At a meeting of the "Farmers' Club" in June last, some contended for box-feeding, while others, and a majority, preferred a covered yard for the purpose. Others, again, preferring tying the cattle up in stalls. Each plan has its advantages under different circumstances, and these must be weighed by the farmer. In box-feeding the dung is not removed. According to the advocates of the system it becomes so much compressed (a daily supply of dry litter being given), that no sensible exhalation of effluvia takes place.

The author of the most recently published work on farm buildings, "A Treatise on the Arrangement and Construction of Agricultural Buildings, by John Ewart,"* inclines to box-feeding. He says—

"A box about 80 square feet of clear area, and 2 feet deep will contain the manure produced by a beast, having a sufficient supply of litter to keep it clean and dry, from the commencement of November to the end of February, and by increasing the depth an additional foot, it will hold the manure produced till the end of April. Eighty square feet for the clear area of a box is sufficient for a beast of the largest size: the dimensions may be varied from 9 to 11 feet from back to front, by a frontage breadth varying from 9 to 7 feet, as may be best adapted to the site on which a given number of boxes are required to be built. The depth should never exceed 3 feet, as beyond that depth it would be inconvenient, and not altogether unattended with danger to the animals in getting them in and out, until a considerable quantity of manure had accumulated in the boxes.

For the particular purpose of fattening, tying cattle up in stalls is undoubtedly less efficacious than keeping them singly in boxes of proper arrangement and construction. This inferiority is chiefly on account of the confinement being too rigid, and of incurring the labour consequent on the frequent removal of the dung. For milk cows, however, they being usually allowed moderate exercise during a portion of the day, stalls appear generally to be as well adapted as boxes, with the particular advantages of stalls over boxes in the more ready access to the animals for the purpose of milking, and of requiring much less space for the same number of cattle.

It is a well-ascertained fact that young cattle, from the time of their being weaned until they have advanced towards their full stature—which, in the breeds most distinguished for precocity, is not until they have completed the second year of their age—require freedom and exercise to attain the necessary growth of frame to fatten at an after period to the greatest advantage. To confine and attempt to fatten oxen by forced feeding, previous to their having nearly attained full growth, is apt to stop the development of frame necessary to carry a great thickness of flesh; if such treatment be not even productive of absolute disease, from the shock the constitution of the animal is exposed to, by so violent an opposition to nature. The aim of the prudent rearer of cattle is to promote in his stock a continually progressive increase of frame and muscle without acquiring fat. To attain this object, the animals require at all times a plentiful supply, of provender of good, but not too nutritive quality; considerable extent of freedom; and in winter, perfect, but not in any degree heating, shelter. These conditions will be best fulfilled by means of fold-yards provided with sheds."

We may here observe that Mr. Ewart's work contains a large amount of useful information, and is copiously illustrated with plans, elevations, and sections. He wisely cautions proprietors, nevertheless, against attempting to be their own architects, even with the assistance of such similar works will afford them.*

As to the box-feeding, we must own we have no great fondness for a system which involves the retention of decomposing matter under the noses of the beasts. On the same ground we look suspiciously on the boarded floors which have been introduced for sheep and pigs, with openings in them to allow the dung to fall through. It is quite right, however, that the evidence should be weighed. Mr. Mechi says, respecting the latter, as to sheep, "we were a good deal plagued at first, when we had narrow $\frac{1}{2}$ -inch openings, having to sweep the floor, and the sheep got dirty; but now, with 1 $\frac{1}{2}$ -inch openings, there is no trouble in any way, no expense of littering. The cost of boarding and labour, per superficial yard, of 9 feet, is, as near as I can calculate, for sheep floors, 4s. 2d. to 4s. 6d.; for the bullock, ditto, about the same. Bricked, and cemented tank under it, about 2s. per superficial yard."

A proper supply of water (at smallest possible cost) is an important matter. An examination will often show that water will bring itself from higher parts of the farm if a course be provided for it.

It is important that all the roofs should have guttering, with pipes to bring the rain water into tanks if needed, or drains if not. When this is not attended to, the yards are made sloppy, and the manure in open courts injured. These courts, by the way, or cattle yards, may be sunk a foot below the surface level, and should have drains to a liquid manure tank, at a point, say 9 inches above the bottom, so as to leave a certain quantity of moisture for the decomposition of the litter. Good roads save money: a railroad, or tramway, may always be introduced with advantage round and through a farm: a steam-engine will prove a good investment of the money it costs, in a farm of more than 500 acres, perhaps less. The barn and granary need not be so large as

* We mentioned some time ago, with recommendation, Mr. Dean's "Essays on the Construction of Farm Buildings," and his "Land Steward." The Royal Agricultural Society's "Journal" will be found to contain some valuable essays on the subject; and in London's "Encyclopedia of Cottage and Farm Architecture," although change of views has made some of the opinions obsolete, there will be found a large amount of available information.

* London, 1851. Longman, Brown, and Co.; Edinburgh, Oliver; Newcastle-upon-Tyne, Lambert.

they were formerly put up; and generally speaking, when about to construct buildings, we should ask ourselves, what purpose have these to fulfil? rather than, what sort of buildings do others put up?

In conclusion, for the present, do not let beauty be wholly disregarded, even in farm buildings. The mind is greatly affected by external circumstances, and may get a bias for order, regularity, harmony, and excellence, from a dove-cot or a gable.

GEORGE GODWIN.

THE CLASSIFICATION OF MEDIEVAL ARCHITECTURE.

If there happened to be in existence at the present moment a correct List of the whole of the Buildings of the Middle Ages in this country, arranged in the exact Chronological order in which they were actually constructed,—if some special Chronicle had been devoted by the Church to this express purpose, and regularly kept, in which, not only the original construction, but the minutest repair and alteration of every important building had been accurately recorded from the earliest period of the Christian era down to the present time,—the History of our National Architecture would be complete. In the absence of such a Chronicle, it is to the construction of such a Chronological List, or the nearest approach that can be made to it, that the efforts of those engaged in the elucidation of this History must ultimately be directed.

A century ago, when Medieval buildings were all classed without distinction in one large group, and indiscriminately denominated Gothic, such an attempt would doubtless have been looked upon as utterly hopeless. The first step, however, towards this ultimate object was taken when Mr. Rickman published the first Edition of his *Attempt to discriminate the Styles of Architecture in England*,* in which he roughly threw the whole of our Medieval buildings into four large groups or classes, and thus rendered a service to those engaged in the study, the extent of which it is not easy at the present day fully to appreciate.

Strange as it may appear to be, it is, nevertheless, no less certain than remarkable, that this first step is, up to the present time, also the last step that has been taken in this direction. Immense as have been the contributions, both in the way of illustration and description, and numerous and talented as have been the writers on the subject, we are, at the present moment—as regards the classification of our buildings—pretty nearly in the same position in which we were when that first Edition was published. Having had the pleasure and the advantage of an early and intimate acquaintance with Mr. Rickman, I have a firm belief that, had he been spared to us, he would have been the first, as he undoubtedly would have been the fittest person, to have declared, long ago, that the time had arrived for a fresh classification of our national buildings; one more detailed and better suited to the advanced state of knowledge on the subject.

That this second step in advance has never yet been taken or proposed, may probably be due, amongst others, principally to the two following causes:—

In the first place, the principal writers and authorities on the subject, of the present day, are a very different class from those of Mr. Rickman's time: they are neither plodding antiquaries, nor practical architects; but they bring to their task abilities of a high order, cultivated tastes, high religious feeling, and great powers, both of language and imagination; qualifications which have enabled them to render the subject attractive and interesting to numbers for whom it would otherwise have had no charms. That the study of Architecture has of late years been elevated and ennobled, and had much more of a philosophical character imparted to it than formerly, is due to the labours of these writers; and it is not in the least to derogate from their eminent services to question whether their opportu-

nities and habits have been such as to qualify them equally for the less brilliant but laborious task, which devolves upon those who undertake, by careful analytical comparison, and by the studious examination and delineation of those minute peculiarities of form and detail which distinguish similar buildings from one another, to supply us with that particular description of evidence upon which any such advance or improvement in our Architectural terminology can alone be based. That the qualities necessary for this description of drudgery, if it may be so called, were possessed in an uncommon degree by the late Mr. Rickman there is no doubt.

In the second place, the absence of any such attempt may be also, in part, attributed to the circumstance that the very habit we have been in, of classing the whole of our national monuments under the four heads given by Mr. Rickman, and of referring each individual example to one or other of these groups, has tended naturally to induce the belief that these four Styles, as they are called by him, prevailed without variation for nearly the entire term allotted by him as that of their duration, and then merged into one another by a course of rapid transition, and thus to discountenance and to conceal the very important and indubitable fact that "*Church Architecture in England, from its earliest existence down to the sixteenth century, was in a constant state of progress or transition*," and that this progress was not only gradual and constant, but, with certain exceptions, universal and simultaneous.

The establishment of this fact (and I am not aware that it is likely to be disputed) brings with it some important conclusions. It follows, in the first place, that the exclusive application of the terms "transition" and "transitional" to certain examples supposed to be intermediate between these four Styles, is erroneous, and that these terms are as applicable to examples taken from the very middle of these Styles as to those which occur at their commencement or their close. The sooner, therefore, we get rid of these terms, in the fallacious sense to which their use has hitherto been restricted, the better.

Again, it is evident that the term "Style" cannot be correctly applied to any collection or series of consecutive examples belonging to any particular period of our Architectural History, and differing from one another so greatly as their extremes necessarily must, except in a sense which is forced and unnatural, and which requires previous definition and explanation: it is moreover clear that its use has tended, more, perhaps, than anything else, and in spite of such qualification, to confirm and perpetuate the error already referred to. The sooner, therefore, we restore to this term its natural signification, and thus employ it conveniently and usefully in our descriptions, the better.* It would appear, in fact, to be absolutely necessary, for the future progress of the study, that we should get rid of the notion of the existence of four separate "Styles," with "Transitional" examples between them, and I cannot see how this is effectually to be done, except by discarding the terms themselves.

These are the considerations which have led me to propose that in our new classification we should not, as heretofore, attempt to divide our National Architecture into a given number of "Styles," but rather its History into a given number of "Periods;" the advantages which the employment of this latter expression in its natural sense presents to us, as implying a certain term of years, and nothing more, being, if I mistake not, considerable. Having thus got rid of the difficulties our former Nomenclature entailed upon us, all that we have to provide for is, that these "Periods" should be so selected that the buildings which were erected within their limits may be capable of being sufficiently identified and characterised by one or more

prominent features, the existence and employment of which were, as nearly as may be, coincident with these limits;—I say as nearly as may be, for, the fact once admitted that the change which the fashion of our National Architecture was continually undergoing was gradual as well as constant, to expect that we can attain to more than this would be absurd.* Having done this, we are at liberty to speak of these buildings in what terms we please; not, indeed, as belonging to an *indefinite Style*, but to a *definite Period*, the earliest and latest examples of which are equally but not more "transitional," in the general sense of the term, than the rest; their *early* or *late* character, moreover, being sufficiently indicated by their classification at the *commencement* or *the close* of the Period.

In stipulating for this license in the re-adjustment of our terminology, and in desiring to sit thus easily under our new terms, I would not be understood as undervaluing the importance of a judicious selection, as well of the Periods into which we may divide our Architectural History, as of the terms by which we may designate these Periods. Arbitrary as any such division of our National Monuments must necessarily be, since no broad line of demarcation in that connected series is discernible, it is nevertheless absolutely necessary that the principal marks of identification by which we are to recognise the buildings of each Period should be clear and unmistakable.

It would be out of place here to recapitulate the reasons which have influenced me in the selection of the particular Periods and Terms, which are proposed in the treatise which has given rise to this discussion. I am rather anxious at present to lay down what I conceive to be the primary conditions upon which any such change in our Classification and Nomenclature must be based. One advantage, however, which a more detailed division of this kind presents, may perhaps be here pointed out: it undoubtedly offers a closer approximation towards that complete Chronological List which we may hope some day or other, possibly and ultimately, to reconstruct. The nature of this advantage, as well as of the views which I have been urging in this letter, may perhaps be roughly illustrated by the construction of the following simple diagram. If the continually changing fashion of our National Architecture, departing from Roman at an early period of the Christian Era, and returning ultimately in the seventeenth century to the same type, may be said to be sufficiently represented by the line which, starting from a given point and returning again to the same point, forms the circumference of a circle; and if in that circle a square be inscribed, one angle of which shall coincide with that given point, then, the four sides of that square may be roughly taken, not inaptly, to represent the four periods of time into which Mr. Rickman divides the history of our national architecture; and if, again, the arcs which are cut off by these four sides be bisected, and straight lines be drawn from the angles of the square to the points of bisection, and an octagon be thus inscribed in the circle, the eight sides of this octagon may be said to represent the eight periods (with one added for the debased) into which I propose to divide the same history, and a closer approximation be made by the figure to the circle itself; and if, further, the same process be repeated, and a figure of sixteen sides be thus constructed, the Early and the Late portions of each of these eight Periods may be said to be thereby represented; and, lastly, if we are ever enabled, by careful comparison and investigation, and by a similar process, to inscribe with tolerable certainty on the circumference of the circle itself, in the order in which they were actually constructed, the names of the whole of the principal buildings of this country,—the History of our National Architecture, as I have already

* Thus the style of the Nave of Lincoln Cathedral may be correctly said to be considerably in advance of that of the Choir, and the style of the Presbytery of Ely to be still further in advance of the former, although the whole belong to the same period.

* It would, in fact, literally be to suppose, as Mr. Cox truly says, in his very able letter published in THE BUILDER of July 12th, p. 431, which is principally devoted to this very point, "that each successive style went out, as it were, one evening, and that the following style commenced the next morning."

said in the first sentence of this letter, will be complete.

I am unwilling to close this discussion without a word of justice to those who have, of late, been employed on this subject; and, first, I wish to put in one for myself. I desire now and once for all to disclaim all idea of credit, originality, invention, or merit of any kind as due to the suggestion I have made. In the course of a twenty-five years' study of the subject, I latterly found that a system of notation, different from that of Mr. Rickman's, had gradually crept into my memoranda, without which, in fact, after I had got accustomed to it, I found it impossible to describe satisfactorily half the buildings I met with: that which I had found practically useful to myself, I desired to afford to others the opportunity of testing; and I cannot see that in doing so I have rendered myself liable to the charge of arrogance and dictation which your correspondent "F. S. A." sought in his last letter on that account to bring against me. Again; although I was, I believe, the first, in my paper on the Geometrical Period, read at the Lincoln Meeting of the Archaeological Institute in July 1848, and published the same month in *THE BUILDER*, to propose publicly the formal adoption of this new classification; and although the limits of the proposed periods still rest on my own authority alone; yet it is certain that similar ideas must have been running in the heads of several distinguished archaeologists at the same moment,—at all events, so far as regards the division of Gothic Architecture into four Styles instead of three. For in 1849 we find Mr. Freeman,* evidently unconscious of my earlier proposition, suggesting an exactly similar fourfold division as subordinate to a higher twofold division; the idea of which he professes to have derived from Mr. Petit's earlier "Remarks on Church Architecture," but which is worked out with an originality of thought that establishes its own claim upon our attention. Next we have, in 1850, Mr. Scott, in his "Plea for Faithful Restoration," putting in a claim not only for the individuality, but the absolute superiority of the "Geometrical variety of the Middle Pointed," in terms which at once show his thorough appreciation, and careful previous study, of the works of this Period. And lastly, we have the ingenious and eloquent, as well as unanswerable appeal of Mr. Poole before the Northamptonshire Architectural Society in October 1850, on behalf of the "Geometrical" Style. That Professor Willis and Mr. Petit are fully alive to the claims of this "transitional" variety to distinct classification their previous writings can leave no doubt. Who, then, would not be willing to share with such writers the merit, if there be any, of assisting in the establishment of a system which may tend to simplify, and therefore to popularise and render more easy of attainment, a study to which we are all so greatly attached, and after which the really interested inquirers, out of so large a body of churchmen, are, even yet, so comparatively limited in number? And here doubtless arises the only question which would cause us to hesitate. Will the adoption of such a system of classification as that which I propose be likely to produce such a result? I entertain a strong opinion that it will. I fear that the present road to knowledge on the subject is blocked up and encumbered with various obstacles and impediments which render it not very easy of approach. I fear, too, on the other hand, that recent publications have been addressed rather to the initiated than to the incipient student; and have treated perhaps more of the *philosophy* than the *history* of architecture; that in searching too deeply for principles, we may run some risk of overlooking the principal object and end of all system and classification, that, namely, of enabling us to convey simply and intelligibly to others the knowledge that we ourselves possess; and that it is possible to overshoot this mark, and to obtain a system which is scientifically correct, but practically useless. Moreover, it appears to me that the road must be so prepared for the beginner as that he will not be called upon to ascend more than a few steps at once: so

* History of Architecture, p. 352.

that he may be able to command and review the ground that he has passed over before he commences his next ascent. It is with this view that I have divided the treatment of the subject into a series of successive publications, of which the first, illustrating the general outline of form in the buildings of the "Seven Periods," has already appeared; and the second, illustrating the nature of the "Mouldings of the Seven Periods," is nearly ready; and all that I ask for is, that no judgment be formed of the value or correctness of the proposed system until a few more of these proofs have made their appearance.

One point I have almost forgotten to notice. So essentially different was the contemporary architecture of different parts of Europe at certain periods, that to endeavour to include the whole under one and the same Nomenclature would appear to be a hopeless task. Let any one who doubts this write out a description of a building of Italy, of the Rhine, of England, and of the North of France, belonging to the middle of the earlier half of the thirteenth century: the following would be the correct designation of such a series of buildings according to our present terms: the first would be "Romanesque," the second "Transitional," the third "Lancet," and the fourth "Geometrical." Now of what possible value would the term be that was general enough to characterise the whole four? Nor can I see the slightest advantage which is to arise from such an attempt: it is true, and it is no less interesting than true, as Mr. Scott has very justly remarked, that there was a time when the designs of all Europe presented the same character, and I agree with him in thinking that this was the period when the art of Mediæval design reached its climax; but this fact affords us no help towards the solution of the difficulty as to the other periods. A three years' study of continental architecture (1832 to 1835) satisfies me that the buildings, not only of different nations, but of different districts, require to be separately classified.

E. SHARPE.

THE LOCK CONTROVERSY.

OUR American brethren are quietly walking into us, to use a vulgar expression, and that, too, in all the strong places. Our naval superiority and our super-eminent skill in machinery are both questioned pretty closely. And now comes this new "Rape of the Lock," not by Pope, but Hobbs, who threatens to find a key for every difficulty, and says he could not be resisted by all the wards in Chancery. And Hobbs has done it too, though the lock was a Bramah and has hung boasting in the window in Piccadilly for many a long day, tempting invasion by the offer of two hundred guineas to any that would pick it. He had previously turned over a Chubb, but under circumstances that did not make the triumph quite a fair one.

His mode of working, as we are told, is this:—He applies a lever to press the bolt in a backward direction, and then proceeds, by means of instruments previously manufactured, to lift the tumblers of the lock one by one, and retain them in their right places. When the last tumbler is lifted the bolt flies back. Thirty days were given to Mr. Hobbs for his attack on the Bramah, and to make his instruments he was allowed to take impressions of the key and the tops of the wards. Day after day he was shut up alone with the lock, none being permitted to enter the room while he was at work; and, with the aid of "thieves' wax," a hinged mirror in the key-hole, a strong light, all sorts of odd instruments, and his own great cleverness, he has succeeded in the task.

For our own part we did not think that any lock could be found, made at a cost which would admit of sale, to resist such appliances, and are astonished that Messrs. Bramah consented to submit it to such practices for so long a period. Whether after all Messrs. Bramah's challenge, as written on the lock, has been met by Mr. Hobbs, is a question: we think not, spite of the arbitrator's award.*

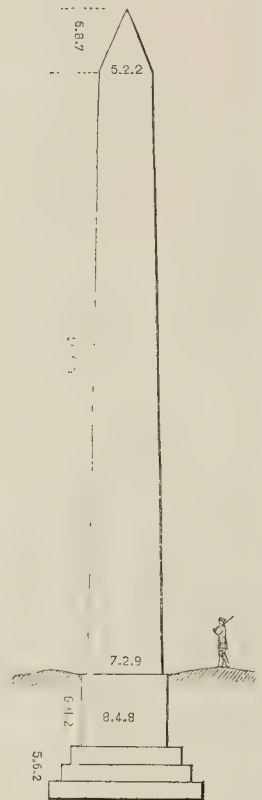
* The challenge was, "The artist who can make an instrument that will pick or open this lock shall receive

As to the American's own lock, the "Paranoptic," it is a wonderful piece of mechanism, put by its price quite out of the list of commercial locks; but whether even this is impregnable remains to be seen, and will, we hope, be tried.

Is there no public-spirited burglar in London that will come forward for the honour of his country and a round sum of money?

CLEOPATRA'S NEEDLE.

THE plea in our pages for the transport of the obelisk belonging to us, known as Cleopatra's Needle, has been so generally echoed and assented to, that we may reasonably expect it will not be long before we see that monument here. We have been favoured by Mr. Guillaume with an elevation of the obelisk, and some particulars forwarded to him by a gentleman on the spot, which will interest our readers. Its exact dimensions in French feet are as follow:—Size at bottom, 7ft. 2.9; at top, 5ft. 2.2; height of square shaft, 56ft. 9.5; height of pointed top, 6ft. 8.7. The construction below ground is shown on the engraving.



The following is a translation of the inscription upon it:—

"The glorious hero—the mighty warrior—whose actions are great on the banner—the King of an obedient people—a man just and virtuous, beloved by the Almighty Director of the universe—he who conquered all his enemies—who created happiness throughout his dominions—who subdued his adversaries under his sandals. During his life he established meetings of wise and virtuous men in order to introduce happiness and prosperity throughout his empire. His descendants, equal to him in glory and power, followed his example. He was, therefore, exalted by the Almighty-seeing Director of the World. He was the Lord of the Upper and Lower Egypt. A man most righteous and virtuous, beloved

200 guineas reward the moment it is produced." Where is the instrument?

by the All-seeing Director of the World, Rhamsis, the third King, who, for his glorious actions here below, was raised to Immortality."

THE IMPROVEMENT OF BRITISH ARTISANS.

MR. T. TWINING has been addressing Lord Shaftesbury on the subject of establishing a National Institution, having for its object to improve the efficiency of British workmen in their several trades, and more especially in those connected with the manufacturing prosperity of the country.

Mr. Twining says,—"Many years have elapsed since I first formed the idea of an institution by means of which the manual as well as intellectual education of artisans, in the more important and difficult branches of trade and manufacture, might receive a finish similar to that which a genteel education receives at the Universities of Oxford and Cambridge. But it is within these last two years that I have been induced to enter more earnestly into the subject, by the cordial encouragement of a friend thoroughly versed in the applications of science and art to the advancement of industry, and whose valuable assistance I always feel pleasure in gratefully acknowledging. It is through this friendly medium that my attention has been directed to the efforts made in continental countries to improve the abilities of their respective workmen, and particularly to the successful operations of an institute analogous to the one I had contemplated, by which the Prussian mechanic has been raised, in a short lapse of time, from comparative insignificance to a remarkable degree of efficiency; and it is thus that I have become impressed with the urgency of making counterpart exertions on our side, and with the importance of turning to good account the peculiarly favourable combination of circumstances offered at the present time." He proposes,—

"1. That in all large towns throughout the kingdom, and especially in the manufacturing districts, evening schools shall be established, where journeymen may acquire, during their apprenticeship, such branches of practical knowledge as have a direct bearing on their several vocations.

2. That a sufficient degree of connection shall be maintained between these local schools and the Central Institute below mentioned, to ensure uniformity of purpose, and regularity of working.

3. That a Central Institute or College, on a large scale, shall be founded under royal charter, in or near the metropolis,* and sufficiently endowed to secure its permanent efficiency.

4. That journeymen having completed their ordinary apprenticeship, and who can sufficiently prove their abilities in a preliminary examination, shall be admitted to pursue, as inmates of the college, a regular course of appropriate studies, theoretical and practical.

5. That final examinations shall test their attainments, and that degrees and diplomas shall class and stamp their abilities, for their own advantage, and for the security of those who might become their employers.

6. That a Museum of Industry, similar to the Musée d'Industrie formed at Brussels under the able management of M. Jobard, shall be established at, or in connection with, the Trades' Institute, and steps taken to ensure the annual acquisition of specimens, models, or diagrams, illustrating all the latest improvements and inventions which may offer practical advantages."

Mr. Twining suggests that a committee of leading men be formed for the purpose of carrying out such a plan as the above, and that a portion of the peculiarly appropriate materials so opportunely brought together within the Crystal Palace, should be turned to account for the formation of the Museum of Industry; and also that the Great Exhibition should bequeath something out of the abundance of its wealth towards the erection and endowment of an Institute which would be so legitimate a monument of its existence and of its benefits.

Our readers will remember a similar proposition first made public in our pages some time ago.

* Say at North Woolwich.

THE CITY OF DRESDEN HOSPITAL.

It is a melancholy fact to consider, that it is in the less populous towns, where human sufferings are least, that they can be best alleviated and attended to. A short description of the above splendid establishment will be interesting in many respects. When the kingdom of Saxony was at its highest pitch of prosperity, a number of splendid public and private buildings sprang up, amongst which the *Palais Marcolini* was one of the most conspicuous. It is situated in a very healthy suburb of Dresden, the *Friedrichstadt*, and reached by the famous *Ostra Allée*, trees a hundred years old. It is entirely built of stone; consisting of a main building extending around a fine court, separated from the street by a spacious gateway. Having been erected by the minister of Frederick Augustus, it was deemed worthy to be the residence of Napoleon whenever he chanced to be in Dresden, and it was (to anticipate our narrative), in the room occupied by the *surgical armamentarium*, that the famous last interview between Napoleon and Metternich took place. However, events took another turn, palaces became at a discount, and the corporation of Dresden hit on the idea of purchasing the *Palace Marcolini*—for the *city hospital*.

Thus, according to the plan of a nobleman's mansion, none of those huge, dismal, long wards were possible, but the poor sick find themselves in spaces most cheerfully and conveniently laid out and arranged. None of the wards (saloons and rooms) hold more than twenty-five beds: the walls are above twenty feet high, the doors and windows ample, made with every accuracy and perfection possible. As in many German hospitals, the poor patients are not burdened with continual scrubbing and scouring (when the medical officers are absent), but a substantial oak floor, painted with varnish, requires nothing but an occasional wiping with a wet cloth: cheerful, wide corridors lead to the different chambers, also those most substantially windowed, excluding any draught or cold of winter. In accordance with this substantial architectural substratum, the Dresden corporation has furnished the whole establishment. The bathing-place is splendid, containing most powerful douche baths, applicable in every direction and to every part of the suffering body. The two rooms of the dispensary would do honour to the first pharmaceutical establishment of a wealthy town, and this department is under control of the celebrated Dr. Struve. The kitchen, pantry, laundry, &c. are all in keeping with those departments already mentioned. It might be well imagined that a Count Marcolini would not have a mansion without a park, and this also has been acquired, and added to the Dresden Hospital. Like the whole establishment, the garden also is divided into a department for the male and female patients, each comprising about two acres of land, with beautiful avenues of large wild chesnut trees, extensive grass plots, of which that in the female department is used for bleaching the clothes of the establishment. All this is well laid out, with a basin in each department, the walks gravelled, &c. It may be also observed, that the male and female portions of the gardens are separated by an avenue of rose-plants, some 18 feet high. Around and behind these gardens, destined for the general patients,—is the remainder of the once huge park, 30 acres and more, in which there is a most ornamental fountain adorned with tritons and other sculpture, which had cost large sums.

And here we have to observe, that the Dresden City Hospital does not only comprise a sanatorium, but one at various graduated prices. The highest normal price in this department is two *thalers* (six shillings) daily, for which a patient receives a very well furnished room, and every attention and care required. But this highest rate is but seldom demanded or paid, and with a little introduction a patient may have also a separate room and adequate comfort, at the rate of one *guilder* (two shillings) a-day. Such patients will then, with permission of the medical officer, have the whole range of the park—an advantage of much

consequence to the convalescent &c. The ordinary charge made to the general patients is ten *silbergroschen* (1s.) per day. And in this place it will be convenient to state the manner, in which patients are admitted in the German (continental) hospitals, which are all public establishments. If a person is a native or a resident of the place where he seeks admission in the hospital, he or she has only to apply to the common councillor or other officer appointed for the purpose. The same is the case with all natives, and the expenses of their cure are borne by the parish or commune to which they belong. Foreigners, viz., all persons born or domiciled beyond the country wherein the hospital lies, apply to the police officer; here they are examined by the medical officer, and on his approval addressed to the hospital. The whole transaction does not last but the time absolutely necessary for the few formalities; and if a person is very ill, he is conveyed in a *fiacre*. The German police-officers, on whom such onerous and ambiguous duties are imposed by the governments, are very willing to perform conjointly similar acts of humanity and benevolence. There exists that sentimental custom in the Dresden hospital, that a bell hung on a little turret is rung as often as a patient arrives in the house—a delicate show of attention on the part of the establishment. In the last republican outbreak the hospital was of great advantage to the wounded of both parties, and it has been also subsequently used for keeping those state prisoners whose bodies or minds required attention. Dr. Herz, the husband of Madame Herz, the inventor of the *Children's Gardens*, long stayed there. The only thing patients seem to complain of, is a too restricted and dry dietary—a thing easy to be improved in the quiet of the present time.

AN IRON BALL-ROOM FOR PRINCE ALBERT.

A SPACIOUS apartment of corrugated iron has been constructed by Messrs. E. T. Bellhouse, of Manchester, for the Royal residence at Balmoral. It appears that Prince Albert's attention was directed to the model of an iron house deposited by Mr. Bellhouse in the Great Exhibition, and the result was, after some investigations, an order in July last to provide a building for Balmoral, to be used as a ball-room, studio for artists, or room for private theatricals, as the case may be.

The dimensions of the structure are as follows:—Length, 60 feet; breadth, 24 feet; height to the eaves, 10 feet; to the central ridge, 17 feet. The foundation consists of a framework of timber, the section of which is 8 inches by 6 inches—laid perfectly level and true—and running beneath the sides and ends of the erection. Upon this framework are bolted the base plates of cast-iron upright pilasters, at intervals of about 8 feet. The pilasters at the sides are prepared at the top to receive the feet of wrought-iron principals, for the roof, which extend from the pilasters at the front to those at the back, forming a strong and complete tie across the building. A series of angle-iron ribs running lengthwise along the erection connect the principals together, and receive the sheets of the roof, which are of corrugated iron, in sheets of about 7 feet by 2 feet 2 inches, the corrugations running vertically from the ridge to the gutter of the eaves. The ends of these sheets meeting at the angle of the ridge, are connected together by a cast-iron ridge capping, to which they are bolted. The upper line of the ridge is ornamented by iron castings of the fleur-de-lis pattern, which gives a neat effect to the roof. The lower ends of the roof sheets are bolted to the inner edge of the gutter, which is prepared to fit the corrugations and make a joint. The sheets forming the front, back, and ends of the erection are placed in the contrary direction to those of the roof, that is to say, the direction of the corrugation is from pilaster to pilaster, horizontal. The sides of the pilasters are prepared in such a way as to receive the ends of the corrugated sheets. The lower edges of the side sheets are bolted to moulded base-plates, which are

fastened down upon the upper surface of the wooden framework, and which also serve to divert the wet from the centre of the wood frame. The upper edge of the wall sheets are bolted to a flange cast along the under side of the gutter. Moulded capitals of a foliated design, and a panel in the body of the pilaster, with the projecting moulded front of the cast-iron gutter running along the eaves, give a good effect to the design. At the gable the roof projects boldly over the face of the building, and a barge of cast-iron, surmounted by a pointed finial, the angle pilasters and two intermediate ones, and the returns at the corners of the moulded gutters, afford relief to the gables. The front is divided by the pilasters into seven bays: in the centre bay is the entrance door, and in those adjoining on each side are windows: in those next to the ends are also windows; and the two intermediate and otherwise blank bays are relieved by the downpipes which descend from the gutters. The back is similarly arranged, save that there is no door, but only the four windows. At one of the ends to the right of the central or side door, there is another door: the other end has no opening. The doors are of wood, panelled and moulded, 3 feet 6 inches wide, and are hung in wooden frames, which are fitted to the corrugated sheets. The window-frames and sashes are also of wood, and are hinged in the manner of French casements. The doors are each surmounted outside by iron castings of the royal arms,—which form an appropriate ornament. In the centre of the roof is fixed an iron ventilator, with a hipped cover: a wooden valve worked from the interior by a rope running over pulleys, enables the aperture to be opened or closed at pleasure. The whole of the several parts of the structure are fastened together by small bolts, and are designed with a view to the attainment of the greatest possible convenience in erection and removal, and to the exclusion of moisture. It is to be floored at Balmoral, so as to save the cost of the transit of timber; and the dimensions having been furnished some time since, the flooring is all prepared, so that no delay will arise on that score, the floor being laid during the erection of the house. It is anticipated that it will be ready for occupation about the middle of the week after next. Its cost, we understand, is about 300*l*.

The iron corrugated plates are a form of sheet iron which is found to have very great resistance to weight and pressure, and therefore to be admirably calculated for use, either as walls or as roofs. The thickness of the plates used for the Balmoral ball-room is No. 15, wire-gauge, which is less than the sixteenth of an inch in thickness. The corrugations are about an inch and a half deep, and about 5 inches apart from one centre to another. The sheet of iron is thus made capable of supporting a weight equivalent to that which a series of beams, side by side, and of an inch and a half deep, could carry. One such plate, 8 feet long and 2 feet wide, with 7 feet clear of bearings, bore the weight of three persons (probably about the weight of 5 cwt.) standing upon it together.

REPAIR OF LAMBETH PALACE.—I beg to call your attention to some work which is now being proceeded with at Lambeth—I allude to the repair of the gateway of Lambeth Palace. Sometime since, the western tower was repaired, and the eastern is now undergoing that process. The building was originally ornamented with coloured bricks forming different devices on the face of the building, but I am sorry to say that the greater portion of these have now disappeared, for wherever the bricks have been decayed or removed new ones have been inserted, and this without any regard to ornament. I can scarcely believe that the Archbishop himself is aware of the fact, and I trust that you will, ere it is too late, say a word or two on the subject; and if you are kind enough to do so, it may lead to a restoration, which will be better than a repair, and this more especially as the new church adjoining is fast approaching completion. O. S.

FRANCE AND ENGLAND.—A COMPARI- SON.

DURING the last week three notices have appeared in the French papers—the 1st, from the directors of the musée, that five new rooms (salles) would be immediately opened; the 2nd, that the Assemblée had voted 30,000 francs for clearing the ruins of Memphis; the 3rd, the apportionment of a considerable sum amongst a number of artists, for paintings in various churches. This is in ruined France. Rich England has too, it is said, lately added two pictures to the National Gallery, the most expensive of which cost 300*l*. How long are we to be in the rear of artistic Europe? Yet our Government is not satisfied with doing nothing,—but love to indulge in peddling bits of mischief. Witness the buildings near the palace at Kensington, the new cross walk, the new ride, the destruction of the old wall, and, in consequence, of the quiet and charming walk which it defended;—the attempted attack upon Greenwich park,—the great house of Mr. Holford, the additions to the grounds of every villa, and latterly, the erection of a mis-shapen lodge in that beautiful bit between the bridge and the botanical garden in the Regent's Park,—and, crowning sin, the caricature on the arch at Hyde Park Corner. The history of the last, from beginning to end, is indeed a disgrace to all who bore part in the plot. A FRIEND OF ART.

STRIKES.

THE numerous strikes that have of late occurred, are not a pleasant feature in trade at present, although they rather seem to be connected with an improving than a falling condition of things.—The workmen at the Lincoln foundry struck work lately, and the firm having conceded two points required by the hands, viz., one hour less a week, and twenty-five per cent. more for over-time than for usual work, the workmen “by the advice of the delegates from London,” abandoned other, and it is said, unreasonable demands, and work was resumed.—On the 1st instant, says the *Armagh Guardian*, the workmen employed by the Drainage Commissioners on the river Blackwater, struck for an advance of wages, and proceeded en masse to the residence of Mr. Gerrard, the assistant engineer, requesting him to raise their wages; but, not willing to comply with their *polite* request, he gave a negative to their proposal. They went to work in a few days again all right, expecting all things were forgot, and that nought but harmony prevailed: the engineer was of a different opinion, and a few of the unruly members received something in the shape of a summons. It seems they were quite ignorant that such a thing as law would meet their case, and were rather shy when they were told that it was necessary, or a week or two in prison. It is to be hoped, says the *Guardian*, that this may prove a warning, as the work commenced at a period when there was no money to be earned in the country, and the workmen seemed very eager to obtain employment.—In reference to a strike on the Dublin and Belfast Junction Railway, amongst stone-cutters and masons, the *Newry Examiner* says:—We deeply regret to state that the strike on the above line, at the Creigmore viaduct, near Newry, still continues. The misguided men, who have been now a fortnight idle, evince no desire to return to their work, and we understand it is the determination of the contractors, Messrs. Killen and Moore, not to yield to their dictation. These gentlemen have for a long series of years been the most liberal of employers. They were first to introduce the excellent system of paying their men at the works instead of at public-houses, and such other similar places of resort. When we mention that the wages given their masons and stone-cutters range from 21*s*. to 30*s*. per week, in proportion to skill, it will be seen that the present combination is altogether unjustifiable. The evil is not confined to the masons and stone-cutters themselves, but no less than 500 poor labourers are thrown out of employment, whose families were altogether dependent upon their exertions for support.”—In reference

to the following grave detail by the *Daily News* of the doings of a central combination of workmen in London, on the model, seemingly, of the dictatorial and unscrupulous Parisian association, to which we had occasion some time since to refer, we may remark that although we have ever had the prosperity and welfare of the working classes at heart, we cannot think that this welfare is to be promoted by dictatorial and despotic, as well as unscrupulous conduct on the part of the workmen any more than of the masters; and that, even when every other difference is squared and fair dealings and doings otherwise religiously observed on both sides, it is not either right or desirable, and can never promote the welfare of the body corporate, that the head should be undermost, and the other members uppermost. The case referred to is that of Mr. Perry, tin-plate worker, Wolverhampton, and his workmen. Up to last April Mr. Perry and his men had gone on comfortably and peaceably on long-established rates. In that month he received by the London post an official-looking letter, from a body calling itself the “National Association of Trades Unions,” and signed “William Peele, secretary.” This communication informed him, for the first time, that differences existed between him and his men, and that a deputation of persons from the metropolis would shortly wait upon him, for the purpose of mediating on these disputes. Similar letters, with the like intimation, were also addressed to the other five houses in the same trade in the town. In due course the deputation came, accompanied by three or four of his own men: his London visitors explained to Mr. Perry that they represented a great society, which had Mr. T. S. Duncombe for its president, and a fund of 20,000*l*. for the support of its policy: they expressed a desire that the existing rates of wages in all the manufactories should be assimilated, though their circumstances, as would appear, greatly varied; and they handed Mr. Perry what they called a “Book of Prices,” but which was simply a scale of wages, for his adoption. Instead of at once repudiating their interference, Mr. Perry temporised with them, until he had got large orders in progress executed, a considerable stock on hand, and written contracts formed with sixty of his best men. Then he announced the resolution he had formed on their first intrusion—that he did not intend to submit to the dictation of strangers in the management of his business. War was at once declared against him and those of his trade who acted with him, by the “National Association;” and it was begun and carried on in a most unscrupulous manner. War requires funds. Now, though the association was said to have 20,000*l*. at its disposal, the first thing its secretary did was to issue a “levy” on its members, and to announce that all the tin-plate workers who left their employment should receive 12*s*. 6*d*. a week. A “secret committee” was formed by the metropolitan delegates, and divided into sub-committees. To one was assigned the duty of receiving the “levy” and paying the weekly contributions; to a second, the task of placarding Wolverhampton with scurrilous songs and libellous publications; and to a third, the seduction and abduction of workmen and apprentices. Mr. Perry’s contract men were seduced into beer-houses; made drunk; when in a state of insensibility were then disguised, taken to the railway station, and despatched, without the knowledge of their wives and families, to distant places, where they were maintained in secrecy and under moral duress. Three-fourths of Mr. Perry’s men were lured away. His apprentices were induced to idle over their work, to spoil it, and to retard the operations of those willing to do their duty. Tin was stolen, tools were missing, patterns were destroyed, boys were abducted and taken off to London at a cost of 8*s*. each a week; a number of Frenchmen, engaged to supply the vacant places, were tampered with, and twenty of them were carried off by one of the delegates, and their expenses back to Paris were paid by the association. At last, privations brought some of the abducted workmen back to his shops: they asked forgiveness, resumed

their engagements, and by degrees let out all the facts we have given a summary of. On their evidence Mr. Perry prosecuted and convicted the conspirators, in whose defence large sums were spent; and he has thereby, it is to be hoped, given a check not to lawful combinations amongst workpeople, but to an organisation which substantially amounted to a trade in strikes.

GUIDES IN THE GREAT EXHIBITION.

In reply to a paragraph so headed, which appeared in our pages a fortnight since, we have received a letter purporting to come from the "Universal Registry for Interpreters and Guides," and signed "F. D. Lewis, Chief Registrar." The writer defends the conduct of his blind guides on the ground that they are engaged by his establishment, and are totally unconnected with the executive committee. "This being the case," he continues, "you will perceive that as this office has to defray the expenses of their engagements, it does not assume an improper feature for the guides to inform any party requiring information, that they 'provide guides for those that want them,' for if they were to devote all their time in imparting information gratis, they would derive no income except through this office, to satisfy them for their labour." I have instituted inquiries into the case, and find that every civility was given to the gentleman when he asked for the information in question. Can the writer have observed that the information sought was simply the hurried inquiry in passing, "Pray, where is Class 21?" as one might ask the first person he met in the street the way to Grosvenor-square. If we thought he had, it would make us very suspicious of the whole establishment. So far from civility being shown, we must tell the "Chief Registrar" that the reply of the second guide was given with great insolence, and we repeat the expression of our commiseration for the poor simple countryman or woman who may fall into the hands of such sharpshooters, or of those who would justify them.

NOTES IN THE PROVINCES.

Norwich.—Some time ago we reported that a committee of the corporation had presented a report at a council meeting, in favour of the establishment of a free public library and museum, and that the members of the Young Men's Institute and others had subsequently presented a memorial to the council for the recommendation of the committee to be carried into effect. The memorialists, says the *Norfolk Chronicle*, have been waiting very patiently for this expected boon, but no movement whatever has been since made on the part of the council. "There are numbers of young men in this city to whom it would be a great advantage, and who would gladly avail themselves of it; and we believe that no popular institution for the diffusion of knowledge, either here or elsewhere, can be permanently established without it. We think that every thing should be done to draw our working men, and especially our young men, from mere sensual gratifications, and why there should be any delay in establishing such a library by the council we cannot imagine. If rooms are required, we believe that the rooms of the Institute would be at once available." Perhaps the real reason is, that the Norwich Corporation think free libraries "and all that sort of thing" mere stuff and humbug, just as many knowing English clodhoppers regard the talk of the "Parlez-vous" as mere gibberish. We know that there are such clodhoppers even in English corporations. The committee at least is an enlightened exception.

St. Neots.—An important experiment in gas making seems to be in progress here. A local correspondent of the *Cambridge Chronicle* says, in reference to it,—"Our townsman, Mr. Bower, has erected for the Messrs. Towgood, paper manufacturers, gas works, on the patent principle of converting those products of the coal into gas which otherwise would be condensed into tar, for erecting which, we understand he has bought the licence. Notwithstanding the many doubts expressed as to his

ever being able to accomplish that which, from the first, he avowed—namely, that with ordinary gas coals (from which gas companies generally got 8,000 or 9,000, and sometimes 10,000 feet per ton), he would get from the same coals 15,000 cubic feet—he actually does so. The Biggleswade Gas Company, in order to test it for themselves, despatched the manager and then the stoker, with 1 cwt. of their own coals, with which they charged the retort, and saw it worked off—the result of which was 765 feet from the cwt." This we long since predicted, and we do not believe that even this is the maximum. As to the precise merit of the patent in question, however, we cannot yet speak; but as the subject is of very general importance, it merits at least a fair trial. The St. Neots people are of course not likely to remain much longer satisfied without a reduction of price, and a demand has already been made on their gas company to reduce it to 4s. 6d. or 5s.: a very moderate demand indeed. "The company," it is said, "will then get quite as good a per-centage (8½ per cent.) as they now do." Both the company and the consumers will perhaps be surprised to find the per-centage considerably increased; but such is the unswerving rule in gas statistics, as we have proved *ad nauseam*.

Windsor.—The Guildhall being about to be improved and repaired, a specification was prepared by Mr. P. Hardwick, architect, and tenders were called for, when the following were opened:—Hall, 930l.; Cleave and Underhays, 926l. 10s.; Bate, 912l. 10s.; Hollis, 907l. 15s.; Holden, 899l. The tender of Mr. Holden, according to the *Windsor Express*, has been accepted, and an agreement signed for the completion of the works within two months. The improvements and repairs comprise a new floor for the Guildhall, the taking away of the heavy columns which now obstruct the sight and sound, and the removal of the magistrates' bench to the north end. Mr. Jenkins has been appointed to superintend the work.

Bideford.—The roofs of Northam church are being reconstructed and extensively repaired in oak and Memel timber: the whole of the ancient carving is being reproduced in solid oak, and the old parts made good and cleaned. New gutters are being placed throughout, and every part of the roofing will be renovated by Mr. Richard Gribble, of Pilton. The masonry and carving of the new windows have been executed by Mr. Wm. Parish, in Gloucestershire stone. The whole works are under the direction of Mr. David Mackintosh, of Exeter.

Lathom.—The Church of St. James, at Lathom, built and endowed by the late Earl of Derby, has been consecrated by the Bishop of Chester. The church was built by Mr. Smirke, architect. It consists of nave, chancel, south aisle, with spire at the west end. The pulpit and altar are of carved oak, and the seats in the nave and aisle are open. The chancel is separated from the nave by a low screen, and is wholly appropriated to the priest and choir: the prayer desk faces south, the lectern west, and the faldstool stands outside the chancel door.

Manchester.—According to a report recently made by Mr. Fernley, the architect, to the trustees of the Royal Infirmary and Lunatic Hospital charities, the design to enlarge and remodel the buildings of the infirmary, according to a general plan approved at a public meeting held June 26, 1845, having been nearly completed, in the erection of the two wings, the removal of the baths in Parker-street and the houses in Portland-street, the erection of the palisading and two lodges, and the laying out the grounds around the hospital; there remains at this time, therefore, only the reconstruction of the centre part of the main building, fully to accomplish the design then determined upon. It is, therefore, now proposed to build a new centre, at an estimated cost of about 4,000l., exclusive of fittings and furnishings, about 1,500l. more.

York.—The chapel of the York and Ripon Diocesan Training Schools has just been completed from the designs of Mr. Andrews, in the style of architecture of the fourteenth cen-

tury, and is capable of accommodating about 300 persons. The walls are of hammer-dressed stone, the facings being bosted. The east window is of five lights, with flowing tracery. The side windows are of two lights, the tracery in each being varied. The west window is of three lights. The roof is high pitched and open: it is carried on corbels, sculptured with figures of angels playing on various musical instruments. The interior is fitted up with open seats, divided from the entrance by a carved oak screen. The whole expense of the building, it is said, will not exceed 1,000 guineas. Mr. Graves, of Aldwark, was the contractor.

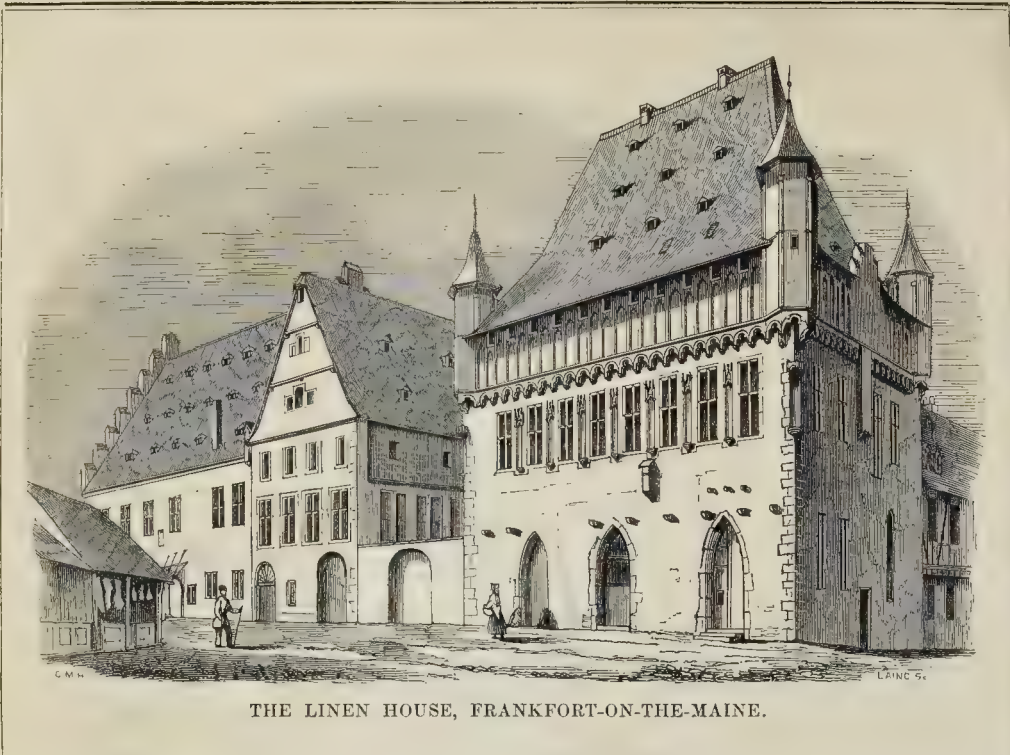
Newcastle.—It is proposed by Mr. W. A. Brooks, the corporation engineer, that a dock of 4½ acres should be excavated and built in the very heart of the business part of the town. The scheme, according to the *Gateshead Observer*, is considered by leading men to be as feasible as desirable. There is also talk of some extensive dock improvements by Newcastle and Shields jointly at the mouth of the Tyne.

Edinburgh.—It has been resolved at a meeting of "Old Herioters," to have a statue of George Heriot placed in one of the niches of the Scott monument. Why George Heriot should occupy so comparatively humble a position under Sir Walter Scott's wing does not appear. There would be about as much congruity, we should think, in erecting a statue of Sir Walter in front of Heriot's Hospital. Both were benefactors—Heriot, to the citizens of Edinburgh, especially and substantially—and, moreover, no mere creature of Scott's production, but a matter of fact celebrity of equal local eminence, and in so very different a walk, that any special honour to the memory of the one, so far as we can see, should have no mere parasitical dependence on the monument of the other. It is the formal resolution of the "meeting of Old Herioters" to do honour to their benefactor by ornamenting the monument at Edinburgh in honour of another with his statue that seems to us incongruous, not the mere surrounding of Scott with the effigies of historical characters on whom he may have shed a lustre in his imaginative works. The Princes-street Gardens are large enough: could not the "Old Herioters" erect a separate statue to their posthumous and educational Cæsar, and leave it to others to lay their laurels on Sir Walter's altar?

Leasalt.—A column "nearly 60 feet high," has been placed "in one of the highest spots" in the parish of Leasalt, to the memory of Sir Andrew Agnew, the indomitable advocate for the pharisaical, or at least the Jewish, observance of "the seventh day's" rites of the old creation, on "the first day" of weekly observance in remembrance of "the new creation." "High places," in honour of such purposes, are highly appropriate.

Miscellaneous.—The Dungannon Gas Company, says the *Newry Telegraph*, "have reduced the price of gas to 8s. 9d. per 1,000 cubic feet; and it is hoped that, by the increased consumption, they will, at the next annual meeting, be enabled to make a still further reduction."—The project of erecting a new town-hall and police-station continues to be entertained by the leading inhabitants of Teignmouth.

THEORY OF SOUND.—I should wish to make one or two observations on sound, as much has been said of late as regards the new Houses of Parliament. If, in a long room, the speaker is placed on the side, those sitting on the opposite side will not distinctly hear the speaker if his voice is weak, but if they turn their face to the wall, they will hear infinitely more distinctly, and I believe that those placed on the same side as the speaker will also hear better than those opposite. I am not supposing it would be practicable for persons to turn their faces to the wall, only that it shows that sound is returned or reflected at certain angles, and that the plainer the surface of the wall is, the better chance there would be for those listening to hear more distinctly; and this I think applies to the Houses of Parliament.—A SUBSCRIBER.



THE LINEN HOUSE, FRANKFORT-ON-THE-MAINE.

THE LINEN HOUSE, FRANKFORT-ON-THE-MAINE.

This is an extensive range of buildings opposite the south side of the cathedral, retaining more than any other of the numerous ancient buildings still existing in Frankfort the original character and appearance. From the humble employment to which they have been devoted they have escaped the hand of the modern improver, and have yet been preserved in substantial repair. The original purpose of the buildings is said to be unknown. Part has for the last century or more been used as warehouses for linen goods, which have given a name to the whole, and the other part has been occupied as the custom-house. It is now probable that some portion will be set apart for the courts of law.

The date of erection appears to be about 1450. The chief alteration which has taken place is in the most prominent of the range. The roof at first sprung from behind a parapet which is now covered, the openings of the battlement appearing as a range of small windows.

The quoins and dressings are of a bright red sandstone, which has for ages been used in Frankfort and the neighbouring towns and cities. The walls are of rubble and plastered externally. The roofs are covered with small slates.

FLUE DESTROYERS.

RESPECTED FRIEND,—Thy vocation lieth amongst the bricks, mine is one of peace and retirement. For purposes of seclusion, I fixed my domicile in the tranquil suburb of Earl's Court, where I have sojourned these two summers, and nothing hath disturbed my repose, save that regularly, *twice in the month*, at about the hour of dawn, awful rumblings are heard in the adjacent dwellings, as if house-breakers were essaying to enter my chamber. At first, my household were collected around me in a state of alarm, but on summoning the aid of our neighbours, we learned that the Ramoneurs were but sweeping the chimneys of the next house.

As this process is an improvement upon the old and cruel practice of cleaning such flues by climbing boys, there can be nothing to object to in the mode, which is one of mercy; but thou, mayhap, wilt agree with me that there may be a small share of cruelty in arousing and disturbing nervous persons, who, like me, rest placidly by night, and work while it is called day.

The astounding noise of this process in small houses like mine, with thin partition walls, may be unknown to thee; therefore, I will essay to describe it. I fancy thee in my position:—half awake from profound sleep thou hearest a rumbling, as of an earthquake—thou startest—another rumble succeeds of a more proximate character—thou risest, starest wildly through the chamber—then follows a shower, as if of falling walls or rubbish—again another, and another: thou art at the window, and perhaps invokest the police—until the cause of thy disturbance be explained like unto mine.

It occurth to me that repeated operations with rough machinery such as these (which are continually protruded up chimneys) may break away, finally, the party walls; and that the besom of destruction shall ultimately open crevices in the intervals called by builders "withs."

Peradventure thy influence with practical builders may persuade them to use some indestructible material to line flues, and also induce the Legislature to stop the untimely and preternatural noises complained of, which are far more distressing and appalling than the cry of "sweep! sweep!" already silenced by them.

The insect tribe of black beetles (which I believe to be one of the Egyptian plagues), have made incursions from the larders and flesh-pots of my neighbours through chinks in the fire-hearth; and their smoke hath found vent into my chambers, which betokeneth the fire whereof it is the precursor.

Should the chosen of the people not decree a change in the mechanism, at least they may regulate an hour for its operation less painful to

TABITHA QUIET.

TRAINING INSTITUTION, BISHOPS STORTFORD.

THE recent enactments of Parliament with regard to education have raised a new class of building, partaking somewhat of the collegiate and scholastic character combined. The number of parochial schools calls forth a corresponding demand for properly-trained masters and mistresses; and these must receive their training under a certain fixed form of arrangement; and most of our dioceses are now combining, in some way, to provide for their respective wants, by erecting buildings exclusively for this purpose. The one represented in our present number is now being built for school mistresses in the diocese of Rochester, on a beautiful level and central site, at Bishops Stortford. The design is Tudor, with a frontage of 177 feet, and a depth of 153 feet, and the plan comprises three distinct divisions, ranged round an interior quadrangle; namely, the educational, the industrial, and the domestic departments. The hall or dining-room, with the large school-room, occupies the principal part, with the superintendent's residence at one extremity, and the practising schools at the other. The interior quadrangle is 92 feet by 32 feet, and surrounded by an open corridor, after the manner of the almshouses at Ewelme, in Oxfordshire. It will contain a flower-garden and a conduit, to supply the establishment with water, in the centre; and the upstairs plan comprises separate dormitories for sixty students, with rooms for the mistresses, bath-rooms, lavatories, linen and clothes stores, &c. The servants' dormitories are in the roof, over the main building. The whole is to be made fire-proof on Messrs. Fox and Barrett's principle, and means provided for ventilation, by Mr. Price, who is now engaged on Windsor Castle. The materials are red brick and Bath-stone dressings. The principal fronts are to be chequered, and the roofs will be covered with tiles stained before burning with a preparation of manganese.

The architect is Mr. Joseph Clarke. The works are contracted for by Messrs. Rigby; and the total outlay contemplated is 10,000*l.*

The lower view shows the inner quadrangle.



TRAINING INSTITUTION, BISHOPS STORTFORD. — MR. CLARKE, ARCHTET.

THE SEWER AND THE BANQUETING-HOUSE.

In matters of construction I think you must be the proper person to address; and although what I am about to complain of has more the character of destruction, I shall pursue my intention. Taking a stroll, Sir, to enjoy the fresh air, along the banks of the Thames, at Hampton-court Palace, and stopping to contemplate Cardinal Wolsey's "Banqueting-house," with its sly little door opening on the towing-path, I was at once assailed by the most offensive effluvia that any one can imagine, and inquiring, evidently of an old inhabitant of the place, whence it emanated, was informed that not 20 yards from where we stood the common sewer of the palace emptied its contents on to the open bank of the river! and this is about the middle of the side of the palace! And inquiring further, whether from any tradition it was supposed the old cardinal had built his banqueting-house so detached from the palace from any odd fancy he might have had the nearer to inhale such a loathsome (that is, to me) and noxious atmosphere, the reply was, No, and that, indeed in the old time, folks were not such fools; that the former sewer discharged itself at the back of the entrance to the barrack-yard, and was done away with, and the present one substituted but some few years ago, which emitted actually sufficient filthy exhalation to have empoisoned the whole side of the palace; and if any poor devils inhabit this sweet banqueting-house, I would seriously advise them to make their wills. Can it be conceived that any architect would not have imagined the obnoxiousness of such an exit so situated, and that he would have carried a covered sewer far enough away from the numbers who are now necessarily exposed to this horrid nuisance, and have formed the exit where but few, if any, might be disgusted and endangered?

MEDICUS.

ENGINEERING AND OTHER INTELLIGENCE FROM IRELAND.

The Board of Guardians of the Tipperary Union have determined upon the erection of an addition to the front building of the workhouse, the drawings to be furnished by the Poor Law Commissioners' architect.

An additional wing is to be erected to Wexford jail, and 1,200l. to be expended thereon.

The Board of Guardians of the Listowel Union have, we understand, received from the Treasury the sum of 1,040l. to erect additional buildings to the workhouse.

The several works consisting of the cutting of the large hill at the town of Banbridge, the hills upon the Belfast and Ballynahinch road, the new post-road from the Quoile-bridge, towards Killyleagh, &c. are in an advanced state, and will probably be completed this season. Important works are to be executed in the county Down, and the improvements upon the Banbridge and Scarva road are to be continued: the expense will be 3,965l. 14s. The Roscommon hills on the Downpatrick and Ballynahinch-road, are to be lowered at an expense of about 160l. A new line of road commencing near Hollymount Church, at L. Lecale, and ending near the post road at Lisnamaul, is to be made at an expense of 2,900l. The amount of applications which have been allowed for public purposes in this locality is 16,444l. 15s. The gross amount on the county will be nearly 21,000l. Mr. John Fraser, Company's surveyor.

A new bank has just been completed in Drogheda by the Belfast Banking Company.

The foundation stone of a new Roman Catholic Church has been laid at Derry by the bishop.

The Poor Law Commissioners intend erecting an additional wing to the front house of Thurles workhouse, and proposals are being received for the execution of the works, according to the plans, &c. of their architect.

A line of railway is to be constructed from King-street in Cork, to the town of Youghal, passing through Middleton, with a branch line to Queenstown. The Bill has received the royal assent.

A monument has been lately fixed in Raphoe Cathedral to the memory of the late Rev. Wm. A. Butler: the design and execution are by Mr. Kirk, sculptor, of Dublin. Two blocks support a roll and massy plinth, on which is a reading-desk, with a cushion, and an open book, representing the Holy Bible: behind is a slab of plain white marble, surmounted by a pediment, on which is a Grecian honeysuckle. A piece of flowing drapery partly covering the pediment, falls in folds at either side of the tablet. The whole is bordered with black marble.

In Dublin the building trade is at present in a flourishing state. An opposition *monster house* is being erected in Mary-street. The extensive firm of Messrs. Carmock, White, and Co. have added the building lately occupied as a police office, to their establishment. A fifth story is being erected. Throughout the city the *shop architecture* is considerably improving. In the locality of Rathinus and Rathgar there is quite a building *mania*. A new road is in course of construction at the termination of Castlewood Avenue, and first and second class terraces are being erected. The new Roman Catholic Church at Rathmines (which we fully described some time since) is progressing but slowly—the original design has been much altered.

The masons and stonemasons employed at the Craigmore viaduct, Messrs. Rillen and Moore, contractors, in receipt of from 21s. to 30s. per week, have struck for higher wages.

ARCHITECTURAL COMPETITIONS.

SECOND LETTER.

Of late years a highly objectionable and not a little injurious practice has been gaining ground: namely, that of inviting architects to send in designs for buildings of no moment whatever, such invitations being generally accompanied with the offer of some miserably paltry premium, which sometimes, as is, perhaps, honestly enough hinted, is all that the successful (?) candidate has to look forward to. A case of the kind is now pending: some speculator who is about to erect a series of houses, which are to be built in pairs or blocks consisting of a larger and smaller one together, has hit upon the following device for obtaining a choice of designs for them at a merely nominal cost. He coolly advertises for designs for "two houses," and in "the particulars" demands from each competitor the following drawings:—A front elevation in two different styles, which is equivalent to two distinct designs, at any rate requires two drawings; a back elevation, a side ditto; plans of each floor; a section; and lastly, drawings of some of the principal details, including "Venetian windows," which last would seem to fix the style, and leave choice for no other than what such features would accord with. There are, then, about ten drawings to be supplied for *ten pounds!*—or rather, not for ten pounds certain, but for the mere chance of winning that magnificent sum. Pity it was not called *two hundred shillings*, as that would have sounded more magnificently still. The fact itself, however, is no joking matter, it being merely a grievance peculiar to the architectural profession, that they should be expected and induced to send in goods for approbation, which they must first manufacture for the especial purpose. Actual compulsion to send in drawings there certainly is not; but there may be the compulsion of circumstances, of which advantage is taken by those who have found out that by getting up a little hole-and-corner competition of the kind they can obtain an abundant choice of designs—choice ones is quite a different matter—for much less than they would have the face to go and offer to any individual in the profession. As regards the practice itself, it is of no use for one here and there to hold out against it, so long as others, who either are unable to do so or are less scrupulous, comply with it. And unfortunately the practice is one which tends to lower the art itself as well as its followers.

Architectural competitions on occasions so trivial and insignificant, that even success in them can confer no distinction, are to

be deprecated if only because they invite mediocrity rather than talent; and, owing to the complete secrecy with which they are conducted, there is not the slightest check upon the most arbitrary, if not actually fraudulent, proceedings also. All such petty, trumpery, *soi-disant* competitions ought to be put down. Let competition be resorted to only upon important and extraordinary occasions, where a prize really worth struggling for is held out, and opportunity is afforded for the display of superior taste and ability. Nor would it be impossible to provide what would operate as a wholesome check upon the sort of competitions which are now so rife.

When a difficulty proves so Gordian-knot quality as to puzzle almost the cleverest to untie it, nothing remains to be done but to cut it through. So let the Institute get their noble president to bring a Bill into Parliament for the better regulation of architectural competitions. The matter is surely of sufficient importance to justify legislative interference quite as much as many others. Let an Act then be passed, making it illegal to get up what is called a competition, and invite architects generally to send in designs, unless the whole proceedings be conducted with the utmost publicity—unless there be not only an exhibition, but a *pre-exhibition*, of all the drawings—unless newspaper reporters be allowed to attend the discussions—at any rate, whatever the sitings of the committee—and unless the names of those who constitute such committee, or who act in the capacity of judges or umpires, be published. "Be it further enacted that every member of any such committee do give his reasons distinctly for his decision or choice." That were a consummation most devoutly to be wished. Good-bye, then, to the ballot-box and all silent votes; good-bye then to the curtain and to all the juggling doings behind it. Instead of thrusting themselves forward, the ignorant and incompetent would hold back and be especially shy of accepting an office and authority which would render themselves amenable to the authority of public opinion. Let each individual of a committee, or whatever else it may happen to be called, stand fairly upon his own bottom, and be responsible for his own opinion and vote. At all events, responsibility, of which there is none whatever at present, would then be enforced, and responsibility would cause people to think twice before they acted once.

That such legislative enactment would be equivalent to a positive prohibition of all the petty schemes for obtaining designs at a minimum of cost—at a cost that would hardly pay for the paper alone of the drawings which are sent in,—is almost self-evident.

Let us give three cheers, then, for Earl de Grey and the competition Bill. ZETA.

RAILWAY JOTTINGS.

The late accidents in and near tunnels have at length induced directors to take some necessary precautions against their recurrence. On the Great Northern line underground telegraphs are now being laid through the several tunnels, so as to enable the man stationed at one end to communicate with the man at the other end, when a train goes in or comes out of the tunnel. It is intended that no second train shall be allowed, under any circumstances, to enter a tunnel until a communication is made that the first train has passed out. Henley's magneto-electric instruments are to be used.—A new railway to connect Bedford with the Great Northern and Eastern districts, 7½ miles long, is proposed to run from Bedford into the Great Northern at Sandy: at a meeting just held at Bedford, resolutions were passed to promote it.—The gross receipts of railway traffic for the week before last upon all the lines in operation, have amounted to 350,687l. on 6,293 miles of line. The total receipts since the 1st July last have been 2,365,310l., against 1,990,878l. to corresponding period of last year.—We might very profitably take a leaf out of the American book in regard to the construction and working of our railways, especially in relation to branch lines. Only think!—they have con-

structed their 10,300 miles of railway at an average cost of 6,000l. a mile: we have constructed our 6,700 miles at an average cost of about 35,000l. a mile, or six times theirs. They charge the public less, and kill and wound fewer of them. They do not travel quite so fast, but they fall short of our speed by very little. They not only construct their lines for a sixth part of the capital cost of ours, but they work the traffic of them much cheaper. Mr. Derby, of Boston, tells us, says *Herapath*, that they work lines answering to our branch lines for 5l. a mile a week: ours cost about 15l.—the trunk lines much more. In point of accommodation for the public (says a New York correspondent of the *Leicester Mercury*) England is behind all countries where railroads are in existence. A rail laid on the turnpike road in American fashion, between Leicester and Nottingham or Northampton, or between London and Tring, with a long light carriage and engine, if a charter could be obtained, would teach the Midland and North-Western railways to afford more and better accommodation than they do. Competition between these points would bring down the fares and increase public convenience. I really believe that the adoption of such a plan would restore much of the prosperity of some of the old posting towns, which are now almost out of the world, and develop fresh resources—increasing instead of diminishing the general prosperity. If folks pooh-pooh the notion, and think trains can only be run on level ground, all I have to say is, that they can be and are run *here*, without being particular to a shade more or less of ascent or descent. The rails are laid in some of the principal thoroughfares of New York city—the carriages in the more crowded parts being drawn by horses; but on the Hudson river line the trains are drawn by what is termed a *dumb engine*; that is to say, it is boxed over to look merely like a car; by which means the noise and escape of the steam are so far concealed as not to alarm the horses attached to other vehicles.—Before the establishment of railways on their present scale, remarks a contemporary, the average fares of mail and stage-coaches, including the allowance to guards and coachmen, which are not chargeable to railway passengers, were as follow:—

	Per 100 miles.
	s. d.
Mail (inside)	52 0
„ (outside)	30 0
Fast coach (inside)	48 0
„ (outside)	26 0

The average railway fares for the same distance at present would be as follow:—

	Per 100 miles.
	s. d.
Per mail, express, and first-class trains, corresponding with inside coach places	20 0
For second and third-class	11 0

Hence it follows that for every 100 miles travelled by first-class passengers there is a saving in the fare amounting to 30s., and for every passenger of the inferior classes there is a saving amounting to 17s. The stage coaches would travel, stoppages included, at 7½ miles an hour, and consequently would require thirteen hours twenty minutes to travel 100 miles. This distance would be travelled on the railway by slow passenger trains in less than five hours, by the faster trains in three hours, and by express trains in a still less time. But let us take it at four hours. Then there will be nine hours and twenty minutes' time saved to each passenger on 100 miles' trip. Now, if we take the value of the time of the class who travel at the average value of 6s. per working day of twelve hours, this will be 6d. an hour, which will make a saving of 4s. 8d. for every 100 miles travelled. Finally, every traveller who is detained long upon the road must resort to taverns for refreshment. If he be thirteen hours on the road, he will at least take one meal: many will take two. A traveller, however, who is detained only three or four hours on the road will take none. Let us put down the cost thus incurred at 6d. per 100 miles of each passenger—a very low estimate; we shall then have the following account of the amount saved to the public in the two

years, ending June 30, 1848, by the railways in passenger traffic as compared with stage coaches, supposing that such an amount of traffic by such means was practicable:—

Fares saved by 354,083,534 first-class passengers, carried one mile, at 3½d. per head	£ 5,163,718
Ditto by 1,357,936,966 second and third class passengers, carried one mile at 2d. per head	11,316,141
Value of time saved by 1,712,020 passengers travelling 100 miles, at 4s. 8d. per head	399,417
Tavern expenses on 1,712,020 passengers, travelling 100 miles, at 6d. a-head	42,600

Total saving in the two years ending June 30, 1848

TENDER FOR REPAIRS OF ST. PAUL'S, COVENT GARDEN.

I HAVE anxiously sought in your valuable Journal for the list of competitors for the works to be executed in repairing your parish church (St. Paul's, Covent Garden), but not finding them, I made application to one of the competitors, who favoured me with a copy of the return sent him by Mr. Mosely, of which I forward you a copy. I fully anticipated the surveyor would have furnished you with the statement, as I think the returns of different tenders is most valuable to the parties tendering, and others.

TENDERS.

Lock and Nesham	£652
Mansfield and Son	643
Farmer	625
Derby	587
Harris	563
Clutter	545
Lansdown	528
Weller	457
Howard	407

For the interior only.

Cooper	187
Bracher	158
Simpson	108

Of the nine competitors for the whole of the works, the average is 556l. 8s. 5½d. (of which the fifth is nearest): by the advertisement the tenders were required in two amounts, viz. for internal and external repairs; the *managers* (who I should conclude to be the churchwardens) reserving to themselves the right of accepting a tender for each. The result, however, is that Messrs. Mansfield and Son's tender has been accepted.

It is very pleasing to find the parish of St. Paul's is in such affluent circumstances as to be able to expend the sum of 86l. 11s. 6½d. above the average of the whole, much more the greater sum of 235l. 10s. above the lowest tender. If the party, who is a parishioner, and whose tender was the lowest, entertained a desire to benefit the parish from the price or prices he quoted, why not have accepted his offer? It would have been but acting with good and neighbourly feelings. A SUBSCRIBER.

Books.

Public Health Act (11 & 12 Vict. cap. 63). Summary of Experience on Disease and Comparative Rates of Mortality. By Mr. WILLIAM LEE, Superintending Inspector. London: Eyre and Spottiswoode, for her Majesty's Stationery Office. 1851.

As we long since remarked, there is something extraordinary and inconsistent in the fact that while a single act of individual poisoning, or even a single death by mephitic vapour, excites an outcry throughout the whole country, the clearest proofs, over and over again adduced, that thousands are annually slain by the municipal poison of ill-drained towns are heard with utter apathy; and anything like a popular and general movement towards the removal of the poison, at least, if not towards the punishment of the guilty, was excited with the utmost difficulty, and is scarcely sustainable at all.

The saturation of the subsoil of towns with deadly filth is a mischief which must, if allowed to continue, very shortly come to a head in some tremendous visitation of plague, by comparison with which even cholera is as nothing. The cesspool system, since its commencement, may have been a palliative, hitherto, that has, so far, fenced with a repetition of the worst and most dread visitations which surface accumulations more readily induced; but only think of

the horrid state of things when the subsoil of the metropolis, polluted everywhere with cesspool deposits and imperfect drainage, shall be completely saturated, as it must inevitably come to be in course now of a comparatively short space of time,—as surely, indeed, as that a single cesspool comes at length to be filled, even while spreading and saturating the subsoil in every direction. If Mr. Macaulay's New Zealander ever witness the desolation of London, no cause of its abandonment by the living of that era will equal this in probability and all-sufficient power to turn it into a desolate Upas valley. Be it remembered that the cesspool system had its beginning at no very remote epoch, and as surely as it had a beginning, so surely must it have an ending, in one way or another, either after the recurrence of great and desolating plagues or before them.

Meantime the evidence adduced in this important report leaves not a shadow of doubt that the saturation of the subsoil of towns from want of adequate drainage and the prevalence of the cesspool system is the great cause of the immense excess in the number of deaths in many towns and villages, beyond the general average of mortality not exposed to this particular cause.

Amongst the general suggestions offered to the Central Board of Health in the conclusion of the report, it is justly remarked,—

I. That even if the injury done were confined to the persons creating nuisances, they ought to be compelled to be clean; how much more when the innocent suffer for the guilty. That therefore sanitary measures ought, without exception, to be compulsory; and so far from any injustice being done by compulsory measures, it is a gross injustice to the masses of town populations, who have practically no voice in the matter, that sanitary improvements should be optional.

II. That inasmuch as the causes of preventible disease are not peculiar to "towns and populous places," but consist in the density of the emanations from unremoved filth, and exist with as fearful consequences in mere villages as in the largest towns, a more comprehensive measure than the Nuisances Removal Act or the Public Health Act, and of general application, is imperatively needed.

III. The actual statistics of sixty-one unimproved registration districts, containing more than a million inhabitants, prove that a much longer duration of life is attained by large masses of people than has been generally understood; and, the points at which preventible mortality commences are lower and more apparent.

IV. That the ages and circumstances at and under which the greatest sacrifice of human life takes place vary in different places; and that at least the Public Health Act ought to be applied, after due inquiry, without petition, wherever it shall appear that upon the average of seven years—

1. The mortality has been greater than 20 to a thousand of the inhabitants; or,
2. The proportion of deaths under one year old to the births has been equal to 1 in 10; or,
3. Where the proportion of deaths from epidemic, endemic, and contagious diseases has been equal to 1 in 400; or,
4. Where the average age of all who have died has not exceeded 35 years; or,
5. Where the average age of the adults who have died has not exceeded 56 years; or,
6. Where the deaths under 20 years of age have exceeded the proportion of 40 per cent. of the whole deaths in the district.

V. That irrespective of the medical considerations connected with improved health and prolonged life, it is manifest that the most perfect sanitary arrangements are the largest pecuniary economy.

By a generalisation from the facts herein-before stated (the reporter adds), it might be deduced that the cost of preventible disease is equal to the whole public revenue of the country.

Handbook to the Antiquities in the British Museum; being a Description of the Remains of Greek, Assyrian, Egyptian, and Etruscan Art preserved there. By W. S. W. VAUX, M.A., F.S.A., Assistant in the department of Antiquities, British Museum. With numerous illustrations. Murray, Albemarle-street. 1851.

The object of the author of this volume is to present the public with a compendious and popular view of one department of the British Museum—that of Antiquities. This he has done by dwelling only on the more important features of the collection, with which he has

readily filled a very interesting, curious, and instructive volume. The work commences with a brief outline of the progress of Greek art, passing in review the sculptures from Phigaleia, as among its earliest remaining specimens; and then the valuable contents of the Elgin, Towneley, and Lycian Rooms. The very interesting remains recently brought to light by the discoveries of Mr. Layard are examined, and the monuments in the Egyptian Saloon, and the mummies and smaller objects in the Egyptian Room, described, together with the exquisite remains of Greek art in the Bronze and Vase Rooms: the only collections omitted are the British or Anglo-Roman Antiquities, together with the ancient Coins preserved in the Medal Room; the former, it is explained, being as yet too insufficiently arranged to admit of classification and description; and the latter embracing too wide a compass for the present work.

From the preliminary sketch of the progress of Greek art, with which the volume opens, we condense the following as a specimen of the author's style of handling his subject:—

The art of Ancient Greece may be divided broadly into five periods.

I. PERIOD TO OL. 50, B.C. 580.

During the first period art was in its infancy, and sculpture in its germ; the artistic genius of the people being devoted to the ornamenting and embellishing of metal objects, whether weapons of war or vessels of domestic furniture, or to the manufacture of idols for the service of religion. The descriptions of Homer show the value attached to the rich and elegant workmanship of furniture and vessels; and the story of the shield made by Hephestus for Achilles indicates that the use of metal was extensively known. In the manufacture of metallic works, it appears that the metal was first softened and hammered out into thin plates, and then subsequently worked up by sharp instruments, as the earliest bronzes which have been preserved show marks of having been hammered out (*σφυράρα*), a fashion which long prevailed in the case of the more precious metals. The invention of casting in metal (attributed to a Samian), and that of soldering, the discovery of a Chian artist, were of great value for the mechanical advancement of the arts, which were still further promoted by the use of pottery, in remote ages an extensive trade at Corinth, Ægina, Samos, and Athens, and to which may probably be attributed the first real commencement of the sculptural art.

In the earliest period of Greek art, we must not suppose that the images of the gods were like the statues of later times: such images were simply rude symbolical forms, whose value depended solely on their consecration. Of this, the most ancient age, no specimens exist in the Museum, except perhaps some of the earliest Etruscan vases in coarse black ware, apparently copies of similar works in wood, and to which no certain chronological era can be assigned.

II. PERIOD BETWEEN OLYMP. 50—80, B.C. 580—460.

The earliest works of the second period appear to have been a continuation of those we have mentioned in the last, viz., those peculiar representations which were called *Acrothits* (*ἀκροῖται*), figures in which the kernel or central block was of wood, and the hands, head, and feet of stone, or some other materials. The character of the art of this period appears to denote, in the gods, majesty, tranquillity of posture, and great strength of limbs; in the Athletes, bodily energy and an attempt at portraiture, so far as the positions in which they are placed recall the posture and action of individual combatants.

To this period belong the earliest Greek monuments preserved in the national collection.

III. PERIOD BETWEEN OLYMP. 80—111, B.C. 460—366.

The third period is the golden age of Greek art, and to it all the finest works of ancient times are referable.

During this period arose a spirit of sculpture which combined grace and majesty in the happiest manner, and, by emancipating the plastic art from the fetters of antique stiffness, attained, under the direction of Pericles and by the hand of Phedias, its culminating point. It is curious to remark the gradual progress of the arts, for it is clear that it was slowly and not *per saltum* that the gravity of the elder school was changed to the perfect style of the age of Phedias: indeed, even in his time a slight severity of manner prevailed—a relic of the rigidity which characterised the art of the earlier ages. In the same way the true character of the

style of Phedias was maintained but for a little while after the death of the master himself: on his death, may even towards the close of his life, its partial decay had commenced; and though remarkable beauty and softness may be observed in the works of his successors, art never recovered the spiritual height she had reached under Phedias himself.

In the rebuilding of the Parthenon, which was the chief seat of the labours of Phedias, he is believed to have filled the office of master of the works, and to have had under him a large body of artists. He, himself, worked chiefly at colossal statues in gold and ivory (*chryselephantine*), of which the two most celebrated were, the colossal statue of Pallas Parthenos, in the Parthenon, and that of Zeus Olympius. No portion of these statues now remains. The figures were remarkable for the richness of decoration with which all the details of the costume, throne, pedestal, &c., were elaborated, while at the same time the grandeur of the general conception was not impaired.

IV. OLYMP. 111—158, B.C. 336—146.

The fourth period extends from the time of Alexander the Great to the destruction of Corinth. The character of its art is a witness to the state of society during this period, which exhibits a decadence in harmony with the decay of freedom in the formerly republican states. Heeren has well shown how in the earlier times art was in intimate communion with the system and the religion of the state. When these decayed, and extrinsic influences became intrinsic, art, though still surviving in a few great minds, ceased to be the product of the mind of the people. The schools of art which flourished during this period exhibit a perpetual striving after effect, which ancient critics particularly remarked in the productions of the Rhodian and Sicilian schools.

The great theatres of the art of the fourth period were those cities where the Macedonian Princes resided, whose custom of representing the kings, their ancestors, in the character either of deities or of mythical heroes afforded great scope for the display of artistic power. The works of art of this period now remaining are probably more numerous than those of the earlier ages, but are at the same time difficult of assignment. The coins are especially abundant, and of these the Museum possesses a large collection. Though in many instances remarkable for dexterous treatment, none of these coins exhibit the grandeur and simplicity of the art of Phedias or Lysippus. At the same time it is right to bear in mind that, with few and rare exceptions, the best coins and monuments are all genuinely Greek, little of extraneous influence appearing till a much later time. Even in remote districts, the art and the civilization of the Greeks appear to have been self-originated and self-developed, a native growth withdrawn from external influences, and slow to adopt any modifications tending even remotely to assimilate the conquering with the conquered races. The Greek colonial cities, in regions remote from Greece, were oases in deserts of barbarism.

V. PERIOD, B.C. 146, TO FALL OF ROME.

To distinguish the Fifth and last division of ancient art from those which have been already described, it may be called *the Roman period*,—a nomenclature which will serve to show that, though the sculptures and other monuments were often the workmanship of Greek artists, yet that they were due to Roman influence, and furnished to supply Roman wants. The Romans, unlike their half-brothers the Greeks, had no inherent love of art, and little creative genius. On the other hand, as collectors they have never had their equals, and a taste for magnificence prevailed at the commencement of the empire which despised doing things by halves. The last days of the republic had seen the first real beginning of artistic knowledge at Rome; and the magnificent views of Augustus and his immediate successors led to the erection of edifices in which the masterpieces of Grecian art were collected and preserved. Hence arose the manufacture of new statues by Greek sculptors for imperial masters, chiefly, if not always, copies of celebrated early Greek works. Of these, the Museum possesses a considerable number.

The age of Adrian is remarkable for a partial revival of ancient Greek art, arising almost entirely from the personal influence of that emperor.

Under the Antonines, the decay of art was still more manifest, the coins of the period, like the busts of the emperors, displaying the same want of simplicity, and a similar attention to trivial and meretricious accessories. Thus, in the busts, the hair and the beard luxuriate in an exaggerated profusion of curls, the careful expression of the features of the countenance being at the same time frequently neglected; while under Commodus, Severus, and his family, we discover

the use of perukes and false hair, and a drapery not unfrequently adorned with coloured stones. The reliefs on the triumphal arches of this period exhibit a mechanical style.

The Model Houses for Families, built by command of his Royal Highness Prince Albert; K.G., &c. By HENRY ROBERTS, F.S.A., &c. London: Seeleys; Nesbit, and Co., Parker and Son; and Hatchard.

THE plans, constructive details, specification, and estimate of cost of the Prince's Model Dwellings in Hyde-park, are here published by request and for the benefit of the Society for improving the Condition of the Labouring Classes, and with a view to facilitate the adoption of the design either in whole or in part, or on a still more extended scale.

The following is a summary of the specification of work to be done in erecting a block of model houses for families, containing four distinct tenements:—

Excavator and bricklayer	£206 11 9
Mason	20 19 11
Sister	28 10 0
Plasterer	39 1 2
Carpenter and joiner	78 6 9
Smith and founder	23 15 2
Furnishing ironmonger	28 7 6
Plumber	18 6 0
Glazier	5 10 0
Painter and stainer	9 6 4

By alterations described or referred to reductions may be made in the above amounts to the extent of 36 7 4

£422 7 3

The Literature of the Rail: published by permission from "The Times," of Saturday, 9th August, 1851; with a Preface. Murray, Albemarle-street. 1851.

REGRETTING the ephemeral position of the excellent article alluded to in the title of this little sixpenny pamphlet, we are glad to see it taken out of that position, and now placed in a more permanently accessible one. It will, of course, be sold on the rail itself, and we earnestly hope to see the example set by the North-Western, and now by the Great Northern, in reforming their station literature, rapidly followed up by the other great companies throughout the country.

Miscellaneous.

WHERE SHALL I PUT MY HAT?—Most persons have said so at the theatre, although for our part we must own to a great partiality for the companionship of that ill-concocted covering for the *caput*, and never find it in the way. At Valparaiso, according to a recent tourist, they have a contrivance worth noting. The theatre there, he says, is of rather large dimensions, and the fronts of the tiers of boxes and gallery, instead of panelling, as in our English theatres, consist of balustrading, painted white, with gold mouldings, and the effect is exceedingly light and pretty, as well as cool. The seats in the pit are all divided by arms, and each seat lifts up and discloses a small box, in which to place the hat of a person occupying it—a very capital contrivance. The seats are called *lunetas*, and may be hired by the year or for the evening. They are all numbered; and as only the same number of tickets are issued as correspond with the number of the sittings, the place is never inconveniently crowded.

A NEW PLANING MACHINE.—The *Albany Argus* describes a newly invented machine, of which it says,—“A rough board placed within its vortex comes out as even and polished as a mirror, to the tune of 108 feet a minute, and this without driving the machine. Its maximum capacity is double and even treble this speed, and the greater the power and the rapidity of the working, the more perfect is its execution. We can believe that it will turn out work at the rate of 200 and even 300 feet per minute, or as fast as it can be fed. In this respect it outstrips the Woodworth invention, and promises to supersede it entirely. The maximum capacity of that machine, we are told, is 30 or 40 feet per minute.”

FIRE-PROOF BANK, SAN FRANCISCO.—We find in the *San Francisco Herald* a long account of Messrs. Adams's fire-proof banking house, just erected. According to this, —in the centre of the massive walls, and pervading them throughout their whole extent, is a vacant space four inches wide communicating with the air through sieve-like apertures in the cellar and the parapet. The floor of the basement and of the small yard in the rear is a solid coat of cement, several inches thick. Beneath the surface of the yard is a reservoir, containing several thousand gallons of water, from which a pipe leads under ground into the basement, where a force pump is attached. A hose leads from thence up through all the floors to the roof, if necessary. By this arrangement access to the water may be secured inside without exposure to the heat, and every floor may be flooded in a few moments, if necessary. In a back corner of the room is the vault, and here all the resources of art have been exhausted to make assurance doubly sure. This vault rests upon a solid foundation of brickwork, extending below to the floor of the cellar. The floor is a mosaic pavement formed of diamond-shaped stones, alternately white and slate-coloured. On the roof, the point usually most exposed in case of fire, the utmost care has been bestowed to render it proof against the attacks of the most fierce heat. A parapet wall two feet thick and six feet high extends around and above. The roof is first covered with zinc, soldered so as to be air-tight: upon that rests a bed of cement one inch thick, and upon that again is a pavement of fire-proof tiles laid in cement and air-tight. The doors and windows are furnished at top and bottom with thick plates of cast-iron, one yard wide, and imbedded in the masonry. The sides are double frames of iron, two feet apart, with brickwork intervening. The doors and shutters are double, with the same interval of two feet between. They are constructed of boiler iron an eighth of an inch thick, and braced in every direction with iron bars an inch thick.

NEW MARKET AT WORCESTER.—The design of Mr. Armstrong, of London, having been chosen out of seven sent in to the Markets Committee, and estimates by Mr. Warburton, of London, for the general works, also sent in through Mr. Armstrong, offering to do the work for 1,150*l.* in place of for 1,997*l.* the amount of the only estimate (that of Mr. Joseph Wood, of Worcester) in response to the first call,—the *Worcester Chronicle* complains on various grounds of these decisions by the committee. Though virtually No. 6 that constituted the chosen design, he says, it was really an amended design afterwards given in that did so; and the architect, he continues, inserted a suspicious clause in his specifications as to the iron being supplied by a certain London manufacturer. The total estimate for the building is stated to be now 2,020*l.* though the resolution of the council stated that it was not to exceed 1,800*l.* The chosen design is described by our authority as a partial imitation of the Hyde-park Building.

MOTIVE POWER AND STEAMERS.—Mr. Hay, the chemical assistant at Portsmouth Dockyard, has exhibited the model of a galvanic new motive power, which it is supposed will supersede the steam-power now used as an auxiliary for propelling line-of-battle ships and frigates. The machine or engine makes about 45 revolutions per minute, sea water being the principal element of the invention. The *Westminster Review* foretells a monster steamer in time to come:—"An iron ocean steamer, of ten or more thousand tons burthen, that shall still the heave of the waves afloat, as Plymouth Breakwater does on shore, and make the salt water the home of the Celt, without the heavings of his diaphragm in sea-sickness; built of iron scantlings that shall bear a proportion to its size; rolled and fashioned by the dock side from the iron ingots, by tools of giants,—one sole heat sufficing to give its permanent form in the structure; built in sufficient compartments, that shall defy leakage, though riddled as a colander; strong as Atlas to crush the rocks on which it may strike; swift as the salt sea shark, with artist fins of metal work; laughing to

scorn, like an ocean monarch, the irate cachalot that sometimes sinks the whaler in his fury; mocking at fire, like the iron horse of the rail; coated with rust-proof enamel; furnished with apparatus to change the salt wave into the mountain water; provided with iron cellars, to arrest the decomposition of fresh food for all time; furnished with hermetic gardens, with machine music, with books, paintings, and sculpture—with warmth and coolness at will—with armed strength to bid all ocean rovers defiance—an ocean palace, moving over the face of the waters whithersoever its ruler listeth."

ELECTRO-TELEGRAPHIC.—A Mr. Reynolds, of New York, proposes to construct the telegraphic communication across the Atlantic at a cost of 3,000,000 dollars. He thinks the plan practicable and safe, and sets forth that "the distance between Cape Canso, above Halifax, on the American coast, and the nearest point in Ireland, near Galway, is but about 1,600 miles along the banks of Newfoundland, which are known to extend within 160 miles of the coast of Ireland, at an average depth of 800 feet. A line of this length, consisting of four wires perfectly insulated in a cord of gutta percha of the size proposed, would last (he calculates, without his host's fear, however) for hundreds of years, as the insulating substance is indestructible in water, and has a strength almost equal to iron. Such a line would weigh about 10,000 tons, and would require about 1,500 tons of iron anchors. The cost of everything, when in complete working order, would be less than 3,000,000 dollars."

—In the United States the revenues received by the telegraphs are very great, and this is not remarkable when it is considered what sums the towns pay towards them. Thus to one company only, Cincinnati paid in the last year 18,970 dollars; Louisville, 22,000 dollars; and Pittsburg, 18,000 dollars; while towns little bigger than our market towns contribute their two or three thousand dollars. Where telegraphs in the United States do not pay, it is from excessive competition; but the yearly income of the telegraph lines working between Boston, New York, Philadelphia, and Washington is as much as 60,000*l.*

GLASS FACING FOR HOUSES.—With reference to a paragraph in our number for 9th ult., headed "London with a clean face," we have received a communication from Mr. J. R. Dicksee, enclosing extracts from a paper on his "pressed glass mosaics," read at the Society of Arts, on the 7th of May, 1845. Mr. Dicksee states that he obtained a patent for these, which is now of seven years standing. In his paper the use of glass, not only for mosaics but in exterior architectural decoration of walls generally, is spoken of and recommended; but his patent appears to relate to glass mosaics particularly, prepared by means of a process of moulding by pressure, while the glass or other vitrified matter is in a fused state. Several patents are referred to by our correspondent as having been taken out with the same purpose in view, but he conceives that he has forestalled all others from using glass in the manner alluded to in our recent paragraph, that is, as a facing to buildings. We some time ago took notice of a mode of imitating marbles and other stones, for exteriors of buildings, by covering compositions with clear glass,—a mode included amongst other patented uses of glass in house decoration, invented by Miss Wallace, and devoted, we believe, in its ultimate profits, to the benefit of her poor countrymen, as a branch of art in which they might find remunerative employment.

THE ART-JOURNAL CATALOGUE OF THE GREAT EXHIBITION.—The fifth part of this really extraordinary work has been issued with the September number of the *Art-Journal*, and will be completed in the next. It will be published as a perfect volume before that, so that the public may have the advantage of it as long as possible before the close of the Exhibition. The premium of 100 guineas offered by the proprietors for an essay on the best mode of rendering the Exhibition practically useful has been awarded to Mr. Ralph Wornum.

THE HAYMARKET THEATRE.—The new piece at this theatre, "The Queen of a Day," has some pretty music by Mr. Fitzwilliam, well sung by Miss Pyne, but is sadly provided with dialogue. Abroad the composers wisely obtain the best available talent for the plot and language which they have to illustrate, and find their account in it. "Grimshaw, Bradshaw, and Bagshaw" is a genuine Haymarket farce, full of fun from beginning to end. Buckstone is its mainstay, and with the richest humour, without a shadow of coarseness or vulgarity, keeps the house in a roar. He expresses a wish that some genius would contrive shutters to put themselves up in the morning, and take themselves down at night. Perhaps some of our inventive friends will oblige him. At the Haymarket there is always a safe evening's amusement, and the public know it.

BEDS AND BUCKS ARCHÆOLOGICAL SOCIETIES.—The union meeting of these societies was held at Leighton Buzzard on Thursday in week before last, and was largely attended. The church was visited, under the guidance of the vicar; and the market cross and other local antiquities were examined, as were also a variety of rubbings and copies of brasses, and other objects, antiquities, &c., exhibited in the town-hall. At the general meeting, Col. Gilpin was called to the chair, after which the Rev. J. Stevenson read a paper on the antiquities of Leighton Buzzard, the Rev. J. Taddy one on Northill Church, the Rev. J. R. Pretyman one by Mr. J. K. Fowler on Aylesbury Church, Mr. G. Hurst another on Bedford Castle, the Rev. H. J. Rose one on Stone Crosses, and the Rev. W. Airy one on Rubble or Rubbish. An interesting and peculiar "sign of the time" was then manifested in an address by Mr. J. D. Bassett, a Quaker, who addressed the meeting on the present condition of the Leighton Cross, and read letters from a Roman Catholic architect as to its restoration, which, he said, would cost 300*l.*, and he pledged himself to contribute towards it as much as its proprietor did. Lord Charles Russell and other gentlemen addressed the meeting.

FINE FOR LEAVING WORK.—At the Handsworth sessions, on Saturday week, a puddler was charged with leaving his work, getting drunk, and assaulting a watchman who had "knocked off" the two under hands, after two hours' delay, in order to prevent further waste of iron and fuel. The magistrates consulted as to sending the case to the sessions, but ultimately, as defendant regretted his folly, fined him 40*s.* and costs, or in default, committed him for twenty-one days, with hard labour, to Stafford.

THE EXHIBITION OF SKETCHES AND DRAWINGS by English artists, commenced last year in the gallery of the old Society of Painters in Water Colours, Pall-mall East, has been opened for the second season. It consists of 288 very interesting works, and we will next week point out a few of the principal.

WIDE ESTIMATING.—The following tenders were delivered for additions to a house in Sackville-street. Mr. Wm. Harris, architect.

Palmer and Son (Bartholomew-close)	£1,390 0 0
Edwards (Westbourne-terrace)	1,135 0 0
Wilson (Eaton-square) ..	884 10 0

R.

Oblige by inserting the following tenders for work at the Crown, Sutton, Surrey, under the superintendence of Mr. Edwin Chart.

Gaskin (Croydon)	£247 0 0
Brown (Sutton)	222 0 0
Russell (Mitcham)	178 0 0
Booker (Sutton)	115 0 0

T. R.

Pray insert the following somewhat startling tenders for work in the King's-road, Chelsea, under Mr. G. Low.

Roose	£160 0 0
Colice	148 0 0
Peck	137 10 0
Perry	116 0 0
Newton	112 0 0
Cox	54 0 0

F. S. C.

The Builder.

No. CCCXLIX.

SATURDAY, SEPTEMBER 13, 1851.

WE have not found that gratification or satisfaction in the perusal of Mr. Ruskin's recently published pamphlet, "Pre-Raphaelitism," which we expected. It is scarcely necessary to say that it is intended as a defence of the works of a certain number of young artists who have called themselves Pre-Raphaelite Brethren, and have gained very considerable notoriety by the peculiar character of their works. In his preface the writer says,—

"Eight years ago, in the close of the first volume of 'Modern Painters,' I ventured to give the following advice to the young artists of England:—'They should go to Nature in all singleness of heart, and walk with her laboriously and trustingly, having no other thought but how best to penetrate her meaning; rejecting nothing, selecting nothing, and scorning nothing.'"

This, the author says, has at last been carried out by the P. R. B.'s, and their works having been attacked, he comes forward, as a matter of course, in support and exaltation of them. More than half the pamphlet, sixty-two pages in all, is devoted to eulogistic comments on the works of Turner. In appreciation of Turner's genius and admiration of his works we go hand in hand with the author of 'Modern Painters;' but we fail to discover the ground on which Mr. Ruskin seeks to connect him with the school in question. He surely is not amongst those who "select nothing?" He has walked with Nature laboriously, and sought to penetrate her meaning, but it was to select her beauties, fix her transient effects, and, knowing what is, show what might be.

Mr. Ruskin sets himself against those who would better their position in the world: don't look up, says our author, look down, and you will find your right place at last. Very likely,—*facilis descensus, &c.* "People usually reason," he writes, "in some such fashion as this: 'I don't seem quite fit for a head manager in the firm of — and Co., therefore, in all probability, I am fit to be Chancellor of the Exchequer.' Whereas, they ought rather to reason thus: 'I don't seem quite fit to be head manager in the firm of — and Co., but I dare say I might do something in a small greengrocery business: I used to be a good judge of pease;' that is to say, always trying lower instead of trying higher, until they find bottom: once well set on the ground, a man may build up by degrees, safely, instead of disturbing every one in his neighbourhood by perpetual catastrophes." It is easy to go down, there is no doubt; less easy to get up again. As Dryden paraphrases Virgil,—

"Smooth the descent, and easy is the way,
But, to return, and view the cheerful skies,
In this the task and mighty labour lies."

Yes, but why labour, says Mr. Ruskin: the hope of doing great or clever things by great efforts is as vain as it is pernicious:—

"I say it is a vain hope, and let the reader be assured of this (it is a truth all-important

to the best interests of humanity),—no great intellectual thing was ever done by great effort: a great thing can only be done by a great man, and he does it without effort. Nothing is, at present, less understood by us than this—nothing is more necessary to be understood. Let me try to say it as clearly, and explain it as fully as I may.

I have said no great intellectual thing: for I do not mean the assertion to extend to things moral. On the contrary, it seems to me that just because we are intended, as long as we live, to be in a state of intense moral effort, we are not intended to be in intense physical or intellectual effort. Our full energies are to be given to the soul's work—to the great fight with the Dragon—the taking the kingdom of heaven by force. But the body's work and head's work are to be done quietly, and comparatively without effort."

And, again, he says it should be understood that,—

"If a great thing can be done at all, it can be done easily; that, when it is needed to be done, there is perhaps only one man in the world who can do it; but he can do it without any trouble—without more trouble, that is, than it costs small people to do small things; nay, perhaps, with less. And yet what truth lies more openly on the surface of all human phenomena? Is not the evidence of ease on the very front of all the greatest works in existence? Do they not say plainly to us, not, 'there has been a great effort here,' but, 'there has been a great power here?' It is not the weariness of mortality, but the strength of divinity, which we have to recognise in all mighty things; and that is just what we now never recognise, but think that we are to do great things, by help of iron bars and perspiration. Alas! we shall do nothing that way but lose some pounds of our own weight."

This doctrine, notwithstanding some qualifying remarks, seems to us as dangerous as it is untrue. "The evidence of ease" may be "on the front of all the greatest works in existence," but it is the ease which results from previous effort: the practised soldier does with ease what costs the recruit sore labour. A great effort at one period of life is needed, and then much may be done with ease. Should an artist be taught that because he cannot now produce a work of mind calculated to charm, soothe, elevate, or instruct, he is to use no efforts to obtain that power, but quietly resign himself to make faithful representations of existing objects? This is very desirable as a means,—very necessary as a first step; but other ends must be set up and other studies superadded if we would develop artists. "A portrait-painter," says Reynolds, "when he attempts history, unless he is upon his guard, is likely to enter too much into detail. He too frequently makes his historical heads look like portraits; and this was once the custom amongst those old painters, who revived the art before general ideas were practised or understood. A history-painter paints man in general: a portrait painter a particular man, and, consequently, a defective model. Thus a habitual practice in the lower exercises of the art will prevent many from attaining the greater." And then elsewhere the same elegant writer says,—"On the whole it seems to me that there is but one presiding principle, which regulates and gives stability to every art. The works, whether of poets, painters, moralists, or historians, which are built upon general nature, live for ever; while those which depend for their existence on particular customs and habits, a partial view of nature, or the fluctuation of fashion, can only be coeval with that which first raised them from obscurity." The great aim of the painter is, as it seems to

us, to deduce from the study of the accidental and particular, the general and the infinite;—to set forth the beautiful, to gain honour for the good. As a course of training, or beginning in art, the minute transcript of nature attempted by the Pre-Raphaelites is calculated to be serviceable, and one, at all events, amongst them, if he be not detained in a practice and a manner by the erroneous exaltation of them into excellencies,—if he be not stayed in what ought to be a progress, and led to think he has reached the goal when he has but started in the race,—will make a great artist. Their energy, resolution, and earnestness have our warm praise; but their expressed avoidance of beauty, the apparent selection of improper models to avoid the appearance of any selection, and contempt for that knowledge which is to be gained from the works of the wonderful painters of the 16th century, are errors which ought not to be supported by those who are interested in the progress of the English school of painting.

"All the elements," says Kugler, "which had existed apart from each other, and had composed distinct styles in the periods hitherto considered, all the qualities which had been successively developed, each to the exclusion of the rest, but which in the aggregate fulfilled the conditions of a consummate practice of art, were united about the beginning of the sixteenth century. This union constituted a most rare and exalted state of human culture—an era when the diviner energies of human nature were manifested in all their purity. In the master-works of this new period we find the most elevated subjects, represented in the noblest form, with a depth of feeling never since equalled. It was only for a short period that art maintained this high degree of perfection—scarcely more than one quarter of a century! But the great works then produced are eternal—imperishable. They bear, indeed, the stamp of their own age, but are created for all ages; and as they were the pride and admiration of the time when they were produced, so they will awaken the enthusiasm of the latest posterity. For the truly beautiful depends not on external or local circumstances: the Madonna di S. Sisto of Raphael, the Heroes of Phidias, Leonardo's Last Supper, and Scopas's group of the Niobe and her Children, belong not exclusively to Catholic Italy, nor to heathen Greece. In all places, in all times, their power must be felt, and must produce its impression on the heart of the spectator."*

The name assumed is not a wise one. Vasari exclaims at the close of his biography of Raphael, the greatest of painters,—

"O happy and blessed spirit! every one speaks with interest of thee; celebrates thy deeds; admires thee in thy works! Well might painting die when this noble artist ceased to live; for when his eyes were closed she remained in darkness. For us who survive him it remains to imitate the good, nay, excellent method which he has left us for our guidance; and as his great qualities deserve, and our duty bids us, to cherish his memory in our hearts, and keep it alive in our discourse by speaking of him with the high respect which is his due. For in fact through him we have the art in all its extent, colouring, and invention, carried to a perfection which could hardly have been looked for; and in this universality let no human being ever hope to surpass him."

Those artists who intend to remain Pre-Raphaelites intend to remain behind the farthest point to which art has been advanced. It is as if the makers of steam-engines were to determine on being Pre-Wattites, and to deal with the subject only as it stood before Watt touched it. Nature is the great and true field of study; but the mere study of nature without

* Smith, Elder, and Co.

* Eastlake's edition.

knowledge of what to select, will not lead to the production of fine works. To avoid the error of ugliness, deformity, and unfitness, a standard is needed to guide us; and this standard can only be gained, the shortness of life being considered, by the study of the works of the great masters who have gone before.

THE SAXON QUESTION.

AN ACCOUNT OF REPTON PRIORY AND CHURCH.*

THE pleasure of antiquarian research, particularly into those matters which relate to architecture, is ever attended, as are most of the things which delight us, by some care. The fear that, after the most lengthened inspection, the most accurate comparison, the most careful measurements, the most laborious research among books and manuscripts, some little circumstance may have been overlooked, some short passage unnoticed, or some unusual character misread, gives anxiety and care to what otherwise is to an educated mind the most delightful as well as useful and instructive of human pursuits. It is for this reason we so frequently complain of the short period that has been allotted to our labours, and we wish we had had more time to bestow upon them, not from habits of procrastination or irresolution, or by the way of excuse for the little we have collected, but simply because we dread there is yet something behind we have not seen—some valuable fruit we have not plucked. But when, as in my own case, I explain that my time has been too short in every sense, as I understood this task would have been undertaken by another member, I trust you will understand how much anxiety I must feel from the reasons I have assigned, and hope that any error I may make will meet with kind excuse and gentle criticism.

I feel it the rather as this building is far more curious and interesting than I had at all anticipated, and as its investigation must lead to the discussion of theories the most important, and as yet uncertain in this branch of archaeology. It is to be regretted that they have been discussed with much prejudice, hastiness, and acrimony. Some of the greatest men have been arrayed on each side of the question—the arguments on both sides are of the greatest weight—and I could almost reproach myself with presumption for attempting it to day. But it is my intention to endeavour to enter into the subject as a calm inquirer, and if I can add anything to the facts, or throw any light upon the dark corners of the case, I shall congratulate myself in having added my mite to the most interesting branch of architectural archaeology.

The history of the foundation of this religious house is necessarily obscure, as all documents seem to have perished at the dissolution. It could not, of course, have existed before the conversion of Mercia to Christianity. This happy event commenced about A.D. 653. Peada, the fifth king, son of the warlike Penda, became attached to Alcfeda, daughter of Oswego, king of Northumberland, and having been instructed by her in the doctrine of the Christian religion, he was baptized, and married the princess. (Ven. Bede, iii., cap. 21.) Peada brought from Northumberland with him four priests to assist in the work of conversion; one of whom, Diuma, was consecrated the first bishop of Mercia, and died in 655, and was buried "in regione quæ vocatur Infeppingum." This has been conjectured with considerable show of reason to be the ancient name of Repton, which is afterwards variously given as Rependun, Repandune, Hreopandun, and Reppington. If this conjecture be correct, this church must have been founded at that time, and probably was the first Christian church in Mercia. Our first positive notice of its existence as an ecclesiastical building is found in the celebrated *Liber Eliensis*, lib. i. cap. 6, where it speaks incidentally of Adulph, the king, whose daughter,

Ædurga (or, as it varies in the copies, Ætburga, or Redburga), was abbess of Rependune, and who sent to Guthlac (afterwards canonized) the somewhat sombre gift of a leaden coffin, and a linen shroud. The same facts are given in Leland, Coll. i. 190, where he calls the lady Edburga. It must be with no small pride, the present inhabitants of the noble county that was once the kingdom of Mercia can regard an origin dating 1,200 years back. It will be for us to consider presently whether any part of the building be of that remote, most remote, antiquity. If it be so, we here have probably (now that it seems likely that St. Martin's, at Canterbury, has been rebuilt) the oldest building remaining in England, not excepting perhaps portions of the crypts at York.

The next mention we have of Repton is also preserved by Leland, Coll. ii. p. 278, where he states that Guthlac entered the monastery at Rependune, and then received the tonsure and clerical habit under the Abbess Alfythra. The town and monastery seem now to have risen to great importance. The latter in particular seems to have become the Westminster Abbey of Mercia. Leland has preserved records (Coll. ii. p. 264) that S. Wistan, the son of one of the kings of Mercia, was buried there, "at that time," he says, "a famous monastery;" and that afterwards his bones were translated to Evesham. In 755 the Saxon Chronicle tells us that the warlike Ethelbald, who was killed treacherously by one of his own chiefs at Seccandune, was buried here. In 786, according to Thos. Rudborne, Ang. Sac. i. 196, Kynechard, the brother of Sigebright, King of Wessex, was also interred there, as well as Meruell, of whom he says,—"the body rests, as they say, at Repedune, a monastery formerly sufficiently noble for the residence of celebrated men and holy women; which place, according to its etymology, seems not to be silent as to the excellency of the king, for it seems to signify (sounds) the manipulus of a mountain. We get no more mention of Repton till 879, when the struggle took place between the King of Mercia and the Danes, who expelled from his kingdom Burhred, who retired to Rome, where he died.

The Danes occupied the towns, and wintered there; and according to Ingulf, then destroyed the monastery. It seems curious that Matthew of Westminster, the Saxon Chronicle, Ethelwerd, and Roger of Hoveden—all of whom describe the occupation of the town by the Danes—should be silent as to the destroying the monastery. Ingulf alone relates its ruin, and designates it as "the most celebrated monastery, the most holy mausoleum of all the kings of the Mercians." From all these combined testimonies, we must have the highest character of the sacredness of the monastery, which then appears to have been an institution both for monks and nuns, but under the chief rule of an abbess. Whatever destruction the Danes may have made, it is clear the church was not destroyed, or if destroyed it was immediately rebuilt; for the Doomsday Book says, "In Rependune and Middleton, Earl Algar has six carucates, &c. &c. Here is a church and two priests with one carucate of land."

This is all we hear of the building till 1172, when from a charter in the possession of the Ferrers family we read, that "Ranulf, called Gernons Earl of Chester, died the 17th of the kalends of January in the year 1153, the 18th of King Stephen; which Ranulf took to wife Mathilda, daughter of Robert Earl of Gloucester; which said Mathilda founded the priory of Rependune in the year of the Holy Trinity 1182, the eighteenth year of Henry II., which Mathilda died the 4th of the kalends of August, 1189." It appears that eleven years previously this lady had founded a priory for Austin Canons at Calk, and that in truth she removed them to Repton, leaving Calk as a small monastery or cell to Repton. We learn this from a charter fortunately preserved by the Harpur family, of Calk, and copied by Dugdale in 1664. It is addressed to Walter Bishop of Coventry, and concedes to the priory at Calk the quæreria of Rependune on Trent, with the advowson of the church of St.

Wistan, at Rependune, but on condition that the convent there shall be the head, and that as soon as fit opportunity should arrive Calk should only be a member thereof, and remain in its diocese. The charter is confirmed by another of Hugh Earl of Chester—without date. It appears from some documents cited by Morant in his History of Essex, that Mathilda also gave to Repton the advowsons of Great and Little Baddow, in that county; but little now is extant referring to the history of the building, although there are very numerous casual notices scattered through the different manuscripts in the British Museum. In the Harl. MS. 2044, we find that Sir W. Patrick granted an income of 200 shillings per annum arising from one of his mills, and shortly after the Prior of Repindune brings an action against his successors for the amount, and the marginal note says he "triumphed over him." We also read of several gifts of land "pro salute anime," at different periods.

At last the storm that had been so long gathering burst on the monasteries, and Repton was seized by the king, its moveable possessions sold by the commissioners, and the land granted to the Thacker family. I hold in my hand a long and very curious list of all the goods thus appropriated, including the sum of 122l. 17s. 6d., which the list says had been embezzled by two of the monks, willing, no doubt, to save what they could out of the fire. The buildings seem to have consisted of a church containing the chapels of St. John, Our Lady, St. Nicholas, Our Lady of Pity, and St. Thomas, a vestry, a cloister, chapter-house, dortour, frater, hall, buttery, Prior's chamber, inner chamber, gardyn chamber, and another next to it; the hall chamber, the high chamber, the kitchen, larder, brew-house, ale-house, boulding-house, and kiln-house; the total value of all moveable goods therein being 162l. 19s. 6d.

Our next mention of the priory is in old Fuller, who tells us that Thacker, to whom the priory had been granted, hearing that Queen Mary was about to restore the monasteries, collected all the workmen he could, though on a Sunday, and pulled the church down, saying he "would destroy the nest, lest the birds should build therein again." "Church work," says Fuller, "is a cripple in going up, but rides post in coming down."

It now remains for us from these combined records to examine the work, and endeavour, if possible, to fix its date.

I have already adverted to the tone in which some disquisitions on this subject have been carried on, and deprecated for myself any bias or intention to pervert the facts or draw any inferences that are not fair. I can hardly wonder at the harsh things which have been said on one side. At one time a single and simple canon was laid down, and will be found printed in some of the early volumes of the *Archæologia*,—any circular arch was (*æ cathedra*) Saxon, every pointed arch Gothic. Now, for any man who could read a Latin charter to be told that the cathedral of a bishopric, founded a hundred years after the Conquest, or a church built by one of Henry the Second's court, was Saxon, was rather too much; and when investigation after investigation showed that hundreds of most decided Norman examples had been register'd as the works of the kings of the Heptarchy, it is not to be wondered at that the critics of the period grew hasty, and were disposed to knock down the Saxon advocate without much inquiry, and this has literally been the case lately. It appears to be the pride of some critics to forget that their ancestors ruled England for between four and five hundred years in wealth and prosperity, with almost superstitious feelings in religion, and with a literature not perhaps very refined, but certainly anything but irreligious; and yet that they did not build one church that remains to us, though hundreds which were confessedly commenced some twenty years after their dynasty had expired, have stood now nearly 800 years, and are likely to stand 800 more. While their seniors by a dozen years are supposed to have vanished long ago—*tenues secessit in auras*. The two great errors in archi-

* The following interesting paper, which we recommend to the consideration of our readers, is a full report of an address delivered by Mr. Ashpitel at the recent meeting of the British Archaeological Association.

tectural critics have been these: they have formed two distinct sections—the draughtsman and the black-letter men: the two qualities are very seldom united in one person: the consequence has been, each party has brought preconceived notions to the field; and while one has laughed at the charter or chronicle as contradicting his views, the other has extended its evidence, and made it invade territories it never was entitled to possess.

Thus, while I have heard many claim a building as a Saxon church—whilst we have evidence of a first-rate chronicler that the Saxon building stood to the south, and was fairly pulled down when the new Norman building was finished on the north side—I think we ought to see whether the medal has not in some cases a reverse. For instance, I read that Waltham Abbey was built by Harold, who was interred there after his death; that the Conqueror deprived the monks of their wealth; that they got on as well as they could till the restoration of the Saxon line, when quite another school of architecture was in vogue; and yet I see in a most respectable publication this most unlikely criticism:—"Waltham, no doubt, built by Harold; yet the present church appears to be Early Norman." The inference is, that the monks, who at the time had not a groat to spare, pulled down a new church to build another new church in its site, of just the same size and style. Let us look at St. John's, at Chester:—we read that was the original cathedral church, and was completely renewed by Leofric, Earl of Chester, about six or eight years before the Conquest. Our next architectural annal is, that a fire occurred early in the 13th century. We see the architecture of two periods instantly, the one Early English work; and we see an older work, which has stood at least eight centuries, and is likely to stand eight more. Is it absurd, then, to take a stand on the written document, and doubt whether the elder part was not Saxon work? Again, let us look at Pershore: there we have a record that the old abbey, founded by Edgar, was burnt down, and that it was rebuilt, and public service commenced in it in the year 1002, only sixty-four years before the Norman conquest; a very great age for a Regent's-park cottage, but a mere baby-hood for the noble fabrics erected at that time. Well, the next item in the Chronicles which have been carefully preserved by Leland, relating to the architecture, is, that part was burnt in 1223. We enter the building, and see two periods of work in a moment,—one clearly Early English, another earlier. What is the earlier? Are we to believe the Chronicle, or to say, No: there was some spell about the Norman invaders: they pulled down all churches, new or old, and rebuilt them in precisely the same style, just for the pleasure of doing so? In the case of Pershore there is a strong argument they would not do so, as we learn that they were in a great state of poverty, the larger part of their property having been transferred to the new Abbey of Westminster by the Confessor, and after him by the Conqueror. Surely they who rely so strongly on the Chronicles in the cases of Ely, St. Albans, and Westminster, will allow us common sense if we pause over them in other cases. Let us remember there was no sudden departure in style. The Normans were men of the same race and the same religion. We must not look for such changes as we see in India, where the mosque marks the advent of the Mussulman, and the church the rule of the Englishman, while the old Hindoo Temple stands by with its own distinctive features. Both Norman and Saxon must have had one common stock, the original Roman, and the later departure from even that style was not so great but there necessarily must have been great similarity between them.

Some writers have cut the knot instead of untying it, and said boldly that the Saxon churches were all of wood, like the little church of Greensted, in Essex; and they quote from the charter of King Edgar (A.D. 973) given by William of Malmesbury, in which he states his intention of "rebuilding all the holy monas-

teries in the kingdom, which are visibly ruinous, with moulding shingles and worm-eaten boards—even to the rafters." But though a great many buildings might have been of wood, we have positive proof that for many years a great many had been built of stone. Exactly 501 years before the Conquest the Church of St. Martin, at Whitehorn, was built, says Bede (iii. c. 4), of stone, an unusual method among the Britons. In 627 Paulinus built a large and noble church of stone at York, and in the next year a stone church of beautiful workmanship at Lincoln. In 652 St. Finan built the church at Lindisfarn. "Nevertheless," says Bede, "he made it after the manner of the Scots, not of stone, but of hewn oak." Surely this exception, "after the manner of the Scots," would prove rather that the manner of the English was different. In 655, the monastery of Medehamstede was begun of "most immense stones." In 660, Lastingham was built of stone. A few years after, we meet with a curious passage in Bede, who states that Benedict Biscop was about to build the monasteries of Wearmouth and Jarrow, and that he crossed the sea and brought back with him masons to build him a church "in the Roman style," which he had always admired. He also brought with him makers of glass, who taught their art in Britain, which had not been known there before. It would weary you to run through all the recorded cases of stone churches for the next 400 years preceding the Conquest: suffice it to say, that in 674, we first meet with the expression, "polished stone," as used at Ripon and Hexham. Within the last century preceding the Conquest, Ely, Peterborough, London, Westminster, Winchester, Worcester, the White Church at Durham, Bury St. Edmunds, St. Mary's Coventry, Stow, Wenlock, Leominster, Aldborough, Spalding, Gloucester, Pershore, Waltham Abbey, and many more no doubt, which I have not had time to reckon, were built, and almost all these of stone. So much for the sweeping assertion that the Saxons did not and could not build stone churches.

The arguments relative to Saxon and Norman architecture have been something like those of Zeal-of-the-Land-Busy, in Ben Jonson's imitable comedy, where the two disputants keep on for a quarter of an hour,—*"It is."* *"It is not."* *"It is."* *"It is not."* Each person maintaining his own ideas, but giving marvellous little evidence for what he says. Let us endeavour to get some proof *aliunde*, and not rely too much on our own notions. First, let us examine several arguments that have been used, which do not seem to me to be conclusive ones.

We are told that Saxon work is much rougher than Norman, and is not ornamented. This may be so to some degree; but surely those who could execute such elaborate diagrams as we see in the Saxon MSS. could set them out for the workmen to copy, and if we judge from their arms and jewellery, they had no contemptible workmen. In one particular, which has been often quoted—the carving of fretwork—this must have been used by the Saxons, as the very word they used to express ornamentation is *gefrettan*. Besides this, we are told again and again, that the Saxons built of polished stone. Again, I can hardly suppose that wide joints are a distinctive mark. A celebrated authority has shown that there are wide joints in many decidedly Norman buildings. In fact, it appears to me that the execution of work of all kinds depends very much on the nature of the stone. If it were a hard substance not readily cut, except by the axe, it is probable that the joints would be rougher and wider than where the material could be cut by the saw. By the way, it is also probably a mistake to say the Saxons were ignorant of the use of the saw: at any rate, they have three distinct words to express that useful instrument. In the same way, I consider that the quality of the mortar is not a sufficient test: this depends very much on local circumstances, in fact, on the quality of the material from which it is burnt. Neither do I think the smallness of the stones to be a criterion. Hugo Candidus expressly tells us that

Medehamstede, or "Peterborough," was built of most immense stones, "*immanissimè lapides.*"

The probable tests may be considered to be these:—Saxon work resembles classic Roman more than Norman work. The former succeeded their polished conquerors of the world, and no doubt entered their houses, where the fountains played in the impluvium, surrounded by columns of classic form. The whole land must have been full of arcades, vaultings, hypocausts, zysti, amphitheatres, and all the borrowed glories of old Rome, and would have given direct examples to their successors—while Norman art must have come through Gallic sources, and most probably was in some way tinged with intermediate peculiarities.

Another and a safe test will be to find peculiarities that do not exist in acknowledged and accredited Norman work, and yet which are not Roman. The latter is easily recognised by its superior workmanship, and identity with classic forms. If early work be not Roman nor Norman, what else can it be but Saxon?

But a still better test is the comparison with the delineation in contemporary MSS. Like the sculpture of Nineveh, or the tombs of Egypt, these drawings will best exhibit the every-day life; the costume and dwellings of the period.

What, then, are the peculiarities on which we can probably best rely? Quoins composed of pieces alternately long and short; round staircases of a peculiar form, on the outside of towers; short pillars resembling turned balusters; arches (so to speak) of triangular form; rude impostes, and pilasters formed of stones so narrow as to look like mere strips. With the two first we have nothing to do in this instance. Let me now call your attention to the illustrations of some undoubted Anglo-Saxon MSS., particularly the celebrated Pentateuch of Ælfric, and the well-known Harleian MS. 603.

There you have the turned baluster columns—the alternate, round, and triangular arches—in instance after instance. Let us now turn to St. Peter's at Barton-upon-Humber: we have these characteristics exactly, as also the strip pilasters. The same character is found in the Tower of St. Bennet's at Cambridge, as a most cursory inspection will show: this has a small portion of strip pilasters also. It is to this last peculiar feature I now beg to call your attention. Every one must recollect the ordinary classic pilaster fronts. The girders of the floors or the principals of the roofs are placed over them, and the walling between them is of less thickness, and, of course, lighter than it otherwise would be. As classic art declined, the same external appearance was attempted, but in a very different proportion. There are very many examples, but the one in the diagram referred to is from S. Pietro in Cielo d'Oro, and was built at Pavia in 750.

In the inside, at Repton, are two curious, rude impostes: they also strongly resemble those at Worth Church, of great antiquity, and which has always been considered Saxon, and those at Stoke D'Abernon.

The most curious and interesting feature is the crypt. These singular additions to ecclesiastical edifices no doubt derived their origin from the circumstance that during the persecution the early Christians availed themselves of the catacombs, which abound as much under old Rome as they do now at Paris. One of the most celebrated is given in the diagram. The remembrance of these sufferings was maintained by erecting these crypts, and till the middle of the thirteenth century no large ecclesiastical edifice seemed complete without them. They were used for all solemn services, particularly burials. The latest ecclesiastical crypts are, perhaps, those at Rochester. The earliest are probably those under our notice. They evidently are copies of Roman work: each column has a diminution and a swell, or entasis, always found in classic work, but never in any subsequent styles. They are also twisted in a style like Roman work,—an example of which from San Paolo is before us. In the diagram I have also given a parallel between the ordinary

classic pilaster and that at Repton. So early is the appearance of this crypt that many have thought it actually Roman, but the simple inspection of the capital, as well as the groining, will show the impossibility of this being the case.

If we look at the outside, our reasoning must be this: as circular and triangular arches used together—and with balluster columns—seems an undoubted mark of Saxon architecture, as is proved by the MSS., and as these are found in execution and in conjunction with strip pilasters—and as these again are found as distinctive marks in Romanesque both in Italy and Germany in the eighth and ninth centuries—I think it is not too much if we consider the architecture of the exterior clearly long antecedent to the Conquest; and if we look at the interior and see architecture older clearly than any Norman, and yet clearly not classic Roman, surely we cannot be blamed if we pronounce this to be part of the old Saxon church. Let the advocates of the opposite opinions remember there is no instance of strip pilasters, balluster columns or triangular arches, in any building which chronicle or charter will prove to be Norman.

Here, perhaps, rested the bones of the great kings of Mercia—here reposed the ashes of the great Saxon saints—here perhaps the Danes caroused through the long winter nights after the conquest of Repton, and before their dreaded incursion into the south—here stood the priory founded by the piety or internal fears of the Norman earls—and here, till the dissolution, were the Secular Canons, whose exertions and learning almost recompensed all the evils that have been attributed to the wealthy monk or importunate friar.

ARTHUR ASHPITEL.

REMARKS ON THE FORM, TREATMENT, AND APPLICATION OF THE DOME IN MODERN EUROPEAN ARCHITECTURE.*

On the subject of the proper style and character of the surface decoration of the dome there are natural objects that are very suggestive, only we must take into consideration, and make due allowance for, the difference of size: small objects are dependent on their decoration chiefly, large ones on form, which must not be cut up or injured by decoration. Some delicate embroidery-like ornament that would not interfere with or distort the general curvature of its surface, or disturb the breadth of its repose, would be the most proper. The ornament much used in great works, consisting of a multitude of square deep coffers placed within each other (the object of which would seem to be to make a very small rosette suffice for the decoration of the centre), is a very senseless one in any form of ceiling, and is particularly inadmissible in the dome: it interferes with the general surface until it is lost to the eye altogether: it looks liney, and produces no shadow in any broad or effective manner. The exterior curvature requires the same care: a calm and beautiful repose of light and shade is the great characteristic of the domical surface, and this must be preserved at whatever restraint of the hand of decoration. On the exterior, an unbroken surface, without ribs or dormers or projections of any kind, perfectly smooth, or relieved only by a net or scale-like covering, would, I believe, be greatest in effect. Its beauty is in its spherical curvature, and in the softness of light and shade which it is calculated to produce. Moreover, the meridian-like ribs so much used in great domes are only appropriate on those surmounted with lanterns, to which they converge. Spherical ceilings are, however, susceptible of much variety of sculptural embellishment: they might be appropriately decorated with subjects from the vegetable and animal kingdoms, which might be partially or wholly tinted; but it requires no great effort of judgment to perceive that historical subjects, either in painting or sculpture, so placed, excepting around the base for a few degrees up where they would be nearly perpendicular, are an irrational decoration: some very fanciful and aerial subjects, com-

prising imaginary beings, genii, or the like, might be admissible in theatres, saloons, &c.; but grave, historical subjects, however artfully foreshortened and disposed for being seen from below, can never look natural, and are improper for such a position; though some subjects, as the Ascension, Transfiguration, and the like, are less objectionable than others. The objection has most force in reference to flat ceilings, but neither on domes nor on vaulted or any other form of ceiling can historical painting be considered proper; and the grand subjects of Correggio and others had been better elsewhere. Neither should a dome or other ceiling be painted to represent the sky. The carved ornaments of the timber-roofed churches representing angels as hovering over the heads of the congregation, formed a beautiful and significant decoration, as it symbolized the highest heavens; but an imitation of the starry sky, though used symbolically, is, I think, an absurdity in a feature the chief object of which is to shut out the sky and excite ideas of comfort and shelter from the weather.

Much of what I have advanced will, I know, sound like heresy, if not apostasy, to many, and I may be deemed presumptuous in arraigning the merit of such works and men; but pure taste and enlightened judgment must, I think, mainly concur in such views, which would not tend to cramp design or clip the wings of imagination, but to guide them into right channels, and secure to their productions, under the sanction of reason, a higher and more satisfactory beauty. We can have infinite variety within the limits of rational design; and the revived architecture of the ancients requires not to be swept away, as some of its physicians would rashly prescribe, and which, indeed, it never will be, but to be purified, refined, ennobled. The most admired buildings in this style are grossly impure, and in no respect more so than in the treatment of the dome; and if the besom, not of destruction, but of correction, were to pass over the domes, not of London only, but of Rome and Paris, and clear away the lanterns, models, and toys that now disfigure their summits, a magical improvement would result in the eye of every genuine devotee of the beautiful and true. If their architects had worked from within outwards in planning their works, and were guided in their general arrangements and choice of form by a desire to obtain the fittest and most beautiful interior, no such features would have appeared, and very different would have been the form and application of the cupola. In all good and true architecture the general form of the exterior follows that of the interior, and is its true expression.

It is quite possible, by adding false and useless features to the essential shell of a building, to make the exterior more sensuously beautiful, i.e., more pleasing to the uninformed eye; and this has too often been done; but its intellectual beauty, is defaced by such treatment: the mind does not approve it; and in reference to the subject under our more immediate consideration, the question must involuntarily arise, why a dome should be shown on the outside that has no relation to the inside, as in St. Paul's, London, and in several of the Parisian churches. If true proportion and beauty require a dome to be placed at a certain elevation inside, that elevation must be the most proper outside, and will be most satisfactory to the inner eye.

When a building is truthfully conceived and faithfully executed, perfect in constructive and proportional grace, we can neither add to it nor take from it, without injury: the veins of life will run through every limb: every part will breathe: addition will be an incumbrance and deformity, subtraction a mutilation and destruction.

It might be pleaded, in reference to some of the false structures to which allusion is here made, that the extension of the cylindrical wall upwards, and the weight of the carpentry of the outer dome, secure abutment to the inner one, as does the brick cone to the inner dome in the ingeniously contrived cupola of St. Paul's; but this is an insufficient apology for their introduction, and does not excuse

the falsity of the arrangement, which inevitably detracts from their artistic merit: they are, however graceful, misconceptions, or, at least, impure conceptions: they depart from art in proportion as they depart from truth, which invariably calls for fitness and propriety, and requires a strict correspondence in architecture, as in all else, between interior and exterior. Now, the most beautiful form with which we could crown the intersection of two great naves is, I would humbly suggest, the pendentive dome. Constructive advantages are perhaps in favour of the cross vault, but the former is the most beautiful; and had the centre of the cross in the great churches to which I have referred been covered immediately by it, like that of St. Sophia and the Turkish mosques (which present, perhaps, the grandest interiors in the world), instead of having the pendentive spandrels merely to form the circular base for the upspringing tambour, greater unity would have been achieved, and truer proportions; for the height would have been in due subordination to the other dimensions, and the whole interior effect would have been more noble and satisfactory.

But if we could forget their incongruity, the absence of interior proportion, and the rest, and view them simply as external features, they would yet be far from satisfactory in the eye of taste: the man of pure art-feeling, and sound art-judgment, in contemplating such objects as the circular domed temples of St. Paul's Cathedral or Greenwich Hospital, must feel a secret regret that they had not, after the manner of their Roman prototypes, been built upon the ground, whereto they would not only look vastly larger and more important, but where, enjoying a more natural position, they would be infinitely more beautiful, besides being of actual use as chapels, libraries, or what not. Placed where they are, such objects have no adequate meaning: no idea, or only a false one is embodied, for most of the miniature imitations of these structures have no interior, or visible available inside, but are merely exterior objects. Now, I believe that no great limb or main feature of a building, such as a tower, should be erected for mere outside show; and I believe also that we might have an equal or greater amount of external decoration if the features devoted to it were made to administer at the same time to interior beauty and use; i.e., that the money spent on steeples, containing nothing, might have been so employed as to produce an appendage to the edifice not only yielding an equal amount of beauty on the outside, but gracefully useful within. With the Gothic spire I meddle not: the governing principle of the style is an apology for it: in the Gothic Church it is in the midst of pointed finials, and all is aspiring together; but the classic column supporting an entablature has no meaning, and therefore no business, up in the air; and the cost of the two or three tiers of columns and spire above our revived Roman churches would have erected a single peristyle, crowned by a dome, of twice the diameter. The rationality of the nineteenth century must, I think, lead to reformation here, and we shall outgrow these senseless practices in architecture; practices tending to please the eye whilst offending the judgment, and which are calculated to bring the whole style in the eyes of the indiscriminating into unmerited contempt. Unmerited,—for the capabilities of the architecture of the ancients cannot, I am convinced, be estimated even from the most celebrated examples in existence: there has, I suspect, never been an adequate amount of real artistic genius applied to it in modern times. In our greatest buildings it has been misapplied,—in temples as well as in palaces. In many of the great palatial edifices of Italy, in still more of the French ones, it has been the bubble of fashion, the creature of affectation: formality and falsehood—the evidence of sacrifice to mere pomp of exterior decoration have everywhere stamped themselves in gigantic deformity. In the greatest works they have been made to administer but to a meretricious pomp, a conventional stateliness,

"Decency and custom starving truth."

In our temples of religion it has fared no better: than in the pontifical church at Rome,

"To which Diana's marvel was a cell,"

there is, perhaps, in no building embodied a greater amount of ignorance or neglect of the principles of the style adopted. Conventionalism, in short, has been its bane: the architects did not build on ideas, nor withdraw their inspirations from nature, and we cannot expect the classic elements to assume artistic compositions under such circumstances,—from the hands of architects who hid, or sought to hide, by gorgeousness of decoration the want of art. I conceive of the revived Greek and Roman architecture as of a flower in its bud that has yet to blossom; of its beautiful elements, as links of music that will yet evolve

"Their grand consummate hymn."

SAMUEL HUGGINS.

PERILS OF HOLBORN-FOOT.

AMONGST the metropolitan improvements which have been carried out of late years, few can be said to have been otherwise than urgently called for; yet if these necessary had been taken in the order of their urgency, there is one which would, long ere now, have stood to our credit as a thing achieved; while perhaps one or two others might still have been, not shelved, but ordered to lie on the table, for the sake of its accomplishment: I refer to the long-desiderated viaduct across the valley of the Fleet.

The observant pedestrian, in passing down Holborn-hill, and approaching Farringdon-street, cannot fail to have his attention attracted to the difficult and perilous nature of the vehicle-traffic in the steep portions of this busy thoroughfare; indeed, his feelings of compassion for the poor horses are enough to suggest to his mind the necessity for some remedial measure being adopted: but to the outside passengers on omnibuses, or the occupants of open cabs, the scenes and experiences here must often be of a very alarming kind; while those who have the charge of heavily-loaded waggons are not to be envied for their difficult and onerous task: in some seasons especially, danger is most painfully apparent.

To many of the more modern inhabitants of London it may be unknown—although in looking at the locality with a geographical eye they would probably take it for granted—that underneath the hollow which lies between Holborn-hill and Snow-hill, a stream, rendered sluggish by its foul burden, runs, or perhaps rather *settles* (glacier fashion), to the Thames. This, now the great Fleet ditch, was formerly the Fleet river, and more anciently, the River of the Wells,—receiving, as it did, various limpid waters, as it meandered from its source in the high grounds at Hampstead-heath, by Kentish and Camden towns, St. Pancras old church, Battle-bridge, Bagnigge-wells, the House of Correction, to the hollow behind Mount Pleasant, Warner-street, and Saffron-hill, and so to the base of Holborn-hill, where it received the waters of the "Old Bourne," which, pent in its tunnel of brick-work, now constitutes Holborn sewer. After the Great Fire of 1666, improvements were made upon this river; and it presented a canal, crossed by four bridges—on at Bridewell, Fleet-street, Fleet-lane, and Holborn, and which was navigable by barges, from the Thames up to Holborn-bridge,—having 5 feet of water at the lowest tides, and quays 30 feet broad on either side. Time was, when vessels had borne their freights much further up its stream; and an anchor has even, it is said, been found as far up as the vicinity of Battle-bridge. Its ultimate sphere of usefulness, however, fast grew upon it: in 1732, it was unanimously voted, in its uncovered condition, a nuisance; and by 1764 its course, even to its mouth, was tarched over, and it was thenceforth dedicated altogether to Cloacina and Mephitus. Talk of the *Pons Asinorum*! it would be a puzzle rather to discover now either the bridges or the course of that once gurgling rivulet, on whose banks our aldermen's forefathers, who, in the time of William Rufus, were probably frugal swains,

may have fed their flocks and herds; and as for its title of "Fleet," its claim to it is no longer appreciable in any sense of the term.

My subject having reference to supra-terrestrial operations rather than to such as I have just touched upon, these brief details will therefore suffice to convey an idea of the underground nature of the main portion of the site; and it need just be remarked here that, on viewing the locality transversely as regards the direction of the trunk line, it will be found that the street surface at Holborn-bridge has already been raised as much as it conveniently can be; and the summits at Hatton-garden and St. Sepulchre's tower are also as low as they well can be; so that nothing but a distinct line of roadway will effect the radical reform which is necessary to get rid of the excessive gradients with which vehicle traffic has to struggle between these two hills.

That some striking change is indispensable in the great main thoroughfare of Holborn and Newgate-street, between the two points just named, has forced itself on public attention for many years; and the following summary will show what propositions have been advanced for the cure of the evil complained of,—some of them highly approved:—

In 1823, Mr. T. F. Taylor proposed to carry an iron suspension-bridge from the corner of Hatton-garden to near the Saracen's Head Inn, in Skinner-street; the roadway of which was to be level, and of sufficient width to admit two carriages abreast; and the footpaths, and nearly all the houses, to be left undisturbed. (Estimated cost, 23,000*l*.)

In 1833, Mr. Turner proposed to construct a viaduct upon brick arches along the south side of Holborn-hill and Skinner-street, from Thavies' Inn to Seacole-lane; requiring the taking down all the houses on that side from Shoe-lane to Farringdon-street, while others of more modern date were to be raised: the arches of the viaduct to be made available for warehouses opening from that portion of the line which retained its original levels, or rather activities. By a subsequent modification of the plan, the street was to be increased to 70 feet wide, the viaduct being 35.

In the same year, Mr. Moseley proposed to raise the ground at Holborn-bridge 12 feet rendering necessary the alteration of houses at the bottom of the hill.

In 1836, Messrs. Barnard and Geary proposed to construct a viaduct on the north side from Hatton-garden to the upper end of Snow-hill, requiring the removal of the greater portion of the buildings between these two points. (Estimated cost, 350,000*l*.)

In 1838, in the Metropolitan Improvement Committee's Second Report, appeared a proposition by Mr. Pococke, for a viaduct on the south side, from St. Andrew's-court to Seacole-lane.

In 1840, Mr. Moseley proposed in addition to his scheme of 1833, to lower the summit of Holborn-hill 18, and that of Snow-hill 12 inches, so as to reduce the gradients to 1 in 35.

In 1841, Mr. Galloway proposed to erect centrally in the line of road, a viaduct 30 feet wide upon iron arches, for horses and carriages only, from Hatton-garden to the Saracen's-head inn; the street to remain below, but widened where requisite.

In the same year, Mr. Moon proposed a plan nearly similar to that of Mr. Turner, only insisting on a greater width of road.

[Of the merits of Mr. Stead's registered project, referred to in letter and leader of THE BUILDER, vol. 4, p. 541, and also at p. 586, further than that it is a viaduct (estimated cost 170,000*l*), and supposes a toll of a half-penny on pedestrians and equestrians using it, a penny on omnibuses, cabs, chaises, carriages, and taxed-carts, and three-halfpence on carts and waggons, I am unaware.]

The above are independent of various propositions in 1833-5, &c., for making new streets or viaducts, distinct from, and not being improvements on the Holborn and Skinner-street line, but in lieu of such. These would seem to view the proper dealing with the present line without interfering with the property along its sides (excepting that

they would have destroyed its value) as being impracticable. Both Mr. Taylor and Mr. Galloway, however, have indicated that the case can be dealt with without being open to material objection on that score; and I think the former only erred in proposing to adopt the suspension principle upon a curved line of way, and the latter in contemplating too great a width.

The width between the houses being say 50 feet, at the narrowest part,—the roadway between curbs being 30 feet, and footpaths 10 feet each, if the viaduct were made the whole width of present roadway, in accordance with Mr. Galloway's plan, it would not only come into offensive proximity to the houses on either side, but difficulty would be created at the terminations, in obtaining passage for the cross traffic into and out of the streets of the lower level; for the height of the required viaduct being at Farringdon-street about 30 feet, and a narrow one being desirable, it becomes obvious that its use must be confined to the eastward and westward traffic, which at the present time seems to be quite nine-tenths of the whole that takes place at this confluence; and therefore there must be preserved or formed at the ends of the high-level way, sufficient passage for such portion of the low level traffic as does not merely cross underneath the viaduct, but passes up or down alongside of it, either in its eastern or western end: were a viaduct erected the full width of the present roadway, this passage at the ends would have to be accomplished by means of something like a circus at each,—requiring the purchase, sacrifice, and rebuilding of property.

Any plan for raising the line of street bodily, and the houses along its sides with it, although perfectly practicable, must involve so serious a cost as to form a hopeless barrier to its accomplishment; and any plan to raise but one-half of its width, whether along the north or along the south side, leaving the other half to still dive down with its present steep incline, would, I conceive, be unsatisfactory,—the low line being mean by reason of its narrowness, even if shops instead of warehouses occupied the brick arches which supported the high one; and when it is proposed to increase the total width of the street above to 70 feet, in order to afford to this low line passage for two lines of vehicles, what between the cost and the sacrifice, a total raising becomes equally feasible, while it would be more consonant to the taste of the age. To those who are acquainted with the city of Edinburgh, such a thing as two streets crossing each other at levels differing much more than would be the case here, is easily understood; as well as the appearance of the houses at the intersection, which are double the usual height: the main difficulty to the working is the obtaining passages parallel with the high level for vehicles from the low one to reach it by.

The central viaduct scheme, for vehicles only, is evidently by far the most tangible,—not a suspension one, where ample support can be conveniently obtained throughout its length from below, and where, supposing it were desirable, it would have to be in several spans, in consequence of the curvature; nor yet one the full width of the roadway, to bring omnibus outsiders staring into people's one-pair and two-pair floor windows, and rendering the low-level vehicle traffic difficult and dangerous; but a narrow one, so as to facilitate the latter, and sustained by direct support.

Such a viaduct, formed solely for the great eastward and westward traffic, should be laid with two pairs of tramways; one pair for the line of vehicles running east, the other for those running west,—the central space narrower than those gauged for vehicles, or otherwise disqualified for use: its width need not exceed 19 feet between the railings: these should be lofty, if not necessarily for security, at least to give the fullest feeling of it to timid passengers. The lines of support below should be so near to each other, say 11 feet from centre to centre, as to divide the 30-foot roadway into three nearly equal parts, and leave good gangways for vehicles between them and the footpaths.

For the construction of such a viaduct,

modern practice would suggest many modes of treatment by which lightness and stability could be combined; but certain enough, brick piers and arches would be as unnecessary as they would be undesirable: for with an increasing traffic it would not be found that any of the space underneath was useless, or that such obstacles as brick piers would have been otherwise than inconvenient and dangerous: round cast-iron pillars, for the supports, would therefore be found to be the best adapted to the purpose in form and material; and iron beams would be less inconvenient than iron arches where the platform joined the inclines. To the right and left of the line of Farringdon and Victoria streets, spaces might probably be spared in the centre as cab stands; but in the extreme ends, where the platform of the viaduct joined the inclines, and the wedged-shaped space beneath terminated, public halting-places might be formed with advantage.

Centrally, in the length of the viaduct, or where it was intersected by the Farringdon and Victoria street line, an enlargement of a circular or other form in the plan, might be made as a station for omnibuses taking in passengers,—stairs being constructed leading up on both sides from the low level.

It will be perceived that the scheme here indicated could be carried out without touching a building, a foot-path, or even a curb-stone. As regards its effect upon the contiguous property, I think it is equally evident that, when once the viaduct was completed and working, that could not be deteriorated, but would more probably be enhanced in value; especially in the lower parts, nearest Farringdon-street. The inconvenience during execution, too, need be but very temporary; since the work would be of a kind which could be almost wholly prepared before the fixing of any part was proceeded with. This Holborn-hill nuisance, therefore, which has been a source of such grievous complaint for many years, and which, so long as it lasts, must keep on increasing, is by no means the formidable difficulty that its continued existence would seem to imply. When I went to the spot recently, on purpose to view it with reference to the subject of its improvement, there seemed to be but one rational mode of dealing with it—by a central viaduct; and when I subsequently made inquiries as to what had been already proposed, it was with some satisfaction that I found the same idea, though different in the treatment, had suggested itself to two previous projectors.

JAMES WYLLSON.

THE EXHIBITION OF SKETCHES AND DRAWINGS BY ENGLISH ARTISTS.

THE promoters of this exhibition, encouraged by the success that attended their first efforts (though not in a pecuniary point of view), and by the ready manner in which their invitations were responded to by artists, have opened their second exhibition in Pall-mall East, and present to public inspection a very interesting collection of studies, extempore sketches, transcripts from nature, first thoughts for pictures, and careful bits of detail.

There is always a charm in sketches (a freshness in first impressions lends its aid in their execution), not to be found in the more matured and highly-wrought pictures, and they make one on more intimate terms with the artist. Some characteristic studies by Mr. John Lewis (five in number) attract immediate attention. The individuality and truthfulness of (134) "Roman Peasant Boy," and (137) "Roman Lady," are as admirable as the expression of (143) "The Greek Primate, Therapia," and (140) the exquisitely-painted head of "Lord Viscount Castlereagh." These, with (146) "A Lady of Rank," are fine examples of delicate and elaborate finish in water-colour portraiture.

(22) "The Opera Box," by W. P. Frith, A.R.A., is a gem of first water: the figure lovely and ladylike. (35) "Anticipation," A. L. Egg, A.R.A., is powerful in colour and painted as only few can paint. (25) "Capuchin

Convent at Amalfi," (31) "The Bay of Monaco," (130) "Martello Tower, Mentone—Evening," (136) "St. Remo, Gulf of Genoa, Santa Croce, in Jerusalem," and (264) "Amalfi, from the Convent," by Mr. Cook, chiefly painted on the spot with photographic truth; are interesting as correct delineations. (36) "The Lily," J. J. Jenkins, is a pretty study. (40) "The New Novel," H. O'Neill, carefully painted, but wanting in refinement; and (87) "The Lily of the Valley," E. M. Ward, A.R.A., are personations in which their several styles are to be discriminated.

Mr. F. R. Pickersgill is advantageously displayed in his water-colour sketches. (69) I. "Angelica delivered from the Sea Monster," Ariosto—II. "Sabrina descending," Comus—and III. "Frolic." The composition of "Sabrina" is exceedingly beautiful, and all denote great knowledge of the resources of colour. The sketch for his (84) "Rinaldo destroying the Myrtle Tree in the Enchanted Forest," is a covetable reminiscence of his fine picture.

Mr. Hook, A.R.A., exhibits his sketch for "A Dream of Venice" (240)—very suggestive of the Venetian masters; and his study of a Female Head (81) still more forcibly illustrates how effectively he has adapted their style. The first sketch for Mr. Cope's (R.A.) "Fresco of Griselda" (287) is a highly-finished drawing, and exemplifies the care and attention exercised on his subject.

The correctness and sound judgment apparent in Mr. Mulready's pen and ink "Sketch" (274) prove how unremittently he must have worked to acquire his certainty, and his chalk "Sketch" (285) shews how grace and science combined assist in making the simplest material interesting.

Amongst the studies for pictures are (164) "Sketch for a large picture," illustrative of English poetry, by F. Madox Brown, the centre compartment of which all that have visited the last Academy exhibition are acquainted with. Mr. W. Cave Thomas's (11) "Study for a large picture," from the Evangelist (Mark), chap. xiii. as well as his (142) "Sketch in oil for the compartment of Justice," House of Lords, deserve careful attention. (93) "Samson in Captivity," E. Armitage, is clever though unpleasant.

(125) "The Sentinel," R. Hannah, a well-painted head; and (126) "Signor Don Sancho Panza, Governor of Barataria," a drawing made with seemingly great facility in pen and ink, by J. Gilbert, are remarkable. (238) "Grace" and (244) "The Trial of the Sword" are better specimens of Cattermole than (260) "Amy Robsart."

(222) "Sketch for the Picture of the Bourgeois Gentilhomme," W. P. Frith, A.R.A., has the qualities and general appearance of a *bona fide* picture, whilst (266) "La Fleur's Departure from Montreuil," vividly recalls one of Mr. E. M. Ward's most charming performances.

(252) "Lateral View of the Portico of the Great Temple of Edfou," (255) "Entrance to the Great Temple of Aboosimbool, in Nubia," showing the first period of Egyptian architecture of the time of the Pharaohs; and (268) "The Portico of the Temple of Edfou, in Upper Egypt," showing the second period of Egyptian architecture of the time of the Ptolemies, are three of those Eastern studies with which the name of David Roberts, R.A., is so closely associated; in pleasing contrast, his (258) "Church of St. Bavo at Haarlem," showing the great organ; and (262) "Interior of Kelso Abbey, Roxburghshire," are depicted with that adaptive and perceptive skill for which he is justly famous.

Mr. Stanfield, R.A., has (96) his "Study for the Picture of Salvator Rosa; (131) "An Interior of Chepstow Castle; and (267) "The Great Tor," to represent him. Mr. Hart's (276) "Interior of the Sacristy of St. Mark's," and (279) "Great Council Chamber in the Ducal Palace at Venice," are, with (241) "The Palazzo Cornaro Spinelli, Venice," of Mr. Lake Price, sparkling and clearly-defined studies of interior. Mr. Holland's Turner-like (230) "Venice," and richly-coloured "Realto," have afforded him an opportunity of revelling in the

prismatic rays. (280) "The Lake of Albano and Castle Gandolfo," and (281) "Cottage of Hampstead Heath," by Mr. Linton, remind one of ancient masters.

Conspicuous amongst out-door sketches are (145) "A Study of Boats," very fine, by T. Creswick, R.A.; Mr. Duncan's (75) "Cottage at Dawney, near Windsor," and (129) "Study in Knowle-park," (95) "Red-hill Common," C. Davidson; (127) "In Houston, Renfrewshire," W. L. Leitch; (98) "Sketch from Nature, at Margate," George Richmond; (132) "Two Sketches made at Hastings," Frank Dillon; (43) "Dunstanborough Castle, Coast of Northumberland," (53) "A Salmon Trap on the Lledder, North Wales," and "A Water Mill, near Caernarvon, all by J. Wilson, jun.; (159) "Earlwood Common, Reigate," C. Davidson; and Mr. Juteum's (169) "Mile-end Ferry, near Henley-on-Thames," A careful drawing in chalk, by Mr. T. Webster, R.A., of (184) "An Old Dame;" two masterly charcoal sketches, (62) "Introduction," and (67) "The Assault," by Mr. Tenniel; (192) "Grapes," George Lance; (210) "Pineapple, &c.," V. Bartholomew; (215) "Poacher on the look-out," and (229) "Duck Shooting," by Mr. Ansdel, are amongst those that attract attention. Nor must we forget the elaborated and Dutch-looking interiors of Mr. Hardy (273 and 284), transcribed with much patience and aptitude; or the graphic memoranda of Mr. C. Landseer, R.A., (72) "Entrance at Knowle," (99) "Scene in an upper Apartment," likewise at Knowle, and (259) "Staircase at Mayfield," or the masterly studies in oil, (70) "An Italian Pilgrim," and (100) "Pifferari," by Mr. Carl Haag, or a charming drawing by Topham, (128) "Highland Bridge," or the careful studies of flowers (76 and 90) by H. O'Neill.

James Godwin has three drawings, (28) "Music," (189) "An Episode from the History of the Plague" (a sanitary fire, with crowding wretches), and (198) "A Provision Merchant during the Plague of 1665," which will help to build him a reputation.

The several names of Linnell, Copley Fielding, G. Frizz, Callow, Clint, Bennett, Gastineau, G. E. Hering, Leitch, Duncan, Allen, Dodgson, Davidson, T. M. Richardson, Branwhite, and some others, are appended to works of considerable excellence.

PRACTICAL METHOD OF CONSTRUCTING THE REGULAR PENTAGON, OR FIVE-SIDED POLYGON.

SIMPLE and practical methods of describing polygons of any proposed number of sides are of very great use to individuals who are in any way connected with the building arts, as erections of various polygonal forms are frequently made the objects of contemplation and design, and are sometimes brought forward as prominent and conspicuous embellishments to a group of buildings.

Now, ready and expeditious methods of delineating polygons, even although these methods should be only approximative, must be of considerable importance to practical men, and it is chiefly on account of the great utility of the methods here given, that we have been induced to put them into such a form as the readers of THE BUILDER may readily comprehend and put in practice, when cases of the kind offer themselves for consideration.

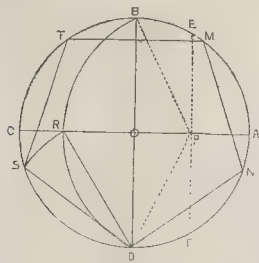
The simplest of polygonal figures is the equilateral triangle or *trigon*; the next the equilateral rectangle or *square*, of which the methods of construction are well known, and for this reason we need not take any further notice of them here; but some of the polygons of higher orders are not so easily constructed, and short approximating methods of easy remembrance and application are here given for the use of the practical architect and mechanic.

PROBLEM I.—To construct a regular pentagon, or a polygon having five equal sides.

The problem, as here enunciated, is proposed in a general way, without any limiting condition whatever as regards the length of the side, or the description of it in or about a given circle; but when the figure has once

been formed according to the method here given, any other conditions can readily be complied with; but the present construction inscribes the figure in a given circle.

CONSTRUCTION.—Describe the circle $ABCD$ of any convenient size at pleasure, the diameters AC , BD being at right angles to each other. With the same radius or extent of the compasses, set off AE and AF in both directions, making the arc EAF equal to 120 degrees; draw the chord EF intersecting the diameter AC in P the centre of construction for the pentagon.



About P as a centre, with the distance PB or PD as a radius, describe the circular arc BRD , intersecting the diameter AC in the point R ; draw DR , and about D as a centre with DR as a radius, describe the small circular arc RS to meet the circumference of the circle in the point S , and draw DS ; then is DS the side of the pentagon required, which being set five times round the circumference of the circle, will mark out the polygonal figure or pentagon $OSTMN$.

This is a very simple and elegant method of describing a pentagon or five-sided figure; but may be proper to remark, that it determines the side of a regular decagon or ten-sided figure at the same time; for the central distance OR , is the side of a decagon.

The method of construction here given is very well known to mathematicians, having been suggested by Ptolemy in the first book of his "Great Construction;" it is not however, so well known among practical men, and is for this reason that we have thought it might be useful to bring it under their notice.

PRACTICAL CALCULATION OF THE PENTAGON.

From the simple nature of the preceding construction, we readily perceive that the side of a pentagon inscribed in a circle of given dimensions, admits of a ready numerical determination, from which its practical delineation is immediately obtained by scale and compasses; thus, by a simple calculation, we find the side of the inscribed pentagon to be

$$s = \frac{r}{2} \sqrt{10 - 2\sqrt{5}} = 1.1756r$$
in which expression the symbol r indicates the radius of the circle, and s the side of the inscribed pentagon.

This is a very simple expression for the side of a pentagon, and very easily put into practice; but the following rule in words will render the subject more generally intelligible to practical men.

RULE.—Multiply the radius of the circle by the constant 1.1756, and the product will be the side of the pentagon, in the same measure as the radius of the circle.

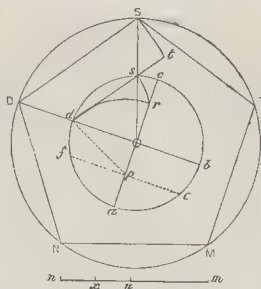
EXAMPLE.—A gentleman has a piece of ground of a circular form, 22 feet in diameter, in which ground he wishes to build a summer house in the form of a regular pentagon: what will be the length of the side outwardly? Here the plot of ground is 22 feet in diameter, and consequently its radius is 11 feet; hence, by the rule, we have $1.1756 \times 11 = 13.16$ feet, the length of the side required; and this known, the length of the interior, which depends upon the thickness of the wall, is easily determined.

PROBLEM 2.—To describe practically a regular pentagon, or five-sided figure, the side of which shall be of any proposed length.

The practical construction of this problem

pre-supposes that of the foregoing; but since that is a matter of great simplicity, the labour of the solution is but little enhanced by it; in order, therefore, to render the solution complete, we shall endeavour to combine the two operations in one as follows:—

Describe the circle $abcd$ of any convenient size at pleasure, and find ds the side of a pentagon as in the foregoing problem, which side thus found may be either greater or less than the given side. Take the difference between ds , the side of the pentagon found by the construction, and mn , the given side; then, if mn be greater than ds , set off mu equal to ds , and bisect the remainder nu in the point x ; produce ds , the side of the first constructed pentagon, till st be equal to nx , and erect the perpendicular ts , meeting the production of the radius Os in S ; then, through the point S , draw SD parallel to sd , to meet Od produced in D , and SD will be the side of the pentagon required.



Therefore, with the radius Od or Os describe the circle $DNMTSD$, and on the circumference thereof set off DS five times and join the adjacent points, which will form the pentagon required. If the side of the constructed figure should happen to be greater than that of the figure required, take the less from the greater and bisect the remainder; then, set half the remainder from d towards s , or from s towards d , and draw a perpendicular to meet Os or Od , and construct the figure as before.

The following, however, is a still readier way of determining the radius of the circle by calculation, and when the radius of the containing circle and the side of the pentagon are given, the figure itself is easily constructed.

RULE.—Multiply the given side of the pentagon by the constant fraction 0.85063 , and the product will be the radius of the circumscribing circle; round the circumference of which set the given side five times, and the pentagon will be completed.

EXAMPLE.—What will be the radius of a circle capable of containing a regular pentagon whose side is 20 feet in length?

In the constant multiplier above given, the three right-hand figures are of very little value, and may be omitted in all practical cases, the first two places '85 being quite sufficient.

Here, by the rule, we have $0.85 \times 20 = 17$ feet, the radius of the circle required.

ST. MARGARET'S, AT CLIFFE, DOVER.—Sir: There is an interesting old Norman church at St. Margaret's, at Cliffe, a village about four miles east of Dover. The eastern (?) doorway (a good specimen) was whitewashed a very few years since, and many of the ornaments (some of which are very curious) on the lozenges are nearly illegible from that cause. The double-toothed ornament is very curious, as is likewise the moulding nearest the door opening. The interior of the church has also been whitewashed, and many of the arch and other mouldings have been greatly damaged from this most absurd practice. The northern doorway has been preserved from whitewash, and is a much older and finer specimen than the eastern. Some of the ornaments are very curious (for instance, four or five death's heads on the eastern side). I do not know of any published illustrations of this old church, or of any of its parts.—T. A. B.

NOTES IN THE PROVINCES.

Norwich.—The church of St. Matthew, at Thorpe hamlet, designed, according to local papers, by Messrs. Brown and Kerr, was consecrated on Friday week. It is in the Early Norman style, and cruciform, with nave and transepts, but without tower or aisles. There is a semicircular finished apse for the chancel. The walls are built of Kentish rag-stone, with white brick dressings. In the decorations for the doors and windows the old English style of moulded bricks has been revived. There is a circular stone belfry at the west end, supported by corbelling on each end of the wall. The dimensions of the building are—extreme length, 79 feet; width, 28 feet; length of transepts from north to south, 61 feet; and width of transepts, 25 feet: the extreme height, from the floor to the roof, is 29 feet. The roof is of deal, stained in oak, and the fittings and furniture are of same material. The cost of the building has been 2,200*l.*, and a further sum of 1,000*l.* was raised for the endowment. Mr. Wornum was the contractor.

Framingham Pigot.—The church in this parish, says the *Norfolk Chronicle*, has of late undergone restoration at the expense of Mr. Plumer and Mr. Christie. The old belfry, which endangered the west wall of the edifice, has been removed, and a new bell turret has been erected at the angle of the wall, in a more secure position. It is a light open bell turret, with a new buttress. Mr. Kerr, architect, supplied the design.

Pickwell (Melton Mowbray).—With reference to some remarks lately quoted in our columns from a provincial paper, on the design of the chancel of the church here, lately repaired, a local correspondent remarks that as the chancel itself is not new, any reflection on the design of it is misplaced so far as recent works are concerned. These works were done with a sum of 175*l.*, recovered from the executors of a late incumbent who had allowed the chancel to become dilapidated. Our correspondent very properly remarks that "misleading the public, and inflicting injury upon tradesmen, by communicating to a newspaper upon such guess work information as that of the correspondent of the newspaper, mentioned, statements professing to be facts, but in reality fables, is a practice which can neither be too strongly condemned, nor too rigorously exposed."

Saltney.—The subscribers to the fund for the erection of a church and schools at Saltney, have resolved that a school to accommodate about 140 children be commenced forthwith, and that one-third of the funds already subscribed be devoted to this purpose. Mr. James Harrison was appointed architect. The Shrewsbury and Chester Railway Company have offered to convey the building materials along their line free of charge.

Knipersley, Biddulph.—A new church in the village of Knipersley, in the parish of Biddulph, Staffordshire, was opened on the 28th ultimo. It has been built at the cost of Mr. Bateman, and is in the Early Decorated style, with nave and transept, chancel, and tower with octagonal spire. The east window is of four lights, with tracery; the west of five lights, also with tracery. The chancel roof is of oak, and open to the rafters. The platform round the communion table is paved with black and grey marble, supplied by Messrs. Hall and Co., of Derby. The remainder of the paving in the chancel, and the whole of that in the nave is formed of flags of Hopton Wood stone, bordered with black tiles from Messrs. Minton and Co.'s. The building will be warmed by apparatus supplied by Messrs. Haden, of Trowbridge. Near the church is a parsonage in the Elizabethan style. There are also schools, with master's dwelling, and village library and reading-room.

Nottingham.—An ornamental fountain, from a design by Mr. Papworth, architect, is proposed to be erected in the market-place at Nottingham.—The gas company are forming two new gas tanks of very large dimensions. They will each be 120 feet across on the outside, and 93 feet, when finished, in the inside. On the outside they will be 24 feet below the

surface, and 5 feet 9 inches above, finished. They will contain about 100,000 feet of gas, when completed.

Leighton (Welshpool).—The foundation-stone of a new church has been laid here. It will be erected at the cost of Mr. John Naylor, of Liverpool, from designs furnished by Mr. H. Gee, architect, also, of a new hall and vicarage adjacent. The builders are Messrs. J. and W. Walker, Birkenhead.

Bolton.—Church Schools are about to be erected at Leverbridge, from drawings by Messrs. Sharp and Paley, of Lancaster, architects. They are intended to accommodate nearly 400 scholars, and will correspond in design and materials with the church and parsonage, which are built of Ladyshore terracotta. The whole cost of the schools is estimated at 1,000*l.*, towards which Messrs. J. and W. Gray, of Wheatfield, have contributed 500*l.* The Earl of Bradford has granted the site.—Part of the premises forming the "White Horse" public-house fell on Tuesday week while some alterations were in progress, including the removal of a wall 10 or 11 feet long, which divided the kitchen from the bar, both at the back part of the building. The wall having been removed, a wooden beam of 10 inches by 8 inches was placed in its stead, below the ceiling, for the purpose of supporting the upper portion of the premises: one end of this beam gave way and fell to the floor, and immediately afterwards the ceiling of the kitchen lowered slowly about 2 feet, and then descended with a crash, the whole of the building above following, so that the upper part of the building, for ten yards in length, was destroyed in addition to the kitchen.

Preston.—The cost of the Preston Baths and Washhouses seems to have gone beyond what was anticipated. The council had already borrowed 9,000*l.* for their establishment, and they have just been called on to authorise the borrowing of 2,500*l.* more. This expenditure, according to a local paper, is wholly for the building and outfit. Exclusive of the site, the establishment at the south end of Liverpool is said to have cost only 2,300*l.*, and it is thought that a like scale of expenditure might have been quite sufficient for Preston. Nevertheless it is believed that the establishment will pay. Up to 23rd ult., the returns for thirteen weeks have already been 214*l.*, leaving 98*l.* for interest on loan, &c., after deduction of necessary expenses.

Newbury.—The Gas Company here have declared "a dividend of 5 per cent., payable on 10th October and 10th April," and have announced their intention to reduce the price of their gas to 8s. "if a reasonable probability of increase sufficient to meet the reduction could be shown, so that the matter of reduction now rests with the public, as without the increase, it cannot be done." As well might that prudent tar, who declared he would never take a dip into his own legitimate element, the water, till he had learnt to swim, have forthwith announced that the matter rested with the sea itself, as, without its instructive assurance that he would or could swim, it could not be done. Over cautious tars such as these, whether gas tars or maritime ones, are only likely to learn the truth in the brief interval between shipwreck and sinking; that is a moment, according to Coleridge and De Quincey, when flashes of mental light, more vivid far than gaslight, enter into even the darkest and most stupid souls.

Doncaster.—The spire of Christ Church, damaged by lightning, has been restored by Mr. Brown, of Sheffield, builder, without the erection of any scaffolding. A lightning conductor has also been affixed by the same tradesman.

Nairn.—A United Presbyterian church is about to be erected here from plans furnished by Messrs. Mackenzie and Matthews, of Elgin, architects. The estimated expense of the new building is from 900*l.* to 1,000*l.* It is to be erected in an open space adjacent to the High-street, and is to be in the Norman style of architecture, and capable of containing about 1,000 persons. The doors and windows are circular-headed, with mouldings running all round. The principal entrance is a large

arched opening, 12 feet wide and 15 feet high, sub-divided by a pillar into two arched doorways. Immediately over this entrance there are three windows, surmounted by interlacing arches. This front is furnished with an octagonal belfry with square base, supported by corbels projecting from the wall. The interior finishings are to be American pine timber. The building materials, it is said, are to be red sandstone for the walls, and white freestone for the dressings, mouldings, &c.

Miscellaneous.—The new police station at West Bromwich has been erected by Mr. Hartland, builder, from plans by Mr. Smith.—The foundation stones of two Roman Catholic chapels, about to be erected at Coughton and Studley, were laid on Wednesday week.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Sanitary Movement in Belgium.—The Board of Public Health in Brussels (*conseils supérieur d'hygiène publique*) has decided on the holding of a hygienic congress, at the time of the next September festivals in the Belgian capital, under the presidency of M. Liedts, minister of state and chairman of the above board. This congress, to which, besides several notabilities, the delegates of the committees of public health are invited, has for its object to determine the most necessary works for the salubrity (*assainissement*) of the towns and rural districts, and to point out practical and efficacious means for putting into practice the intentions of government. The superior board has invited the governor of the provinces to indicate the persons who would be most fit for that important and useful mission. The following is an outline of the programme issued by the *conseil supérieur* of Brussels. The delegates to the hygienic congress have to deliberate on the measures most effectual for insuring the successive execution of all the works of public salubrity deemed necessary, and for guaranteeing the proper employment of the local funds as well as other subsidies granted to these works. The hitherto existing regulations consisted principally in the nomination of local committees of public health, headed by the superior board appertaining to the department of home affairs; the attribution given to the commissaires of cleanliness (*commissaires voyers*) to direct and superintend the works of public salubrity in the country districts; the establishment of a general inspection of the service of public health, the compiling and circulation of instructions and drafts of regulations relating thereto, and which had become the groundwork of many useful local enactments; in fine, the arrangement and disposal of the public grants demanded by the local administrations. These measures have not been unproductive. A great number of sanitary works have been executed or projected of late, and the "considerable improvement in the sanitary condition of the working classes, in districts thus acted upon, is a fact of general notoriety." Still some grand and universal measure can only be expected from final centralisation. The programme concludes by stating the different questions which will be laid before the sanitary congress, amongst which there are several relating to the modes of coercion to be resorted to against those civic (*municipal*) bodies who would be behind in, or even averse to, carrying the beneficial measures of government into execution, sacrificing, then, as it would seem, the welfare of the majority of a nation to the paltry interest of a few sordid and rapacious individuals.

Balneary Affairs, Paris.—We extract the following from one of the Paris periodicals:—"As the establishment of public baths has impressed a new feature on one branch of our social institutions, the researches connected therewith are elucidating this subject every day more and more. Although for the healthy and vigorous any bath may be similarly beneficial, it has been found, of late, that bathing-tubs lined with zinc will not act beneficially on persons labouring under nervous disease, the number of whom is very considerable. Copper-lined tubs will be better for debilitated consti-

tutions; better still those made of iron glazed or enamelled. A new species of baths has also been tried, to which its originators have given the name of 'Artificial Volcanic Baths.' Besides their great efficacy, they are likely to benefit the owners of small iron furnaces, and the people connected with such works. A large lump of red-hot scoriae is taken out of the furnace and plunged in the bathing-tub filled with water. The effect of the melted scoriae and the grains of iron contained therein produced on the water is very great; so that even flames are issuing at times therefrom, all which results in the dissolution of many of the alkaline and metallic substances contained in the scoriae, of which iron in the state of a sulphate and carbonate is the most important. The water acquires quite a brown colour, and is richer in mineral ingredients than any known natural therm."

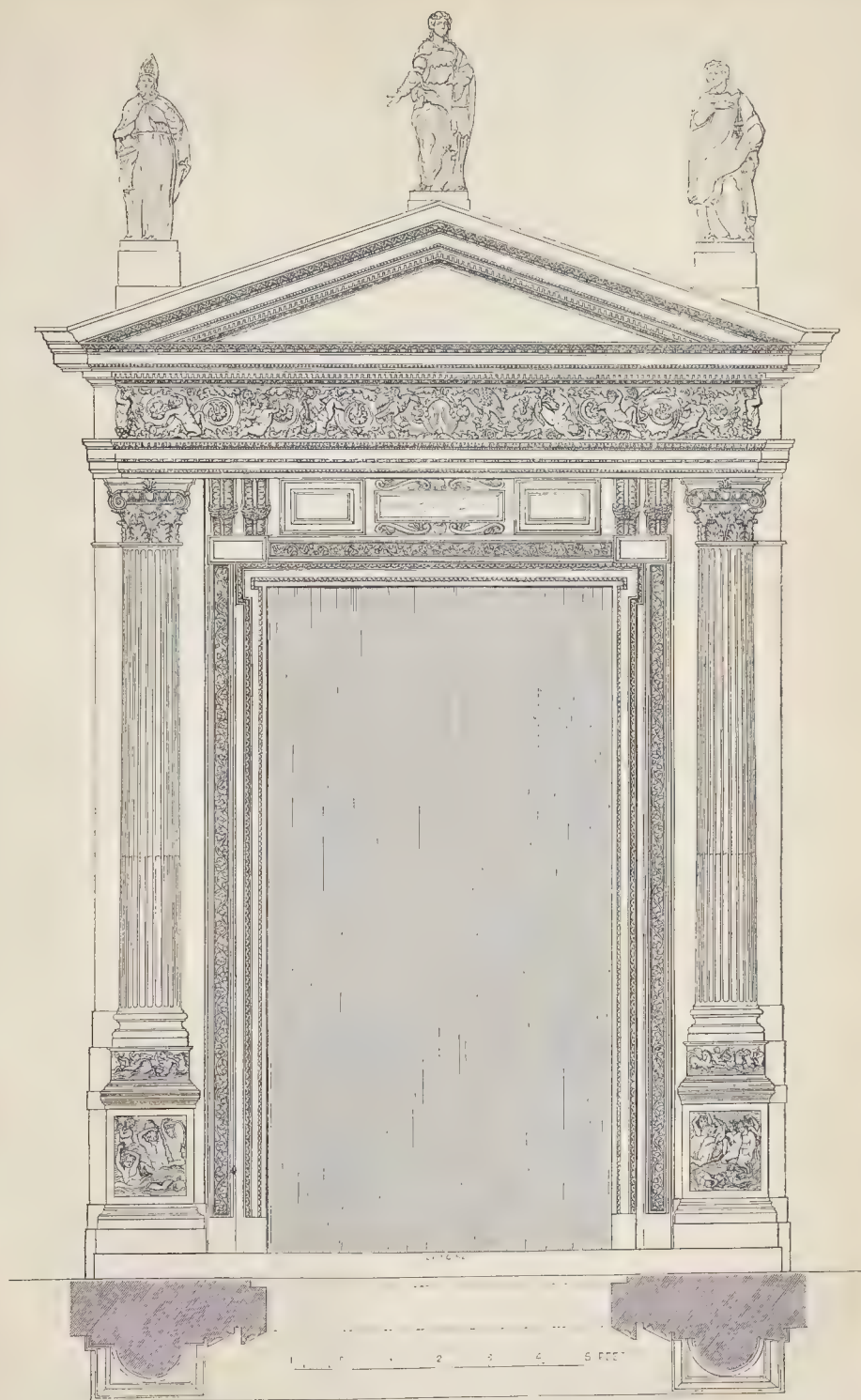
New Building for the Philharmonic Society, Brussels.—The works of this long-wished-for edifice are in active progress, and exhibit a fine arrangement of the saloons, as well for festivals as daily usages. It has appeared to be a general wish in the Belgian capital that the great literary and musical associations should hold some of their meetings in the open air, and the building of the Philharmonic Society is connected with a fine garden, situate, as it were, in the centre of the town, affording a commodious access to all parts of the building. If, as is proposed, a winter garden should be arranged here, the music could be heard from all sides of the locality, and in all seasons.

Aix-la-Chapelle.—The king has ordered that the great hall of the Hôtel de Ville, wherein many an emperor and empress have been crowned, shall be restored to its pristine splendour. M. de Cornelius has received an order for making the cartoon for a glass painting destined for the cathedral of Aix-la-Chapelle, to represent the coronation of the Virgin Mary. The picture will be 25 feet high; but as the huge window reaches a height of 80 feet by 17 of breadth, the remainder of the space will be filled up by golden stars on a sky blue ground.

SCULPTURED DOORWAY FROM THE CATHEDRAL OF CATANIA.

This very elegant doorway is on the northern side of the cathedral of Catania: it is of marble, and very beautifully executed. The mouldings are well profiled. It is dated 1577. Mons. Hittorff, in his fine work on the monuments of Sicily, thinks it must have been executed by the celebrated Gagini, but in that case, as he died six years before the date given, the final completion of the doorway must have been retarded by some circumstances. The introduction of the socle beneath the pedestal of the columns (not in good taste), leads to the inference that the latter belonged to some other monument, and were worked in.

APPARATUS FOR SUB-MARINE WORKS.—M. Cavé has presented to the Paris Academy of Science a memoir on a diving-vessel, of which there is now a model at work in the Seine, opposite the Institute. On the deck of a dredging steam-vessel a large chamber has been fixed, five metres high and seven metres broad. In the midst of this space is a circular opening, which passes through the vessel, and in which slides a cylinder, in the way of the joints of a telescope, reaching to the bottom of the river. The junction with the air-chamber is made by a slough of leather fixed at one end on the deck, and on the other to the extremity of the cylinder. If the tube be thus arranged, it suffices to compress the air in the chamber: the water then rushes off at the under sides; a portion of the bed becomes dry, and the workmen can move about with ease. A sort of ante-chamber, with two doors, and performing the functions of a sluice, allows access to the main chamber, without interrupting the work. The model now in operation on the Seine is but one of a reduced scale, compared with two made by M. Cavé for the works of the barrage of the Nile.



SCULPTURED DOORWAY FROM THE CATHEDRAL OF CATANIA.

[1877.]

YANKEE NEWS.

Bricks.—We find in the *Portsmouth Journal* (U. S.) a notice of the process of making bricks by steam practised at the establishment of Messrs. Woodworth and Moore, of Boston. The clay is ground up, pulverized, and bolted as fine as meal. In this state, entirely dry except moistening the moulds to prevent adhesion, the clay is turned into eight boxes of the size of bricks, and they undergo a pressure of six hundred tons. The machinery then raises the bricks and pushes them forward while the moulds are filling; and then another revolution produces eight more. Seven revolutions are made in a minute, producing fifty-six bricks, so hard when taken from the machine that wheelbarrow loads of eighty are packed up together without marring them in the least. The bricks, says our authority, come from the kiln with a beautiful, smooth, and straight surface, equal to any pressed bricks we have seen brought to our market. With this machine twenty men can make thirty thousand bricks in a day. There being no evaporation, the burning can be made with a great saving of fuel.

Artificial Leather.—A steam engine of six or eight horse power is erected at Abington, Mass., for grinding up the chips and shavings of leather which are cut off by the shoe and boot-makers, and which have heretofore been burnt or thrown away. These are ground to a powder resembling coarse snuff, and this powder is then mixed with certain gums and other substances, so thoroughly that the whole mass becomes a kind of melted leather. In a short time this dries a little, and is rolled out to the desired thickness—perhaps one twenty-fourth of an inch. It is now quite solid, and is said to be entirely water-proof.

Galvanic Printing Press.—A patent is being taken by a Mr. Foreman for a printing press, moved and regulated by galvanic magnets. His paper works upon a reel, and is continuous, like the telegraphic coil. The paper passes over the type on a cylinder, and when one side is worked the paper is reversed, and the other side printed with a perfect register, and the sheets are clipped apart as they come from the press by an ingenious contrivance. According to American authorities, "There is no limit hardly to the speed at which this press will work: its exactness is beyond anything known in this line of machinery; and, what is better than all, Mr. Foreman says he can put up the largest sized press at a cost of not more than 500 dollars." Mr. Foreman is a practical printer, and at present a citizen of New Boston, Illinois.

Boston v. New York.—The following statement of the relative wealth of Boston and New York has been circulated:—The population of Boston by the late United States census is 138,788: the real and personal estate as established by the late State valuation, is 213,310,067 dollars; making for each inhabitant of Boston the sum of 1,537 dollars. The population of New York by the United States census is 515,394: the valuation of the real and personal property, as ascertained the present year, is 320,108,358 dollars; making for each inhabitant of that city the sum of 621 dollars.

Art-Patronage.—The newspapers are calling on the States to give enlarged encouragement to art. The *Home Journal* says, in an article on the subject:—"Every State capitol should pay honour to the names that throw a special lustre upon the local sovereignty to which they have belonged. Something in this way has already been done—by none more than by Virginia. Years ago, while Washington lived, she secured a life-like impersonation of her great son, by sending to France for the services of Houdon; and the figure that now stands in her public hall at Richmond, is a treasure of memory and of art which all the other treasures of the world could not buy from her. She has lately, also, given an order to Crawford for a colossal group illustrative of the fame of the State—consisting of an equestrian statue of Washington, surrounded at its base by statues of six other Virginians—Marshall, Henry, &c. Besides the several States, it is an appropriate and legitimate object of the

expenditure of cities to decorate the squares and public buildings with the figures of those exalted persons who, in past times, have made such cities the particular theatres of their reputation. Why has nothing been done in this way by New York? There once stood in the Exchange a statue of Hamilton, which was destroyed by fire. Why has it not been replaced? There ought to be in this New York of ours, upon the summit of a pillar, visible widely over the waters, a figure which should announce to the European that he is about to tread the land of Washington. There ought to be in our streets and parks statues to remind us all that we dwell upon a soil once dignified—for ever benefited—by the virtue, the learning, the ability, the patriotism of Hamilton, of Jay, of Schuyler, of Livingston, of Hobart, of Kent. If orders were given by our municipal and state authorities for works that are properly required for the adornment of our cities, and called for by the duty which the public representatives owe to the memory of the "great men" that "have been among us," our artists would find all the patronage that they could require, and art in this country would soar far beyond the level it has ever yet attained."

A Gas Engine to supersede steam.—The Cincinnati papers state that a Mr. Solomons, of that city, has invented a gas engine, which is to supersede steam. "With common whitening, sulphuric acid, and water he generates the gas. Five dollars' worth of these materials," says the *Nonpareil*, "will serve to propel a boat across the ocean half a dozen times, and if there be no leakage it will keep the boat in motion until it wears out. . . . The result is, that it requires 1,800 dols. of expense to run a boat from Cincinnati to New Orleans and back again, with the old engine, while this one will do the same work for 50 dols. Mr. Solomons has his engine in operation. It is of 25-horse power, and raises 12,000 pounds up and down five times in a minute. He has it so planted that its power may be seen. The engine is so constructed as to be self-sustaining, manufacturing and pumping its own gas, while a small furnace, almost half as large as a common furnace for heating flat-irons, furnishes all the heat he desires. A handful of charcoal does the work, and his boiler is about as large as a good sized cannon-ball." The carbonic acid gas engine itself is no great novelty: neither is this mode of generating gas. One main element of power in the present instance is heat, 20 degrees of which are said to give a pressure of 1,080 lbs., 40 degrees 2,160 lbs., 80 degrees 4,320 lbs.: that is, 132 degrees less than boiling heat gives a greater power with this gas than 452 gives by converting water into steam.

BLACKFRIARS AND WESTMINSTER BRIDGES.

It is held, to be forewarned is to be forearmed. Now, come what may to these two great public structures it never can be said your columns have been closed against such warnings. In Mr. Walker's evidence taken before a committee of the House of Commons, July 1850, he says, "Supposing for a moment we have next winter, or any winter, a great mass of ice coming down the river, I would not be answerable it would not sweep away all the piles," and down with them the bridge (Westminster) would assuredly fall. Should that happen, what then becomes of Blackfriars? It has been further stated that the bed of the river in that part has lowered six feet since the last great repair: if that be so, let any one turn to the soundings accompanying Mr. Page's report in 1846, and they will then be fully satisfied the alarm now expressed is not without reason. Committees have been sitting at intervals during the last seven years; evidence of the highest character been brought forward; and this year a royal commission has been appointed doubtless with a view of considering the evidence produced before these commissioners, and yet nothing has been done: the apathy of public authorities is really surprising: two more important thoroughfares connected with the traffic of the metropolis than cannot be, and yet in the face of the evidence quoted, we must encounter

the risk of another winter. It would almost seem the delay was for the purpose of carrying out the scheme of a temporary bridge at Westminster, or it may be in the hope of the bridge being carried away, and thus to compel the immediate use of Charing-cross and Vauxhall bridges, thereby habituating the people of Westminster to the change of traffic, and paving the way for the scheme of the double bridges suggested in 1846.

A. Z.

ENCROACHMENTS IN ST. PANCRAS.

I PRESUME that the state of our principal thoroughfares is a subject deserving of your notice: therefore I beg to call your attention to the New-road and City-road, from Trinity Church eastward. For many years past I have observed with great regret the progressive encroachments on the gardens in front of the houses, particularly in those parts near the end of Tottenham-court-road, by the erection of shops, &c., close upon the footway; so that this once open thoroughfare is now contracted into the dimensions of an ordinary street; excluding in a great degree the air and view, and destroying its proper and distinguishing character as a kind of Boulevard.

The increasing value of the frontage for the purposes of trade is obviously the inducement to these erections, and it would be useless to urge against this private advantage the consideration of the public good: I had, therefore, observed and deplored the growth of this evil as uncontrollable, and without remedy. I was surprised, however, to find that it has been contemplated and provided for by express legislation. The Act 7 Geo. 4, for consolidating the metropolitan roads distinctly prohibits the erection of any building within 50 feet of the New-road, or within 40 feet of the City-road, on any new foundation. Unfortunately a subsequent Act transfers the management of these roads to the parishes through which they pass, since which this salutary provision has become a dead letter.

Such a result is not to be wondered at when you consider how the vestries are constituted; some of the members probably being the transgressors, and the majority unwilling to incur any expense in litigation: at all events, the fact is that these encroachments have been steadily advancing, and during the last year or two at a greatly increased rate; so that if some other authority do not interfere, the mischief will go on extending, until this once fine thoroughfare will be converted and degraded into an ordinary street.

Whilst such large sums are being expended in public improvements, widening streets, and creating new lines of communication, surely it is most inconsistent and unreasonable to allow this counter improvement, or nuisance, to take effect under our eyes, particularly when means have been provided to prevent it; but such is actually and unfortunately the fact.

Some years ago it was proposed to buy up and remove the public-house which projects so awkwardly at the corner of the New-road, and Hampstead-road; but now it is become only one part of a mass of obstructions, too large to be bought, and being illegal, ought no longer to be tolerated. I hope, Mr. Editor, that you will assist in arousing the public to the assertion of their rights: then I have no doubt that they will prevail against the apathy or private interests of the local authorities.

F. B. A.

It may not be irrelevant to advert to a specimen of parochial administration, as now exhibited to the annoyance of the public in a part of the New-road. The wood pavement has been allowed to become so bad that a barricade was erected, and her Majesty prevented from passing that way in her progress to the Great Northern Railway station; and it still remains closed, without even the commencement of repair! At the same time it appears that the vestry have been making an abortive attempt to extend their jurisdiction over the roads and pavements by a Bill to supersede the whole of the seventeen boards of commissioners by whom they are at present managed, with the exception of the New-road, and some other portion of small extent.

shoulders of a king, is a crowned female figure on a knot of foliage. The other two have sitting figures. Of the ends to the subseal, or lower stalls, there are eight examples, all differing in the carving, but similar in form. The stalls are without canopies, and are probably of the fourteenth century. H.

DREDGE'S SUSPENSION BRIDGE.

A CORRESPONDENT says,—"The report of the failure of the Dredgeian bridge, across the river Leven, Lochlond, which found its way into most of the public journals some time ago, was incorrect. The fact of the case was simply this:—the centre links of one of the main chains broke in consequence of a flaw in the iron, and the unnecessary use of centre links in the bridge. But notwithstanding all this the traffic was continued, and, without interrupting it, Mr. Dredge has since removed the centre links of the other main chain, which has effected an improvement, and makes it substantial and inflexible. This was the second large bridge erected under the patent in 1841; and it is the only instance of fracture in all the bridges the patentee has erected. Indeed, how seldom is it that an approximation to truth is arrived at in the first or second attempt of carrying out any important thing in mechanics (the steam engine, &c. to wit), but often from the smallest accident springs the most useful discovery, which in this instance was of so trivial a nature that it did not even alarm the persons who were upon the bridge at the time the links broke."

We will take this opportunity to mention that a "Description of Suspension Bridges on Dredge's Taper Principle," has just now been issued by Messrs. Young and Co., which will enable those who may have occasion to erect suspension bridges to examine into the merits of the system.

LODGINGS FOR WORKMEN.

RESPECTED FRIEND,—The manifold treatises on *model lodging-houses*, from time to time published in thy print, have much gratified me and others who, like me, are associated for the prevention of cruelty to animals; for thy disquisitions, begun now some years back, have found an echo in the press at large; and it hath become fashionable to patronise and advocate such institutions.

Our society in favour of quadrupeds hath done much in favour of silent suffering since its establishment some twenty years back; but until thou didst raise thy voice, no society was ever formed for the abatement of cruelty towards bipeds—I mean the human animal. There are grievances and woes more cruel than flagellation, and the more sensitive animal, man, intended by the Creator to inherit the earth, and to have dominion over every living thing, is the creature doomed to endure those refinements of suffering! The beast is protected by law from merciless wails: the same law protects from violence by blows the rational animal; but hitherto (in what may be called the infantine state of humanity) the law hath had little effect in correcting "man's inhumanity to man."

It irketh me to reflect upon the many, as yet, unredressed evils under which our fellows in community still labour; and that these evils should be, and actually are, more unredressed if not unmitigable in a nation like ours, the most civilized, the wealthiest, and, shall it be said, the most Christian!

Of these, the chiefest is the want of suitable habitations, and those comforts that our state of social advancement requires. There are poor who have not always been poor,—what is their condition when driven to the exigency of lodging a family in two rooms?—what, then, if reduced to one room?

Every human creature is primarily entitled to the free and unrestricted enjoyment of God's great elementary endowments—*light, water, and air*. This is conceded by all who have treated the subject, for the argument is irrefragable: therefore it is the duty of every government, of every municipality, in the first place to assure to every living subject the free exercise and enjoyment of these natural gifts;

they are shed abroad upon creation, and should no more be made the media of taxation than the breath of the nostrils. There are, however, in our adventitious state of existence in crowded cities, rights as indispensable as they, and one of them is the right to a *fitting location*.

Thy descriptions of model lodging-houses show that the sense of the time is moving in the right direction: that of St. Pancras is, indeed, a model amongst those first founded, and it is devoutly to be hoped that those proposed for the new thoroughfare, Victoria-street, will be worthy of the designation of that great conduit, and of our excellent and virtuous Queen. But, most worthy Editor, I would suggest to thee (what one of thy correspondents, "Quondam," hath before stated in *THE BUILDER*), that living-rooms for the poor ought to be had and provided for them at a rate not exceeding 1s. per chamber (including accessories) per week.

A poor working man, or a mechanic with 20s. a week, and family of only three, can barely afford that sum: add to it 1s. 6d. for fuel (the least possible allowance), and 6d. for soap, and but 15s. remain to meet all the requirements of food and clothing, not to mention casualties and sickness.

The poor were from the beginning, but their position in a capital, and amongst a community of unparalleled wealth and luxury, is immeasurably more galling, as only their *extremest wants* are at all remediable.

It is well for the pious and charitable to devote money to the construction of lodging-houses, from which they derive 5 per cent. profit, and more than 5 per cent. is returned by investment in model lodging-houses: still it would be better if partly *elemosynary* gifts, and partly invested capital, were dedicated to these objects, restricting the returns on borrowed funds to 5 per cent. In such case, suites of four chambers of fair dimensions might be rented at 3s. a week.

From a computation made by me on the average rents of houses (in one tenement) it is clear that 5l. per chamber (of large dimensions) is the proportion ordinarily paid:—for example, a six-roomed house with decent and commodious adjuncts, may be rented for 30l. a year—an eight-roomed house for 40l.—a ten-roomed for 50l.—and so on: such commonly have curtilages and even gardens: this amounts to 2s. per chamber per week for highly-finished mansions. This computation only relates to houses of the ordinary class, and not to first-rate situations; for such positions will often bring four times the value of the structure in rent.

As a large part of the first cost of a house arises from the high finish, external ornamentation, and internal decoration,—so plain dwellings, of a substantial character, with moderately proportioned, plain, and wholesome apartments, might, in proportion to extent and number of chambers, be erected so as to let for much less.

All structures of this kind should have a kitchen in each suite, with other requisites (as in Paris) to preserve the privacy and segregation of each family: at the same time, other establishments suitable to single persons, such as that of Bloomsbury, might secure increased comfort and economy, perhaps through the general purveyance of one kitchen and one cook.

No one can fail to admire the pretty evidence of poor habitations in Hyde-park: the security from fire, neatness, ventilation, and compactness reflect credit on the good prince who hath made the condition of the poor his study. Whether he designed them or not matters as little as whether he personally designed the Great Exposition: it is enough that royal patronage bestow on such matters their care and regard,—yet would I put it to thee, friend editor, whether this sample be not a toy, too expensive in construction, as also too stinted in capacity: thou wouldst not like a sleeping room 9 feet by 6 feet—but one step from the bed to the wall: besides, the height is deficient. These might suit a rich man's park grounds where expense could be of no moment.

TABITHA QUIET.

THE RIGHT OF THE CONTRACTORS TO THE COMMISSIONERS OF SEWERS TO CONSTRUCT DRAINS, AND CHARGE FOR THE WORK DONE OVER THE CONTRACT PRICE.

WHITECHAPEL COUNTY COURT.—(TUESDAY).
DETROCK & GRENIER.

The plaintiff in this action is a builder and contractor to the Commissioners of Sewers for the eastern division of the metropolis, and the defendant is landlord of some houses in Chapel-court, St. George's in the East. The sum sought to be recovered was 71. 7s. 1d.; and defendant had paid 2l. into court as sufficient for the work done.

Mr. Fisher, solicitor, appeared for Messrs. Detrick, and called Mr. Alder, who said he was principal clerk to the plaintiffs, and took instructions from the defendant to make a drain through a passage leading into a court. The contract was to be 2l., and whilst making the drain the men unexpectedly opened into a disused cesspool. The case was laid before the Commissioners of Sewers, who sent their clerk of the works, and who ordered them to go lower. Upon doing this it was found the next house was giving way. At this time they had sunk 10 feet according to the surveyor's orders, but upon finding the accident they rose, and were obliged to fill the cesspool up. Had been a great many years in the employ of contractors, and could positively state that the charge made was below the cost. They were obliged to act up to the instructions of the officers of the Sewers Commission, and could not deviate from their levels or courses of drains. Mr. Grenier had offered him 2s. 6d. to fill in the cesspool and not report it to the commissioners.

Two of the contractor's workmen deposed to the necessity of sinking the drain, in consequence of finding the cesspool, and further said that the defendant had repeatedly said he would pay all expenses.

Mr. Cox said that he held under lease the adjoining houses of defendant, and that he represented to the Commissioners of Sewers the nuisance of defendant's houses from want of drainage: in consequence of this the drain was ordered to be made by their contractors. His house had not yet done settling, and as defendant had no right to the passage, he should look to him for any damage he had sustained, and not to the contractors.

Mr. Grenier said it was entirely from want of skill on the part of the contractors the increase of work had occurred. They excavated too low, which brought the walls down. Instead of 10 feet deep, 4 feet would have been sufficient. He knew nothing of the cesspool, and considered the power of the Sewers Commissioners most arbitrary towards owners of property.

Mr. Reynolds said the defendant called him in to look at the job, and he offered to take it for 3l., out of which he should have had to pay the commissioners fifteen shillings. He said he would do it for 4l. if "the Sewers" would assist, but he was told they would not under the circumstances. If their contractor did the work they would cleanse the drains, but not otherwise. Believes Mr. Detrick to be a large contractor for sewers. The power of the commissioners is so great that if a builder does not carry out their instructions he is liable to be fined 20l. The plaintiffs were bound to do what the clerk of the works directed. Thinks they went too deep.

Mr. Fisher replied and pointed out the responsibility of his clients, who had clearly acted up to the orders of the authorities.

His Honour said the practical experience of Mr. Alder showed that no more work was done than was required, and he had no doubt if the Commissioners of Sewers had ordered twenty times the amount of work to be done the defendant would have been liable for the expenses. He must, therefore, order the amount sued for to be paid in a month. Verdict for plaintiff.

The court was crowded with builders of the East End, who did not appear to relish the judgment.

THE IRON TRADE.—Returns of the Board of Trade show that the export of iron, and especially of manufactured iron, continues to improve. The value of the foreign transactions in July was 531,014l., being an increase on the same month of 1850 of 62,738l.—The Cradley chain-makers have struck for an advance of wages, or rather for a return to the higher prices they have till lately been receiving. It is expected that the turn-out will be general.

VICTORIAL STATUE AT GLASGOW.—Upwards of 3,000l. have been collected for the proposed equestrian statue of her Majesty at Glasgow.

Books.

A Treatise on the Substantive Law relating to Letters Patent for Inventions. By HENRY LUND, Esq., M.A., Barrister-at-Law. Sweet, Chancery-lane, 1851.

THIS is, strictly speaking, a law book, containing a full account of the present state of the law as regards patentable inventions, and professing to answer the following questions:—“What inventions can be patented? What are the nature and details of the contract which the inventor is said to make with the Crown? What are the essentials of a specification of an invention: in other words, What is the nature of the documentary evidence required to define and circumscribe the exclusive right to any patented invention? What considerations should be kept in view on the sale of, or other dealing with, Letters Patent? And, lastly, What amounts to an infringement of a patented invention?”

The formalities preceding the grant of Letters Patent (as the author observes) will no doubt be shortly changed for some simple procedure; and the practice in actions for infringements, and in proceedings by *scire facias*, which belong to the general practice of the law, is also under revision. These alterations, as soon as perfected, will be added to this work in the form of an appendix.

As to the law of procedure, the author thinks that no change can be too great or decisive, provided it combine certainty with expedition: meantime, the present volume is designed to prepare for the consolidation of the substantive law, and to provide inventors as well as lawyers with a methodical and complete yet concise treatise on this branch of the law.

Elements of Spherical Astronomy, illustrated with appropriate Diagrams and practical Examples. By WILLIAM TURNBULL, Imray, Minories, London, for the Proprietor.

THIS laborious little work is designed to facilitate the application of spherical trigonometry to the calculation of astronomical and geographical problems. It comprises the stereographic projection of the sphere on the planes of the meridian, horizon, equator, ecliptic, and the equinoctial and solstitial colures, with tables of formulæ and rules for calculating the declinations, right ascensions, latitudes, longitudes, amplitudes, azimuths, and distances of the heavenly bodies; the times of their rising, setting, and culminating; with various other particulars interesting to students. The tables of formulæ from which the rules of calculation are derived are the same as those given in the author's “*Treatise on Spherical Trigonometry*,” and we know enough of the author and his labours, as indeed do many of our readers themselves, to be assured of their accuracy.

By the way, we may here incidentally remark that a new field for some fortunate mathematician to immortalise himself in appears to be opening up, not only in those doubts expressed by Herschel, Nichol, and other astronomical authorities as to the sufficiency of the law of gravitation to explain one of the most prominent facts in the mechanism of the solar system, namely, the circularity of form in the planetary orbits, but in various other defects of the orthodox doctrine, which could readily be pointed out. With reference to the former, we observe that in course of last week Professor Nichol drew particular attention to the fact in a lecture delivered at Liverpool and reported in the *Albion*. “Gravitation,” he said, “was the great law of the solar system, but there were certain features of that system which the law of gravitation would not explain. There was the peculiar disposition of the planetary orbits, for example, which were all circular, or nearly so. The mere law of gravitation would equally have sustained them had they not been so. Again, they all moved round the sun in the same direction: gravity had nothing to do with that. This was also the case with regard to the satellites, with the singular exception, however, of the planet Uranus. Further, all the planets turned round on their axis in the same direction as that in which they moved in their orbits. The same law applied to the satellites. Here were a number

of arrangements which required explanation.” As to the Professor's own explanatory hypothesis, we are not a little surprised to find him, who smashed the nebular theory of the elder Herschel, picking up the fragments, and endeavouring, therewith, to reconstruct the solar system—and of course all other starry systems, made up also, as he himself conceives them to be, of suns and their satellites, something like our own. Whatever be the merits of this hypothesis, however, it is not the only one, neither is it the best, that is open to mathematicians, as could easily be shown were this the proper place to do so. Other questions will be found to be involved in the same explanation when the true hypothesis is worked out on mathematical principles: such is the question of the consistency of planetary matter itself, whether solid or only encrusted molten matter, a question to which recent observations on Saturn's rings add great interest: such, too, is the question of the true extent and consequences of the secular ecliptical changes, ranging widely as they do in the different planets, and capable as they seem to be of even affording geological explanations of an extensive order, if not also of converting geological into astronomical periods, a desideratum for which the Royal Society many years since offered a prize.

The Question of Unreciprocated Foreign Copyright in Great Britain; with notes. By H. G. BOHN. London: Bohn, York-street, Covent-garden, 1851.

THIS is a reprint, or at least a report, of the speeches and proceedings at the public meeting held at the Hanover-square rooms on July 1st, 1851, Sir E. Bulwer Lytton, Bart., in the chair. The great purpose of this meeting, and of the report of it here published, as well as of the energetic editor's notes, is the promotion of a law of international copyright: there may be different opinions as to the best mode of realising or enforcing such a law, but that authors ought, at least, to have as definite and permanent a property in their own writings as inventors have in their own patented inventions, is nothing but reasonable: if foreign nations, however, by first, or simultaneously, publishing their works in this country, take the benefit of our statutes, while in their own countries they plunder British authors without remorse, and allow of no such protection to them as they themselves enjoy here, the sooner they are made sensible, in some way or other, of the base iniquity of such practices, the better—for us and them too.

The Cottage Homes of England; or Suggested Designs, and estimated Cost, of improved Cottage Erections. By J. W. STEVENSON. London, 1851. Houlston and Stoneman.

IT is more consonant with our feelings, when we find a book to be what we cannot recommend, to let it pass by without comment, than to point out its defects. We should do so in the present case; but when we find the author stating of the various works that have recently issued from the press on “*Improved Dwellings for the Poor*,” that “*the whole of them are deficient*,” and that his is to meet the want; and further, that he advertises to supply designs and superintend their erection, we feel it to be our duty, as well to those architectural practitioners who have spent time and money in acquiring a proper knowledge of their profession as to the public, to say that this work does not prove Mr. Stevenson competent to be a teacher.

The Paperhanger's and Upholsterer's Guide. By JAMES ARROWSMITH. London: Dean and Son, Threadneedle-street.

THIS little book is the work of a practical man of long experience, and contains much information that will be found useful by the young paperhanger, and, indeed, by some old ones too,—for unfortunately, through the slapdash system of modern speculative builders, a number of men have been brought into the trade wholly ignorant of the business, and incompetent to hang paper properly. To such of these as feel their deficiency, and would do better if they could, we recommend Mr. Arrowsmith's

inexpensive little guide, the chief fault of which is, that it does not go far enough.

A Glossary of Terms used for articles of British Dress and Armour. By Rev. JOHN WILLIAMS M.A. London: Pickering, 1851.
On the State of Agriculture and the Progress of Arts and Manufactures in Britain during the Period and under the Influence of the Druidical System. By Rev. JOHN JONES, M.A. London: Pickering, 1851.

THESE are mainly reprints from the pages of the *Archæologia Cambrensis*.

Miscellanea.

PLAN FOR EXTINGUISHING VESUVIUS.—The extraordinary results of Mr. Goldsworthy Gurney's operations on burning coal districts appear to have become transformed in Germany into the alleged formation of an English joint-stock company to extinguish the volcanic fires of Mount Vesuvius, and redeem its dangerous districts into valuable agricultural fields! The jest is a good one, doubtless; but it would have been still better, were it not the fact that the very agent whereby the alleged end was to be effected, namely, a canal of water, to be turned into the bowels of the mountain, is just that to which geological authorities attribute the excitement of volcanoes. Sir H. Davy explained their action by supposing that the interior contained such metalloidal substances as potassium, which actually burns and blazes in water, while decomposing it; and, although Sir Humphrey is said to have renounced that idea in after-life, we know that red-hot iron and other substances will also decompose water and produce explosions. Active volcanoes are generally near the sea, and blind or extinct ones where there is no access to water. Moreover, there is great probability that volcanoes are but vents to the fiery molten matter which is believed by geologists to constitute the whole mass of the globe, the crust of which, as represented in a diagram, for instance, in the “*Penny Cyclopædia*,” and based on calculations of the increase of heat in mines according to the depth, is no greater in relative thickness than the shell of an egg is to the mass of the white and yolk!

A GIGANTIC UNDERTAKING.—It is already proposed to erect a granite bridge, above two miles long, “with bazaars, shops, &c., and a covered colonnade,” across the Severn at Black Rock or New Passage, to connect Monmouthshire and South Wales with the West of England and Bristol! So precious and scarce does building ground appear to be in that overcrowded district, that the very piers and abutments are to be made “habitable”—by the fishes we would have thought, were it not stated that it is in “the upper parts” only that these habitats are to be provided—for the gulls therefore it must be. But whence the twice two miles of shopkeepers are to come, much less their customers, we are not informed. Yet “a dividend of ten per cent. would be certain on the capital obtained,” of the amount of which to be called for, however, we can find no trace, although it “would of course be very great,” especially considering that the bridge is to be 140 feet wide, with a double line of rails and a common carriage road, and with arches of 324 feet span, rising 130 feet above the highest spring tides, so as to allow ships of the largest size passing at all times. The “shops, bazaars, and colonnade (with open and well-fenced promenades on their roofs at an elevation of 200 feet above low-water mark) may be constructed principally of glass and ornamental metals, after the manner of the Crystal Palace, so as to afford conveniences for the display and sale of artistical, manufacturing, and natural results of all kinds, thereby constituting a sort of permanent ‘Great Exhibition’ of the products of all nations—and for monuments and curiosities of every description—and the bridge itself, like the Glass Palace, would be the greatest monument and curiosity of the whole!” especially when the glass became as totally cracked as the “...antic undertaking” itself is, on “the whole.”

BATHS AND WASHHOUSES.—The following is the London return for the month ending August 30th:—

ESTABLISHMENT.	BATH DEPARTMENT.		WASH-HOUSE DEPARTMENT.	
	Number of Bathers.	Total Receipts.	Number of Washers.	Total Receipts.
The Model, Whitechapel St. Martin-in-the-fields...	10,910	284 6 8	2,843	6,017
St. Marylebone	24,573	362 10 5	3,699	7,791
St. Margaret and St. John, Westminster	36,656	530 18 7	1,017	4,320
Westminster	17,694	200 11 1	1,328	2,696
Totals.....	89,833	1,154 6 9	9,487	20,957

THE NEW PARK FOR FINSBURY.—We are told that this project is received favourably by the Government. The spot selected is equidistant from Regent and Victoria Parks. It is proposed that one entrance shall be at Highbury-place, and that the park shall commence at Highbury-crescent, passing along the right side of Holloway and Hornsey roads to the Seven Sisters-road, and (taking an easterly direction along this road until it joins the Green-lanes, and then proceeding south of these lanes) including all the space of fields to the west of Newington-green; afterwards inclining towards the New River, which is proposed to cross north of the "Horse-shoe," excluding the Birmingham Junction Railway, and extending to the bottom of Highbury-grove, where a second entrance may be formed, completing the inclosure: thus the park will be bounded by four roads, without a public road passing through it. The park will cover an area of about 150 acres, and the estimated cost for the purchase of the freehold is 150,000*l*.

THE SMOKE NUISANCE.—GLASGOW.—We are glad to hear that a committee of the Glasgow Municipal Police Board for the abatement of the smoke nuisance, agreeably to instructions given at a late meeting of the Board, have appointed an "Inspector of smoke," whose duties will be to demonstrate the practicability of consuming sooty exhalations, and, in the event of smoke producers remaining obstinate, to bring them before the magistrates, who, under the provisions of the Local Act, have full powers to compel the removal of the nuisance. We must take this subject seriously in hand presently, for London.

GUTTA PERCHA TUBING AS A CONDUCTOR OF SOUND.—The laws of acoustics are confessedly obscure; you have endeavoured to throw some light on them by able articles from your own pen and that of your correspondents: the following facts may be found useful as a slight contribution to the science. Some few years back, my hearing having become very defective and surgical aid being vain, I was compelled to have recourse to instruments to assist my hearing. To my very great disappointment, however, I found the benefit derived from them very trifling. I read all that medical men had to say on the subject, and tried all the various advertised instruments, but found them all alike defective on one point: the drawback was this, that although they certainly increased the volume of sound, yet what was gained in power was lost in distinctness. I then tried various experiments myself, and the result satisfied me that medical writers, in recommending the use of gong metal, bell metal, &c. for the construction of hearing tubes, were entirely wrong; excellent as they may be as conductors of sound, they are decidedly the very worst receivers. Deaf persons find that however loudly the sound may be carried to the ear, yet there is no distinctness in it, the sound being massed together, the words running one into the other, and making, as it were, a *blot* of sound. I believe the cause to be this: all metals vibrate, more or less: the waves of sound striking against the mouth of the trumpet cause a slight vibration, and this continuous vibration is the origin of the indistinct-

ness: hence all acoustic instruments should be of a non-vibrative substance, and this accounts for the property gutta percha has of conveying sound. But it will be found that it is not confined to gutta percha. It may, I think, be a question, how far the plan of hollow walls in modern buildings may affect the hearing, but that the fact of vibration, in addition to reverberation, being the undetected cause of failure in many buildings erected for various vocal purposes, I think may readily be believed.—R. G. B.

PATENTED CONSTRUCTION OF ROADS AND PAVEMENTS.—A French gentleman, M. H. F. Marie de Pous, of Paris, has enrolled a patent in this country for the "combination of certain substances, and the employment of certain processes, applied to the construction of roads, streets, pavements, and ways, with, or for, the running of locomotives." The processes consist chiefly of spreading thin layers of material, such as ironstone in a granular state, and then watering and rolling, repeating the layers to the requisite thickness. In certain cases solution of sulphate of iron is used for watering, and the ironstone combined with volcanic schistus gluten. "The substances best suiting this formation of pavement are iron ore, in slate or stone, reduced to small pieces: granulated cast-iron, either broken or in chippings or shavings; iron or other metals, reduced to pieces or shavings; volcanic schistus, known as volcanic gluten, after having been subjected to the action of the fire, and pulverized and converted into cement; all cements and hydraulic limes; lime plaster, sand stones, iron drosses, slags, bitumens, asphalt, sulphur, sulphate of alumina, or alumina, and sulphate of iron, previously observing that the ground is macadamised and rolled, or otherwise hard pressed, to produce a sufficiently permanent and compact mass, to sustain the traffic of the road or way. In all cases the substratum of this character is required, as the material to form the surface is not applied in sufficient thickness to ensure its remaining perfect without a previously prepared permanent bed." The several combinations of materials, the patentee has described separately, as so many individual processes.

TO GET RID OF COCKROACHES.—Mr. Samuel Tewkesbury, of Nottingham, in a letter to the *Manx Sun*, says, "I beg to forward you an easy, clean, and certain method of eradicating these loathsome insects from dwelling-houses. A few years ago my house was infested with cockroaches (or "clocks," as they are called here), and I was recommended to try cucumber peelings as a remedy. I accordingly, immediately before bed-time, strewed the floor of those parts of the house most infested with the vermin with the green peel, cut not very thin from the cucumber, and sat up half an hour later than usual to watch the effect. Before the expiration of that time the floor where the peel lay was completely covered with cockroaches, so much so, that the vegetable could not be seen, so voraciously were they engaged in sucking the poisonous moisture from it. I adopted the same plan the following night, but my visitors were not near so numerous—I should think not more than a fourth of the previous night. On the third night I did not discover one; but anxious to ascertain whether the house was quite clear of them, I examined the peel after I had laid it down about half-an-hour, and perceived that it was covered with myriads of minute cockroaches about the size of a flea. I therefore allowed the peel to lie till morning, and from that moment I have not seen a cockroach in the house. It is a very old building; and I can assure you the above remedy only requires to be persevered in for three or four nights, to completely eradicate the pest. Of course it should be fresh cucumber peel every night."

ST. MARY-LE-STRAND.—The gallery is to be lengthened here, and various works, painting, graining, &c. are to be done. The following is a list of the tenders:—Crucifix, 350*l*; Sykes, 334*l*; Hurwitz, 330*l*; Cull, 280*l*; Macey, 269*l*; Chesterman and Son (accepted), 228*l*.

THE MONUMENT TO GEORGE STEPHENSON.—The treasurer of this monument announces that he has received subscriptions amounting to 2,800*l*, of which 250*l* were contributed by 2,400 workmen. The *Daily News* advocates the erection of a strictly national monument in Westminster Abbey, to be paid for out of public funds.

DONCASTER WATERWORKS.—In response to the announcement offering 100*l* for an approved plan of water supply from the river Don to Doncaster, seventeen competitors have lodged their plans, which have been handed over to the corporation's consulting engineer, Mr. Alexander, for his report. In the interim the plans are also to be examined by the corporation.

THE SUBMARINE TELEGRAPH.—Captain Bullock is to make another attempt forthwith to lay the submarine telegraph from Dover to the most eligible place of communication on the coast of France.

TO CORRESPONDENTS.

"Granites and Stones in the Great Exhibition."—We shall commence some articles on this subject next week.
"Over Time."—A mechanic complains of employers allowing their men to work over-time when many others are out of work.

"W. W. W." "Honestas" (declined), "N. W. W." "D. W. R." "E. S." (an interesting drawing, but not suited to our pages), "C. H." (will find mention of the house in a previous number. With thanks, we are not disposed to engrave the view), "J. G." "J. B." "Liverpool" "R. S. B." "I and P" (we are happy to speak of improvements which we know them to be such), "Jumex" (we will refer), "C. H." (shall appear), "W. A." (ditto), "John Bull" (it is a common practice, but strictly speaking is wrong), "B. R." "W. H. B." "W. F." "M. N." "H. W. P. C." "C. P." "A. A." (has disappeared), "C. P." "C. H." "Messrs. H. and Sons," "F. D. P." (we will not open old sores), "Observer," "C. G. S." "H. S." (we are unable to refer), "C. B. A." "G. G. S." (shall appear), "P. S." (first letter referred to has not arrived).

"Books and Addresses."—We have not time to point out books or find addresses.

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up.	B B B B ditto ditto.
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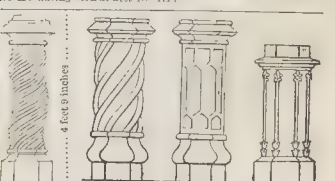
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The Builder.

No. CCCC.

SATURDAY, SEPTEMBER 20, 1851.

AMONGST the day's excursions from Brighton which the rail has opened up, CHICHESTER should hold the first place. Strange to say, however, comparatively few of the visitors to Brighton find their way there, but are contented to traverse eternally on horse, on foot, or on wheels, the East and West Cliff of that elegant and healthful watering-place, with an occasional walk on the pier, a scamper over the swelling Downs, and one visit to the "Dyke,"—of course called the "Devil's" in early times, when it was the custom to attribute to the fiend's agency whatever people were unable to account for in a simpler manner. Any large stone on a plain far remote from its quarry was usually dropped there by the bad spirit; and any extraordinary markings in a rock shewed where his hoof or claws had been. Does he leave fewer marks in these days? Let us hope so, though it be not our business.

The cathedral is the principal object of interest at Chichester, but there are besides, the market cross, the walls, and the town itself, for those who can see. The Cross, a large octagonal structure, built towards the end of the fifteenth century, with central pillar, flying buttresses, niches, and pinnacles, is in a miserable state of decay, and has awakened the attention of the local archæologists to the necessity of some steps for its preservation. It serves now as the public time-teller, showing on four of its sides the dials of a clock, given by Dame Elizabeth Farrington, in 1726, "as an hourly memento of her goodwill to this city." Some repairs were made in 1746, says a second tablet, and badly enough these were done, as the briefest view will show. The cross is placed at the intersection of the principal streets, and comes in picturesquely from all sides.

The stone of which the cathedral is built is much sounder than that of the cross, although some of it is 300 years older, having been put up at the commencement of the twelfth century. We do not intend to trace the history of the cathedral: those who visit it will do well to obtain a sensible little "Guide" to it, written by one of the vergers, Charles Crocker, a local poet, who, according to his own story, was pulled out of the lowest rank of society into a respectable position by a small volume of poems which he contrived to write.* Suffice it to say, that the structure is Norman. Being repaired in 1187, it was restored with Early English additions, and presents therefore some appearances internally, which would seem curious without knowledge of this fact. The nave has much dignity, and the presbytery every great elegance and beauty, especially the Early English triforium at the east end, with its sculptured figures, and the clusters of purbeck marble columns below. In the Norman nave, we should mention, purbeck

marble columns were introduced after the fire, at the angles of the piers of the main arcade and elsewhere, and serve to connect the whole, in an interesting manner.

The cathedral has the peculiarity of double aisles on each side, which give a beautiful intricacy and play of light and shade, and it has stone groined vaultings, which are early examples. The Norman arches at the *crux* which carry the tower and spire are lofty and very fine: above, some small pointed openings show where the later work commenced. The width of the transept is included in the choir. The wood fittings of the choir are ugly and unsuitable, and will, we hope, soon give place to better. The south transept contains two curious paintings, executed by one Theodore Bernardi, in 1519, and a series of portraits of kings of England. The Consistory Court, communicating with a small room over the south porch, used once as a place of security, if not as a prison, should be viewed. The south porch itself is a pretty specimen of Early English work. In the south aisle of the choir there are two pieces of ancient sculpture, representing, rudely, Mary and Martha before the Saviour, and what may be the Raising of Lazarus.* In the first-named, the castle in the back ground has a number of low pyramidal roofs, covered with scales, such as are represented in many early Norman MSS. So, too, the iron-work on the door, which stands open. There is an ancient wrought-iron gate to the choir, simple and effective, and everywhere, indeed, are scattered evidences of ancient taste and skill to arrest the observer and make him think.

The Lady Chapel is of considerable length (the length of the whole building, by the way, is called 411 feet), and is of the decorated period, but early in it.† Notice here the carved capitals which carry the groined vaulting, and are very good.

Amongst the old tombs may be specially mentioned Bishop Shurborne's effigy, of alabaster, in the south aisle of the choir; the coped tomb of Bishop Radulphus, the founder of the Cathedral, near the Lady Chapel; the shrine of St. Richard in the south transept, and the tomb of Richard Fitzalan and his Countess, on the north side of the nave. The latter two have been restored by Mr. E. Richardson, and were mentioned by us at the time. A modern altar tomb, with canopy, by the same sculptor, to John Smith, Esq., of Dale Park, is scarcely so well cut as we should have expected. There is an exquisite mural monument on the south side of the nave, by Flaxman, in memory of the daughter of Captain Cromwell (1797). The political economist will look with interest on the statue of the unfortunate Huskisson, by Carew, and the lover of poetry will seek out the tomb,—

"Where COLLINS, hapless name,
Solicits kindness with a double claim."

Over the entrance to a modern vault formed for the Duke of Richmond's family is written, *Domus Ultima*. Some of our readers will remember Dr. Clarke's epigram on this:—

"Did he who thus inscribed this wall,
Not read, or not believe, Saint Paul,
Who says there is, where'er it stands,
Another house, not built with hands?
Or may we gather from these words
That house is not a—House of Lords?"

* Some of the parts of this have been misplaced.

† The Lady Chapel is now used as a library. In a case here, are relics of an early date discovered in the tombs of two bishops, necessarily exhumed during some alterations.

The gradual restoration of this cathedral, fortunately commenced in time, has been going on for several years past, and is still proceeding under the direction of Mr. Butler, a local architect. The purbeck marble columns, we observed, are being repaired with what seemed a composition of pounded marble, bees' wax, resin, &c., which is shaped with a hot iron, and takes a polish similar to the stone itself.

Many of the windows have been filled with stained glass. The windows at the west end have been successfully executed by Mr. Wailes,* who has also put up several at the east end with more or less success. Mr. Willement has executed a painful imitation of Early English glass in the north aisle of the presbytery, and Mr. O'Connor a memorial window to Sir Thomas Reynell (1846), which, although meritorious in some respects, is somewhat coarse and heavy. A very difficult art is this same glass-painting: if our artists did right they would never allow themselves to be persuaded to meet circumstances, by putting up anything less good than the best they can do.

Externally the tower and spire (beautifully placed) remind you of Salisbury, and the observer will find many beautiful bits as he wanders round the building. The bell-tower, an erection of the Perpendicular period, stands at a short distance from the north side of the nave (the stone is in a bad taste), and then there are the cloisters, on the south, which enclose three sides of an area called Paradise (whence "*parvise*"), and have an effective wooden roof of simple construction.

We must back, however, to Brighton, if it be but for the purpose of suggesting to the authorities there, some attention to the adornment of their town. The absence of art in Brighton is very noticeable and lamentable: scarcely a statue, or a vase, or a decoration is to be found. There is a *fountain*, it is true, and a pretty specimen it is.

The purchase of that costly folly of George IV., the Pavilion, was a wise step on the part of the town. The Banqueting Hall with its dragons, the Music-room with its eagles and glittering ceiling of gilded shells, have been fitted up for public entertainments, and excite wonder, if not admiration. The gardens seem to want a man of knowledge and taste to change their aspect from what is now too much like "Vauxhall in the day-time;" and for the town generally, with a view to the future, we would suggest the appointment of a committee of adornment. With 60,000 inhabitants and three miles of houses next the sea, Brighton has no excuse for standing still.

MINERAL PRODUCTS IN CLASS I. OF THE GREAT EXHIBITION WHICH RELATE TO THE BUILDING ARTS.

BUILDING STONES OF CORNWALL AND DEVON.

AMONG the most valuable and important of our building materials are the granites of Cornwall and Devon, with their associated rocks of porphyry, trap, and serpentine. Although there are minute differences of composition in the various masses of granite which form the great "tors" and elevated plateaux of Devon and Cornwall, some being distinguished by distinct imbedded crystals of felspar, and assuming in consequence a porphyritic structure, others possessing the three principal ingredients of granite—quartz, felspar, and mica—

* The upper windows here were filled in this way. The present design held formerly the rectory of Marylebone, and on quitting it a sum of money was subscribed by his parishioners to present to him a testimonial of their respect, and at the dean's own suggestion, we believe, was applied in the production of the glass for this window.

* The history of the building, nevertheless, deserves, and should have, more complete investigation than has yet been given to it.

mixed in a more crystalline and uniform manner, and others again with a large proportion of their alkaline constituents more or less decomposed, yet there can be no doubt that all the great granitic protuberances from Dartmoor to the Lands End belong to one common geological formation, and are probably of nearly the same geological age.

It may be observed of these masses that the granite of Dartmoor is the most crystalline in its structure, has the finest grain, and is most uniform in its colour. As we proceed westward the granite usually contains more distinct crystals of felspar, which crystals become largest and most varied in colour in the extreme west of Cornwall. This appearance of distinct crystallization in the felspar is supposed to have arisen from an inferior degree of heat in the molten mass of the granite when first protruded, the effect of this inferior heat and consequent fluidity being that the felspar crystallized before the other ingredients, which were afterwards consolidated around the first-formed crystals of felspar. Besides this difference in the original consolidation of the granite, there is another way in which porphyritic granites have been largely produced. It is supposed that the original masses have cracked during the process of cooling, and that the yet fluid igneous matter from beneath has been injected into the cracks or fissures so formed, and has caused those remarkable formations called *clvan dykes*. These dykes vary in width from a few inches to several hundred feet, and may frequently be traced for many miles in length. It appears that the material injected into the dykes has commonly been at a lower temperature than the adjacent granite, and that although the centre of the dyke may be perfectly crystalline, and not distinguishable from the neighbouring granite, yet the sides of the dyke very frequently exhibit a distinct porphyritic structure, owing, as in the former case, to the crystallization of the felspar before the quartz and mica assumed the solid form.

In some of the granite which is very decomposable, the crystals of felspar are detached from the other ingredients, and can be readily picked out, showing an example of extremely rapid cooling. Specimens of this kind from Lundy Island, may be seen in the Museum of Economic Geology.

The true granite of Cornwall and Devon is always a compound of three or more minerals, adhering together by simple aggregation, and without any cementing substance between them. They all, as far as I have observed, contain the usual triple compound of quartz, felspar, and mica,—the felspar being usually much in excess of the other ingredients, and furnishing generally the most prominent and distinguishing character of the rock, the quartz next in quantity, and the mica last in importance. The felspar is to be readily distinguished by the size and opaqueness of its crystals: the quartz has usually a transparent, lustrous appearance, not exhibiting geometrical figures of crystallization like the felspar; while the mica is usually soft, whitish, and shining, and can be separated into flakes or minute plates with a knife. The relative hardness of the three may be expressed by saying that the mica may be cut by a knife, the felspar can be scratched only, and the quartz will effectually resist all attempts either to cut or scratch it. Besides these ordinary ingredients of granite, this rock in Cornwall and Devon usually contains schorl, a brownish black and fibrous mineral, which can also be separated into plates like mica, and which occurs chiefly in the outside portions of the granite masses, and is not so common in the central parts. The structure of porphyritic granite has been already explained. It does not differ from that of granite itself, except in having large imbedded crystals, which have cooled before the general mass, and may be described as crystals imbedded in a finer kind of granite. The true porphyries of the West of England are different from this, inasmuch as they have a distinct basis, in which crystals or fragments of other rocks are imbedded. This basis is not the result of crystallization, but of mere mechanical aggregation. Thus we have quartz,

porphyry, and felspar porphyry, both named from the imbedded minerals, the former usually consisting of a basis of decomposed felspar, enclosing quartz, and the latter of some other basis enclosing felspar. In many porphyries the basis encloses crystals both of quartz and felspar, the variety and shapes of which give rise to many of its most beautiful forms. Chalcedony and agate also occur in porphyry, and much modify its appearance. The crystals are said to be always of contemporaneous origin with the base, and are not mechanically mixed, like the constituents of sandstone rocks.

The serpentine of the Lizard and other parts of Cornwall is a very beautiful rock, the prevailing colour of which is green, but this is veined by cloudy streaks of black, yellow, and red. The chief constituent parts of serpentine are silica, varying in different places and by different analyses from 32 to 45 per cent.; magnesia, 23 to 37 per cent.; lime, 0 to 11 per cent.; alumine, 0 to 18 per cent.; and volatile matter and carbonic acid, 0 to 14 per cent. It is moderately soft, and can be worked and turned in a lathe. It takes a beautiful polish, and is a highly ornamental stone, being extensively fabricated into vases, columns, pedestals, chimney-pieces, &c. Serpentine ranks as one of the primitive rocks, and in Cornwall is protruded through the granite and older stratified rocks, which it overflows and rests upon.

The granite of De Lank Moor, and that from Hey Tor (see No. 190, Class 1) are favourable specimens of the Devonshire granite, and are especially well known in London. The quarries of Hey Tor are about four miles north of Ashburton, on the eastern border of Dartmoor Forest. They are connected with the Teigngrace canal by a tramroad eight miles in length, formed of granite blocks. The canal passes down to Newton Bushel, where it joins the river Teign and communicates with the sea and with the South Devon Railway. The Hey Tor granite was used in the construction of London-bridge, Fishmongers'-hall, Tothill-fields Prison, the pillars of the gates of Christ's Hospital, and for the columns of George the Fourth's library, in the British Museum.

There are also extensive quarries on the western side of Dartmoor, at Foggintor, from which place the stone is brought down to Plymouth by a railway 25 miles in length (see No. 160, class 1). The mode of working this quarry was exceedingly well described a few years ago by Mr. William Johnson, in a paper read before the British Association. He describes the quarry as situate about 350 or 400 feet below the summit of the mountain. The quarry was first opened by means of a gullet, which was driven horizontally until an upright face of rock 50 feet high was reached: this face presented beds of beautiful stone 8 and 10 feet in thickness. The gullet has since been much extended, and the sides cleared away, till the floor of the quarry presented in 1841 a cleared open surface of 4,000 square yards. On both sides, and beyond this cleared space, the quarry is further worked by benchings, having an area of about 2,600 square yards, the highest bench being 80 feet above the rails on the floor of the quarry. Blocks weighing 20 tons, containing about 250 cubic feet, have been frequently sent out of this quarry, and it is not uncommon for one shot in blasting to detach and loosen 3,000 tons of stone. The author describes the Foggintor granite as the best in this country for steps, plinths, strings, blocking courses, ashlar, pedestals, obelisks, columns, cornices, and indeed for all other purposes of architecture. It is also very peculiarly fitted for the massive works of hydraulic engineering, as in docks and harbours, on account of the great sizes in which the blocks may be procured. Hence it has been very extensively used for copings and mooring posts, also for the hollow quoins and projecting quoins of dock and lock gates, for the altars or retreating benches of graving docks, as well as for the heaviest and most massive parts of bridges and other engineering works. The works at the Devonport Dockyard, those of the magnificent new graving-dock at Woolwich, Tenby Beacon in Pembrokeshire, the

Neale memorial in the New Forest, Hants, the Nelson column, and the retaining walls in Trafalgar-square, and the new buildings of the Sun and Alliance Fire Office all furnish examples of the Foggintor granite.

Besides the varieties of Devonian granite already mentioned, the Exhibition is rich in specimens of Cornish granite, a few of which I proceed to mention. The district around Truro (No. 164) sends several varieties of granite, besides a great many porphyries from the numerous dykes in the neighbourhood. These have been marked and arranged with much care, and their value pointed out as building stones, materials for road-making, &c. In No. 169 are several specimens of red porphyritic granite and porphyritic elvans from the neighbourhood of Launceston, Cheesewring, and Landreyn North. In the district of St. Austell much of the granite is in a very decomposing state, the felspar being frequently converted into *kaolin*; and the St. Austell committee (No. 166) have sent up a specimen of soft granite, which may be described as a very light-coloured stone, with the felspar in an amorphous, uncrystallised state, the quartz very light-coloured and diaphanous, the mica white, and in very small plates. The blue granite from Roche, also sent by the St. Austell committee, deserves notice. The felspar here is very indistinctly crystallised, the quartz very crystalline and translucent. In No. 160 we have several specimens from the neighbourhood of Penryn and other places in the granite district which lies on the west side of Falmouth. In all these specimens the felspar is in more distinct and better defined crystals than in the Dartmoor granite. The Penryn stone, as well as that from the Constantine quarries, on the opposite side of this granite district, stands in high repute amongst engineers and architects, and one or other of them has been used in Waterloo-bridge, at the dockyards of Deptford, Woolwich, Chatham, Portsmouth, steam-basin at Keyham, British Museum, Royal Exchange, Phoenix Fire Office, and many other important buildings. The collection, No. 160, which is very extensive, and is contributed by Messrs. W. and S. Freeman, also comprises specimens from the most remote mass of granite which this country contains; namely, that which occupies the Lands End in the extreme western part of Cornwall. Amongst these are blocks from Mosemonan Quarry, from Lamorna Quarry, near Penzance, and from Zemor Quarry, St. Ives, the shipping port for all these being Penzance. In these granites, as before observed, the felspar crystals are very large, frequently measuring 6 or 8 inches in length by 2 or 3 inches in breadth. These granites have been employed in her Majesty's dockyards at Deptford, Woolwich, Chatham, and Portsmouth, the steam-basin at Keyham, Dover Pier, and Hull Docks. Messrs. Freeman also exhibit outside the building specimens to show the size of the blocks which may be procured from the Penryn and Penzance granite, namely, an obelisk in one piece from Lamorna quarry, 24 feet 4 inches in height, and weighing 21 tons; also the base of this obelisk from Carnsew, near Penryn, weighing 31 tons. This collection comprises some beautiful varieties of greenstone porphyry, especially one called *polyphant stone*, from Lewannick Quarry, Launceston, Cornwall. This stone takes a highly ornamental polish, and was used in Lewannick Church, Launceston Castle, Altermun Church, &c.

In No. 159 are several specimens of fine grained porphyry, among which is a white variety of great beauty, which would be suitable for building purposes. No. 141 contains some highly ornamental slabs of porphyry with polished faces, the area of each being about 15 square feet. One of these is a specimen from Retire-in-Withiel, Cornwall, with a greyish cream-coloured ground, containing imbedded crystals of white felspar, crystalline quartz, and black schorl: two other specimens from the same place have a flesh-coloured reddish ground, with white felspar crystals of all sizes, up to 2 inches by 3-4ths of an inch, in some places speckled with black schorl of all sizes up to the diameter of a six-

pence. Another specimen is from Luxulyan, Cornwall, having a black ground with crystals of flesh-coloured felspar, varying from the smallest size up to 2 inches by $1\frac{1}{2}$ inch. This number also includes a beautiful tessellated table composed of fifty-four specimens of polished stones from a porphyry quarry at Retre-in-Withiel.

It is much to be lamented that a material of such high value as granite for all building purposes should, by its enormous cost in London, be placed beyond the reach of all but the most wealthy corporations, and individuals who are compelled to undertake the most imperishable class of buildings. If it were possible to deliver granite in the Thames at something like 2s. 6d. or 3s. per cubic foot, instead of doubling this price, it would, no doubt, vastly stimulate the consumption of this very superior material, and add greatly to the character of our ornamental buildings. The expensive freight of granite, which is usually sent to London by sea, has hitherto been the barrier to its general introduction, but now that the counties of Devon and Cornwall possess a railway communication with the metropolis, it is not too much to expect so great a reduction in the cost of transport as to bring granite generally into the London market. It appears that the Great Western Railway Company would derive a very handsome profit by carrying up this granite to London, at a cost of 10d. per cubic foot, which would probably effect a saving of several shillings per foot in the price of granite. The same observation applies to the beautiful porphyries of Cornwall, which vary through every gradation, from the highly ornamental crystalline and variegated specimens which adorn the halls of palaces, down to the decomposing and earthy varieties which are scarcely suitable even for road-stone. The finer specimens of porphyry are much used for ornamental flooring, ceilings, columns, pilasters, tables, recesses, tessellated pavements, monuments, &c. The inferior kinds are used for ordinary building purposes, and for road-making. Some varieties even of the soft kind are said to possess the properties of freestone, and to stand exposure to the weather.*

ON THE APPLICATION OF ELECTRO-MAGNETISM TO LOCOMOTIVE ENGINES.

THIS interesting invention by Messrs. Amberger, Nickles, and Cassol, has made the subject of a memoir by Mr. G. Love, C.E., presented to the Society of Civil Engineers of Paris in the course of last June. A discussion was immediately opened upon the subject, a detailed account of which was given at the time by the *Annales des Chemins de Fer*, and the *Journal des Chemins de Fer*. The communication was received with feelings of great interest by many of the members present, but three of the engineers opposed strongly the memoir, so far even as to deny altogether facts which the author and many others had been, for a long time, accustomed to look upon as established. In consequence of this Mr. Love felt himself obliged to submit to the society another memoir, in which he investigated more completely the facts previously disputed. The effect of this new memoir was such as the author wished to produce, viz. to determine one of those engineers whose high position on railway working lines should allow it, to take the invention in hand and try it on a large scale. Mr. Sauvage, an eminent government engineer, who has the management of the locomotive department on the Paris and Lyons railway, kindly offered the inventors the means of putting their invention to the test of experience, and they have now been engaged for upwards of a month in preparing the apparatus and engine, with which a decisive experiment will shortly be tried.

The principal object of this notice is to give an abstract of the last memoir; with the hope it may induce practical men to look candidly on the new invention, which seems to us to promise, even in its infancy, to bring important changes in locomotive engines, and also in the construction of railways.

* To be continued.

Amongst the objections made to the first memoir was one which, if it had been true, would have proved the impracticability of ever using electro-magnetism to increase the adhesion of the working wheels of a locomotive engine. It may be useful to remind our readers here in a few words, that the invention consists in a long wire of copper, clothed with silk, and so disposed as to make a great number of circumvolutions round the lower part of the wheel without touching it. When a current of electricity produced by a battery of Buntzen is allowed to run through this wire, or coil, the part of the wheel which comes in contact with the rail is transformed into an artificial loadstone, the well-known property of which is to adhere strongly with iron. This in consequence produces an increase of adhesion, the value of which, it is easily understood, can be varied at liberty, according to circumstances. The same battery, when not used to give adhesion, may be turned to act on an iron break, which comes down on the rail like that of Mr. Laignel, and produces powerful friction without the least combination of levers or gearing. A break made on that principle has been lately adapted to a waggon of the Great Western Railway, and it was a matter of no little astonishment to witness the force it displayed, although a very small part of it was touching the rail on account of it being rather out of shape. Now the objection alluded to was this: the wheel electro-magnetized being in contact with an indefinite length of rails, and these touching the earth by a great number of points, there will be a loss of fluid, such as to reduce nearly to nothing the increase of adhesion; or a most powerful battery, and consequently a very large expense, will become necessary to increase it to an efficient and useful degree. This, however, Mr. Love showed to be wholly unsound. We proceed to give a short account of the other objections, which were, in the whole, a mere denial of the following propositions:—

1st. The adhesion of locomotive engines is frequently insufficient. It is not in proportion with their power.

The maximum of adhesion generally corresponds to the greatest effort the engine is capable of producing at the circumference of the driving-wheels, and it is calculated to be about the one-fifth of the weight incumbent upon these wheels. But we know well this quantity of adhesion may, according to the state of atmosphere, go down so low as to become only the one-fiftieth or even the one-thirtieth of the said weight, so that the quantity of adhesion the engine can provide varies within considerable limits, entirely out of the control of the engine-man. Now the adhesion the engines must provide varies also within tolerably extensive limits, according to the weight of the train, the speed, and the degree of inclination of gradients. Hence, we understand, that it may occur, and indeed it does occur frequently, that the engine can only dispose of a very small quantity of adhesion when the maximum should be required, a circumstance which creates delays, collisions, and at least puts the companies frequently to the extra expense of auxiliary or pilot engines.

Here we find in the memoir a table in which the author gives numerous instances of engines belonging to French railways, with the necessary quantities of adhesion they require on a gradient of 1 in 200; in consequence of their usual speed and the weight of the trains they are calculated and frequently called upon to drag. He has placed opposite the quantities of adhesion, *maxima* and *minima*, these engines can provide according as circumstances are favourable or not, and it is shown by this table that the required quantity of adhesion is often double of the quantity that an engine can dispose of.

The conclusion that may be drawn is, that an engine cannot be held to possess a sufficient quantity of adhesion unless her *minimum* should be equal to the *maximum* she may be called upon to provide. It is evident that an engine placed in such a condition might do her full duty in spite of the slippery state of the rails caused by the fog or rain, or other

circumstances. But it is equally evident, that such a result could not be aimed at, unless her weight should be increased enormously, far beyond what may be necessary for the strength of her pieces.

2ndly. The insufficiency of adhesion is one of the causes of the limitations of the gradients in the construction of railways.

The power of an engine is such that it would enable her to climb up very steep gradients, provided the speed should vary properly in an inverse ratio; but it must be observed that the steeper the gradient is the greater must be at the same time the necessary quantity of adhesion, so that this quantity draws nearer and nearer the maximum the engine can dispose of in the most favourable circumstances, as the gradient goes on increasing. But we know very well that the only quantity to be depended upon is her *minimum*. It insures that increasing the steepness of gradients is increasing in a great proportion the chances of stoppages, collisions, or extra expenses of auxiliary engines, inconveniences that a wise engineer will avoid as much as possible in reducing the gradients, and making tunnels or deeper cuttings, &c.

3rdly. Electro-magnetism taking away all uncertainty on the quantity of adhesion that may be obtained to meet what may be required at any time, will be the means of adopting steeper gradients, and, consequently, of reducing considerably the cost of railways.

This requires no further demonstration: we shall content ourselves with this remark of Mr. Love, that many secondary lines, where speed is not so much wanted, and which could never be thought of being undertaken before, will be easily made with very little expense compared to what should have been necessary with the limited gradient now adopted on most railways.

4thly. Electro-magnetism may also be of great service to lines opened to traffic.

We can see at once, for instance, that the connecting rods of coupled engines, which are in the eyes of all practical men a bad and dangerous system for obtaining the necessary degree of adhesion, will be done away with. There will be no longer any necessity either to fix, in bad weather, those barbarous and absurd sand-boxes in front of the driving-wheels, which, if they get by these means the adhesion required, project the sand into all parts of the mechanism, and wear it out rapidly. Besides, coupling being dropped entirely, companies will soon find a good saving in the maintenance of the roads, which, every body knows, suffer a good deal from that system. Another cause of rapid destruction of the roads, and breakage of rails, is the enormous weight that acts on the driving-wheels. With electro-magnetism weight being no longer a necessary condition for adhesion, that of an engine will be distributed as equally as possible on the three pairs of wheels, and besides the advantages derived from thence for the maintenance of roads, it will permit engineers to limit themselves, in future, to rails of moderate size and weight.

5thly. The principle by which adhesion is now obtained is the most serious obstacle to a more extensive application and improvement of railways and locomotive engines.

Indeed, what sort of improvement may be wished in the new system of roads? One of such a nature as would permit the application of them to those countries, the hilly constitution of which threatens them with being deprived of railways for ever; and we see at once that this desirable object can only be attained in making cheap railways, and cheap railways can only be made with steep gradients and tight rails: and who does not perceive that the present uncertainty of adhesion and the enormous weight presently required on the driving-wheels, is a complete bar to that progress?

Again, what improvement should be looked for in locomotive engines? It would be very desirable that an engine could produce a less costly power, that its weight should be reduced a great deal. But the principle of adhesion is such, that it forbids altogether to seek for the means of diminishing the weight of engines and profit of an invention that would

place in our hands too light an apparatus producing cheaper force. Thus, the discovery of Mr. Boutignies, which, it is thought, will permit the construction of boilers of a very little weight compared to those now in use, and giving dry steam, compressed air cylinders, machines put in motion by electricity, &c., all these inventions, which it is not unreasonable to expect will be brought one of these days to a practical form, must be laid aside as long as we stick to the *principle of weight* for adhesion.

Mr. Love concludes with the observation that it is very seldom that an idea, however good, comes to a shape useful to industry as long as it remains in the hands of theoretical men. Thus, steam would still be asleep and useless in Papin's Digester, if practical men had not taken it from the hands of the most learned people. What has occurred for steam will no doubt be again the case for electricity. Up to to-day this powerful fluid has only been studied in cabinets of physics, and for a long period of time the only things that have issued from that source are the electric telegraph and a great number of scientific playthings. The time is not far off when the highly interesting problem will be solved,—shall electricity take the place of steam?

THE CLASSIFICATION OF MEDIEVAL ARCHITECTURE.

I AM unwilling, not being one of the principals in the discussion of this subject, which has appeared in your columns, to make unreasonable claims upon your valuable space; but the subject is to me one of so much interest that I cannot refrain from offering a few remarks arising from Mr. Sharpe's last communication, in which, by the way, I will endeavour to be less complimentary and more specific than in my last.

As in all such questions the honour of precedence is of some little value, my first object shall be to correct two misapprehensions upon that head. Of the two leading systems of classifying *Pointed Architecture*, the three-fold division is popularly attributed to Mr. Rickman, and the four-fold to Mr. Sharpe. To neither of these gentlemen, however, does the honour of precedence justly belong, though to each is to be attributed much credit for placing their several systems in a popular and generally intelligible form.

I am not sure what is the date of the first edition of Mr. Rickman's "attempt," but it was certainly anticipated by several years, both in its classification and even, in some degree, in its nomenclature, by a work now little known, and whose author, though still living, has never, that I am aware, attempted to vindicate his claims of precedence, but has, with singular modesty, allowed them to be made to one who at a later period erected so far more perfect a superstructure upon his foundation. I refer to the "Description of the Cathedral Church of Ely," by the Rev. George Millers, then minor canon and sacrist, now registrar of that cathedral. This work, of which the second edition was published in 1808, divides the entire range of English architecture into five "Ages," viz., "Saxon," "Norman," "Early English," "Ornamented English," "Florid English." We have here Rickman's divisions, and almost Rickman's nomenclature; the only real difference being in the last term, "Perpendicular" being Rickman's own. Mr. Millers, however, having formed his ideas almost exclusively from the study of his own cathedral, was led into two rather serious errors; the one from his adoption of the opinion of Benthall and others as to the supposed remains of the Saxon Conventual Church, which led him utterly wrong as to the characteristics of Saxon architecture; the other from imagining that the flowing windows to the aisles of the six eastern bays of the cathedral, which were copied in the fifteenth century from the adjoining work of Bishop Hotham, were veritable specimens of the style of their age: this led him to extend his "Ornamented English" Age far beyond its proper limits, an error very excusable in so early an attempt at classification, and affecting in no degree his claim of precedence.

I will next claim for my friend Mr. Freeman the honour of precedence over Mr. Sharpe as to the four-fold division. Mr. Sharpe, it is true, disclaims all credit for originality, but still says, "I was, I believe, the first in my paper on the Geometrical Period, read at the Lincoln meeting of the Archaeological Institute, in July, 1848, and published the same month in *THE BUILDER*, to propose publicly the formal adoption of this new classification;" and he then says that, "in 1849 we find Mr. Freeman" (in his "History of Architecture"), "evidently unconscious of my earlier proposition, suggesting an exactly similar fourfold division as subordinate to a higher twofold division." Now, Mr. Sharpe does not seem to be aware that Mr. Freeman first brought forward his two-fold, and subordinately four-fold, division, in a paper read before the Oxford Society, in November, 1845. I have not that paper at hand, but I well remember reading it with great interest, as well as the long discussion which arose from it in the *Ecclesiologist*. In a letter, written by Mr. Freeman to the last-named publication, and dated April 3, 1846, the system is distinctly enunciated. In it, he advocates primarily the twofold, and secondarily the fourfold division in the clearest terms, and even states that a paper had been read by Mr. Cox, in which he "entirely adopted" this division: he asserts that "on philosophical principles the unity of the Decorated style falls to the ground,"—that "no such broad change in principle separates the Lancet from the Geometrical, or the Flowing from the Perpendicular, as divides pure Geometrical from pure Flowing;" and he yet more distinctly says, "I reckon then two great divisions of Gothic, each subdivided into two classes; and these four styles I would call Lancet, Geometrical, Flowing, and Perpendicular."

Among my own papers I find a copy of a letter I wrote to Mr. Freeman, in August, 1846, in which I agree to his divisions in the sense, not admitted by himself, of thinking the Geometrical "the termination of the ascending scale," and the Flowing as "the beginning of the descent," and I express my opinion that the point which divides these styles, "however indistinct, is the most important era in the whole history of Pointed Architecture." It is curious enough that this letter contains in its margin nearly the same circular diagram suggested in Mr. Sharpe's last communication. When two years later I saw Mr. Sharpe's drawings at Lincoln (I missed the pleasure of hearing his paper) I naturally took it for granted that he had taken his system from Mr. Freeman.

I think Mr. Sharpe hardly does justice to himself or his subject when he argues that, because our architecture "was in a constant state of progress or transition," its divisions must necessarily be arbitrary; that these divisions must be viewed rather as *periods* than as *styles*; and that of these periods the middle portions are equally transitional with the extremities.

If the divisions are simply arbitrary, why so much discussion as to whether they should be *three or four*? If they are mere "periods," why divide them so unequally as 70, 55, 45, and 190 years? The answer is obvious: viz., that we perceive four distinct phases of "style" prevailing through perfectly unequal periods, and consequently that, though both "styles" and periods, they are much more distinctly the former than the latter; and if so, it is manifest that their central portions are by no means transitional in the sense in which that term may be applied to their extremities.

An apt illustration of this may be found in the prismatic colours. They, as our Gothic architecture, are in a constant state of transition; but does this disprove the existence of three primary colours,—does it make the subdivision wholly arbitrary,—or does it prove that red, blue, and yellow are as transitional as purple, green, and orange? It is quite clear that a constant state of "progress or transition" is not inconsistent with the periodical appearance of pure and distinct types, which, though parts of a general system of

transition, are not in their own nature transitional. Mr. Sharpe's "transitional period" is unquestionably such *par excellence*, as being that between two distinct classes of art, instead of being only between the different phases of the same art; but I contend that, though less marked, the passing of the divisions of Pointed architecture into each other are equally transitional with that of Romanesque into Pointed.

I think Mr. Sharpe's reply to my suggested difficulty arising from foreign examples the only satisfactory one which could be made; and having practically held with the fourfold division ever since its first enunciation by Mr. Freeman, I must thank Mr. Sharpe for having, by simply cutting the knot, removed the only misgiving I had.

I believe, though in a minor degree, a similar division exists in foreign examples, and I hope that this may be worked out in detail by some competent hand. Certainly the absence or presence of the curve of contraflexure is, even abroad, the great distinction between early and late examples, though abroad it is seen only or chiefly in minor parts, as cusplings, &c., rather than in leading lines. Possibly, then, foreign Pointed architecture, like our own, may eventually be divided into four classes, and if so, we may, which is most desirable, agree upon one general system, though, perhaps, only numerical, *applying to all*, but at the same time have for each country a concurrent national nomenclature, descriptive of its own series of changes. The French system, and that of the *Ecclesiologist* would do for the former, were they *four* instead of *three*-fold; and for the present, by dividing the "Secondaire," or "Middle Pointed," into "Early and Late," they may for convenience be used concurrently with more precise national classifications.

What I have said I will recapitulate thus briefly:—

1stly. The threefold division, usually attributed to Mr. Rickman, belongs really to Mr. Millers.

2ndly. The fourfold division advocated by Mr. Sharpe, originated with Mr. Freeman.

3rdly. That system would be more correctly described as four *styles*, or phases of style, than merely as "periods."

4thly. I would suggest its general adoption for English architecture, though I think the usual terms, "flowing" and "perpendicular," would be conveniently retained, instead of "curvilinear" and "rectilinear."

5thly. We should have, concurrently with this, distinct national systems for other countries, and one general system, even if simply numerical, *applicable to all*.

GEO. GILBERT SCOTT.

THE FREE GRAMMAR SCHOOL OF SAINT OLAVE'S AND SAINT JOHN'S, SOUTHWARK.

AN account of this foundation has recently been printed for private distribution by Mr. G. B. Corner, F.S.A., and contains much interesting matter, showing strikingly, amongst other things, the great increase of value which time has given to property. Mr. Corner says,—

"Henry Leeke, of the parish of St. Olave, Southwark, brewer, who may be considered as the founder of this school, by his will, dated 12th March, 2nd Elizabeth (1560),† desired to be buried in the church of St. Olave's, Southwark, of which he was a parishioner; and he bequeathed out of the rents and profits of certain houses and tenements within the precincts of St. Martin's-le-Grand, which he held by virtue of a lease from the dean and chapter of St. Peter's, at Westminster, 20l. a-year, during the term of the said lease, to be distributed for certain charitable purposes by the churchwardens of St. Olave's, of which he

* As our object is to *revive*, and not merely to construct a history of Pointed architecture,—as our wish is not merely to chronicle the past, but to make its beauties the nucleus of present and future art, it appears to me that the varieties of style, rather than mere historical transitions of period, must necessarily form the ground-work of our nomenclature, for how can we divide our own works into "periods?"

† Proved in the Prerogative Court of Canterbury, 23rd April, 1580.

directed 8*l.* per annum to be applied towards the maintenance of a free school in St. Saviour's parish, but if within two years after his death a free school should be built and established in St. Olyve's parish, then he gave the said 8*l.* per annum towards the same.

On the 13th November, 1560, it was resolved by the vestry, 'that the churchwardens and others should seek to know the goodwill and benevolence of the parish, what they would give towards the setting up and maintenance of a free school; and on the 22nd July, 1561, it was ordered that the churchwardens should receive of Mr. Leeke's executors the money given towards the erection of a free school, and that they should prepare a schoolmaster to teach the poor men's children there, according to the Queen's injunctions, which schoolmaster should be sufficient to teach the children of the parish to read and write and cast accounts; and further, the churchwardens were to prepare and make ready the church-hall with benches and seats, and all things necessary for the said school, which was to be ready against Michaelmas then next.

In 1567, it was resolved by the vestry that the school should be made a free school, and established by authority, and an attempt was made to procure an Act of Parliament for that purpose, which failed. But Queen Elizabeth, by letters patent, bearing date the 26th July, in the 13th year of her reign (1571), after reciting that the inhabitants of the parish of St. Olave, Southwark, had, at their no little cost, labour, and charge, ordained and erected, in the aforesaid parish, a grammar school, in which children, as well of the rich as of the poor, being inhabitants of the aforesaid parish, were instructed and brought up liberally and prosperously in grammar, in accidence, and other low books, ordained that the said school from thenceforth should be a grammar school, for the bringing up of the children and younglings of the parishioners and inhabitants therein as aforesaid, and should be called 'The Free Grammar School of Queen Elizabeth of the Parishioners of the Parish of St. Olave, in the County of Surrey.' * * *

For several years after the school was established it was maintained by the churchwardens, out of the general funds of the parish, they receiving Leeke's Gift; Richard Dowsett's of 40*s.* per annum, given in 1561; Lamb's Gift, 1572; and Bullman's, 1574, towards it; but it was considered advisable to vest sufficient property for its support in the governors; and at a vestry, held on the 4th May, 1579, it was agreed that, 'Thomas Batte, William Willson, Oliff Burr, Thomas Harper, Ryc Denman, and Ryc Pynfold, should take order with Mr. Godyer and Mr. Egglefeld, to pass over Horseysdowne to the use of the schole.'

Horseysdowne, or Horsadown (now Horslydown), was then a large grazing field, down, or pasture for horses and cattle, containing about sixteen acres, belonging to the parish: this field had been purchased by the parish of one Hugh Eglyfeld, or Egglefeld, in 1552; and it appears by the minutes of a vestry, held 5th March, 1552, that Egglefeld had demised and granted to the churchwardens and the assistants all his right, title, and interest, which he had by virtue of a lease which he bought of Robert Warren, and that he should have, for the same, the money which he paid to Warren and the grazing of two kynes, in Horseysdown, for his life. The sum paid by the parish to Egglefeld, was 20*l.* and twelve pence.

At the time it was resolved to assign this field to the governors of the free school, it was used by the parishioners for pasturing their horses and cattle, and for digging sand and gravel; and there also were the parish butts for the practice of archery; but subject to such privileges of the parishioners the field was let to one Alderton, at 6*l.* per annum. * * *

In addition to the endowment given by the parish and the legacy given by Mr. Leeke, the governors of the free school received other contributions from individual benefactors, including various tenements.

Robert Tyler, of Stockwell, gentleman (who was many years clerk to the governors), by his

will, dated 30th November, 1809, gave to the governors 300*l.* sterling (after the decease of his wife), the interest whereof to be applied for apprenticing poor boys educated in this school, or in such other way as the governors might think fit. He also gave to each of the masters and ushers of the school, at his wife's decease, 50*l.* Mrs. Tyler died in July, 1833, and the legacy has been received by the governors and invested in the funds.

In the reign of King Charles the Second, the governors thought it advisable to procure a more extended charter, and accordingly, by letters patent, dated 2nd May, 26th Charles II. (1674), the charter of Queen Elizabeth was confirmed, the provisions of that charter were repeated rather more formally, and the governors were enabled to hold lands to the amount of 500*l.* a year, to be applied for the maintenance of the schoolmaster and ushers, the erection and support of the school-house, and the lands and tenements thereto belonging, for defraying the necessary charges of the governors, for the maintenance of two scholars out of the school at the University, till they should take the degree of Bachelor of Arts, and also for the setting out poor impotent persons of the parish of St. Olave, and for erecting and maintaining a workhouse for setting poor persons of the parish at work, and not otherwise.

Horslydown having been covered with houses erected on building leases, which have fallen in, the yearly income of the school is now very considerable.

The old school and the schoolmaster's houses stood in Churchyard-alley, nearly opposite to St. Olave's church, and having been pulled down in or about the year, 1830, for making the approaches to New London-bridge, a piece of ground in Duke-street was granted by the City of London, as a site for a new school; but that ground being afterwards taken by the London and Greenwich Railway Company, the New school was ultimately built on a piece of ground in Bermondsey-street, provided by the Railway Company for that purpose.

The first stone of the new school was laid on the 17th November, 1834, by Charles Barclay, Esq., M.P., then warden, assisted by the rest of the governors, in the presence of a numerous company of the inhabitants of both parishes; and the building was sufficiently completed to be occupied by the master and scholars, and to hold the commemoration on the 17th November following.

In the year 1849, this new school was required by the London, Brighton, and South Coast Railway Company, for the enlargement of the railway and station, and being empowered by their Acts of Parliament to take it on certain conditions, they agreed with the governors to pay them a considerable sum of money for it, the governors undertaking to find another site for the school, and to rebuild the same.

A proper site for the school has only now, however, been fixed upon, and in the meantime the school is carried on in a building in Maze Pond, formerly Messrs. Harris and Billiter's warehouse, rented by the governors, and temporarily fitted up for the purpose.

The following extracts from the scheme for the management of the school, approved by the Court of Chancery in 1837, will give some idea of the means now at the disposal of the governors:—

"That the school lately built by the governors, situate in Bermondsey-street, shall be called 'The Classical School,' and that the branch school lately erected in Magdalen-street, shall be called 'The English School,' and that there shall be in such classical school at the least one master and two ushers; and that there shall be in such English school at the least one master and one usher.

That a sum of one hundred pounds a year, at the least, shall be allowed for apprenticing out such poor scholars as may apply, to fit and proper trades or businesses, on their leaving school, as the governors at a meeting or meetings duly convened from time to time, may think most beneficial, and due publicity of such provision be given in the said schools.

That four exhibitions not exceeding eighty

pounds per annum each, at either of the universities of Oxford or Cambridge, be allowed for scholars from the said classical school, who may be desirous of taking the benefit thereof (being deemed by the examiners of the said school to be properly qualified), and that upon occasion of filling up every exhibition, public notice thereof be given and circulated through the said parishes of St. Olave and St. John, and by notices affixed on some conspicuous part or parts of the said schools and premises, one month at least previously to filling up such exhibition, in order to invite and encourage more of the scholars to take the benefit of such exhibitions, it appearing that only five exhibitions have been granted, or applied for, in the last thirty-six years.

That an annual sum of one hundred pounds at the least be paid and distributed to, and among such infirm, decayed, and poor parishioners, inhabitants of the said parishes, as do not receive parochial relief either in money, clothes, bread, coals, or otherwise, and at such times and in such proportions as to the governors at meeting duly convened for that purpose shall seem most beneficial.

That the governors having, for several years past, usually appropriated some part of the funds of the charity to the support of a girls' school in each of the said parishes, be allowed in future to give such schools such sum as they shall, in their discretion, think fit, but not exceeding to each school the annual sum of fifty pounds.

That an annual sum of one hundred pounds be paid, or allowed to the warden for the time being, for or towards the expenses for which the same has heretofore been paid to him, and particularly on the occasion of the public examination of the scholars."

The classical school consists of about 320 boys, all taken from the two parishes of St. Olave and St. John, 100 of whom are taught Latin and thirty are also instructed in Greek.

The English school, situated in Magdalen-street, was erected by the governors in the year 1824, and contains about 260 boys.

The boys are admitted by presentation from the governors, which are freely given to the parishioners, but a certificate is required from two inhabitants, householders, that the parties are resident in one of the parishes.

The seal of the corporation, dated 1576, and distinguished by a rose displayed, the ancient cognizance of Southwark, represents the master sitting in a high backed chair at his desk, on which is a book, and the rod is conspicuously displayed to the terror of five scholars standing before him, exemplifying the maxim of King Solomon, "Qui parit virgam odit filium."

A THEORY OF THUNDERSTORMS AND WATERSPOUTS.

THERE are two kinds of electricity, viz., positive and negative, both having a tendency to unite. Positive electricity is always found in the higher regions of the atmosphere; and the colder and more rarefied the air, the greater its quantity. Negative electricity is always found in the earth and in the water, from which it escapes, the warmer and more expanded the air. Hence, no thunderstorms in winter and in the cold regions, except in very rare cases.

Thus, the body of air swimming on the earth, is a constant obstacle to the union of these two kinds of electricity, which may be considered in the light of the two genders of the animated and vegetating creation. When the rays of the sun, in certain states of the atmosphere, fall particularly strong on the earth or the sea, their accumulation and intensity cause the air to expand, and in proportion to this accumulated heat and consequent expansion of the air, the negative fluid is liberated from the earth or disengaged from the sea: it rises all over the more than ordinarily heated surface, and filling the air, produces in men and animals that lassitude of body and depression of spirits which we always complain of in sultry weather.

Whilst this process of liberation goes on, the sky becomes overcast, or clouds begin to form, and the positive fluid of the upper regions, floating there loosely like its relative

below, finds at once in these clouds a place of rest into which it draws like water into a sponge, and at the same time a conveyance through its opponent, the air, towards the object of its attraction. During this process of concentration above and below, both electricities begin to exercise their mutual influence, their inherent magnetic power having increased with their accumulation, so as to bring them, as it were, within sight of each other: the saturated cloud, joined by others floating in the air and likewise attracted by one another, begins to lower as it becomes larger and more charged, and its movements are more or less directed by the accumulation of negative electricity, which draws it down, by atmospheric currents, and by the face of the country. If the place be mountainous, thunderclouds will sometimes approach from opposite directions, and hover about the tops of hills and mountains as if they would not leave them.

The negative electricity tending to rise, and at a certain height finding itself everywhere impeded by a denser and colder state of the air, seeks a conductor, by the side of which it meets with less opposition. Thus, resisted by the higher atmosphere, it leans against any elevated object that may be near, ascending close to its surface and that of the air pressing against it, forming, as it were, a continually upward flowing stream, towards which the electricity of the vicinity takes its course and keeps up the supply. The fluid, however, will prefer such conductors as have most affinity to it,—namely, all those bodies that contain a great, if not the greatest, amount of latent heat, or latent electricity, like metals, trees, &c. The more pointed the conductors, the more easily will the stream, forced on from below, quit its hold, and emerge into the opposing atmosphere: the rounder or longer the upper extremity of the conductor, the more the negative fluid will accumulate there, and the more difficult will be its passage away into the air.

In this manner, then, the negative electricity floating on the earth or on the sea, is directed in as many streams upward as there are conductors, and the better the conductor the more concentrated or condensed will be the stream: the best and highest conductors take the lead, and in most cases absorb the lower and lesser streams of the vicinity. If on the sea, a ship will be the conductor towards which the electricity of the surface will incline: on land, the chief conductors will be elevated buildings, particularly steeples with metal vanes, &c. trees, as also the human body and animals in an erect position, where higher conductors are wanting. In the case of mountains, the fluid will creep up the sides, and arrive at the summit more and more concentrated, like many streams merging into one: hence its power at this elevation to attract and arrest electric clouds. Vapours will also continue to rise from the earth, and, charged with the negative electricity through which they ascend, they will form into light clouds, and rapidly take their direction towards the positive clouds above.

By these means, the atmosphere is filled with streams and volumes of the negative fluid, and the stronger and higher they are, the more they will attract and hold fast the electric clouds: the negative clouds will swell the positive ones, and they will amalgamate without explosion, if the former be but lightly charged with the fluid: if heavily charged, the mutual attraction is stronger and more vehement, and the point of union at a greater distance: the intervening air is sufficiently dense, and the friction sufficiently great, to ignite the positive fluid in its passage to the negative cloud, and thus the union of the two clouds will be accompanied with lightning.

In the same way, when within the point of union, the positive electricity will dart forward from its hiding-place towards the electric streams from the earth, ignite by the frictions with the air it has to pass through, and cause as many volumes to explode in the air, or down to the very bowels of the earth if uninterrupted, as may be dense enough and within its magnetic reach, to be capable of ignition.

In all cases, where resistance of the air to the amalgamation of the two electricities is not sufficient to cause ignition, the union will take place without the appearance of lightning, and have the same destructive effect without the fire, though no such effect will be visible, if the two electricities are not of sufficient density.

The stronger a cloud is charged with electricity, the blacker will be its appearance: magnetism will hold the fluid together in as compact a body as possible, and the vapours of the cloud are consequently contracted, with the charge they contain, into a much denser body than in the ordinary way.

By a similar process to the above, waterspouts are formed at sea.

In a "dead calm" the sun exercises, as a matter of course, a more powerful influence on the water than he does when it is in any way agitated: by the intensity and accumulation of his rays on the quiescent surface, the air resting upon it is unusually rarefied; an extraordinary evaporation takes place, as if the sea were steaming; and an immense quantity of negative electricity is produced or liberated. The electric fluid, tending to rise, and the air being opposed to its passage, unites with the generated vapours as a better—in this instance as its only—conductor: the particles of vapour are heavier than the expanded air and unable to ascend to form a cloud; therefore, attracted and held together by the electricity they contain, and trying to force a passage upwards, they all move towards the centre of the foggy surface, until by degrees the whole mass assumes the shape of a funnel upside down, and becomes more and more elevated. In the absence of a conductor, this body of electrified vapours forms, as it were, a wedge in the shape of a cone, to part and penetrate the impeding air, through which it otherwise could not ascend. Whilst this forming of the wedge, or screw, takes place, the air round about cannot entirely remain passive, but is slightly set in motion by the spiral-like accumulation in the centre, in the same direction as the wedge is screwing or winding itself upward; and by degrees the air will press heavier on the outer side of the funnel, and less and less towards the middle, where it meets with less surface, and where its pressure is more slanting, so as to help in the formation and raising of the negative pyramid.

The rising of this electric pyramid, however, would not take place, if before, or at the same time, no cloud had been forming in the sky, saturated with the positive electricity of the upper regions, and exercising its attractive power on the kindred body below: the two fluids tend to union, but have no "go-between," no conductor to effect it. Thus, it is the attraction from above that makes the negative vapours (unable to rise, being heavier and denser than the air) assume the natural shape of a funnel-like wedge, whilst the attraction from below, in the absence of numerous and widely dispersed conductors, causes the same appearance in the cloud above: it is a kind of mutual magnetic suction, the one causing the wedge or cone above, and the other causing the cone below, until they meet, the former at the same time pressing by degrees upon the air, and setting it likewise in motion.

That previous to, or on their actual meeting, no explosion is taking place, may be accounted for in several ways.

In the first instance, though the extreme point of each cone may be seen, yet it is likely that each one sends forth some rays, or thread-like streams of electricity, as a feeler—an advanced guard,—to prepare, as it were, the way, which the increased force of magnetism, concentrated like the rays of the sun in a burning-glass,—acting now like a minute bridge from the point of one cone to the point of the other,—has made penetrable. These fore-posts meet long, or at least some time, before the visible cones come in contact; therefore, the amalgamation of the two fluids, diffused over a large space of vapours, and the union of the two cones, is so gradual, that no ignition can take place, there being no friction, or but very little, with the air.

The absence of explosion may, in the second

place, be accounted for by the exceedingly saturated or condensed state of the vapours: they are too much like water to let the electric fluids have an easy escape, though it does not diminish their relative attraction, their impetuous inclination being only somewhat fettered.

When the union of the two cones has been accomplished, and the two fluids have been amalgamated, the whole, being now too condensed to be held any longer in suspense by the air, will violently burst, or come down in rain or hail, and, as may be, with lightning or without, accompanied with great noise, though without thunder.

All these phenomena may easily be accounted for, particularly the bursting, the rain and hail. Lightning will more or less depend upon the density of the respective cones and their admixture with air during the amalgamation of the two electricities; and the lightning taking place within the cones, and merely flashing out (as it is said), readily explains the rumbling noise; but not traversing, not striking through the exterior atmosphere, as is the case during thunderstorms on land, accounts sufficiently for the absence of thunder.

If the "dead calm" at sea extends to a great distance, several waterspouts may naturally happen at the same time, each one forming its own centre.

Their motion on the water seems to depend upon the upper currents of the atmosphere, the positive cone leading the negative one: they may also move in the direction of a ship, or a point on land, as centres of attraction and conductors to the electricity by which they are surrounded.

Waterspouts on land happen from the same causes as those at sea; from the high position of positively electrified clouds, and from isolated and powerful conductors of negative electricity from the earth.

The strong winds that generally attend thunderstorms arise from the previously rarefied state of the air, and the pressure of enormous clouds upon the atmosphere: to the rarefied place denser air will naturally flow, and the cloud, or clouds, form, as it were, a bridge, or so many bridges, under whose arches the air will stream with the greatest violence; and the more bulky the bridge, the more impetuous the rush. The rarefied atmosphere will of itself already contract, and make room for more air, owing to the condensation caused by the withdrawal of the rays of the sun behind the cloud.

What effect the rays of the sun may have upon the cloud I am not prepared to say, but merely beg to direct attention to the point.

There may be inaccuracies in this exposition of my theories, but I am sure you will excuse them, not having much time to devote to these objects. I hope, however, that they will be further developed by abler men, and by such as have the opportunity of practical examination and more extensive research.

W. ADOLPH.

NOTES IN THE PROVINCES.

Cleveland.—It appears that a rich bed of iron-stone, of great extent, has been discovered in Cleveland, between Stokesley and Whitby. According to a report of one of the Government inspectors of mines, made in a private capacity, "the principal seam varies from 10 to 15 feet in thickness, and there are two smaller seams lying below it, varying in thickness from 6 inches to 2 feet each." He declares that "in quantity it is inexhaustible," and "the cost of working it a mere trifle." It contains 33 per cent. of iron in the uncalcined stone; and he adds, "there is little doubt of its creating a greater revolution in the iron trade than that which resulted from the discovery of the black band in Scotland. In no part of the country could iron be produced so cheaply as in this district. The Cleveland Hills will become the centre of the largest iron district in England."

—On the 22nd ult., Captain Cook's Memorial School, at Marton, in Cleveland, was opened. The buildings have been erected from designs by Mr. R. C. Carpenter, architect. The contractors were—Mr. M. Bowser, of Stockton-

on-Tees, for the foundations; Mr. W. Bulmer, of same place, for mason's, bricklayer's, and plasterer's work; the late Mr. G. C. Dickinson, of same place, for wood work; Mr. J. Smith, jun., of Redcar, for plumbing and glazing; and Mr. Kellett, of Middlesbro', for slating. The exterior is of stone. The style adopted is the Tudor. Above the main doorway in the porch is a niche, at present empty, which was intended to contain a statuette of Captain Cook, had the funds been sufficient; but we are sorry to learn that, on the contrary, there is a considerable deficiency. The school-room, adapted for sixty children, or rather more, is lighted by a three-light window, cinquefoiled in the heads, at the west end, a similar one at the east end, and a smaller two-light flat-headed window, trefoiled in the heads, to the south, between two buttresses. On the roof is a wooden louvre. On the western gable is a dolphin, as a wind-vane. The interior of the school-room shows a high-pitched open timber roof of trusses, with principal rafters, collars, and curved braces. The wall, for 3 feet upwards from the floor, is lined with hard fire-bricks, as a preventive against the kicks and blows of the children. The ventilation has been attended to by introducing fan air grates, communicating by passages under the floor, with the exterior air, and also by movable weather-boarding in the louvre. The buildings are raised above the ordinary ground, and have a terrace to the west side.

West Lynn.—A contract having been entered into by Messrs. Peto and Betts, to execute a new channel from West Lynn into the Wash of Lincoln, 1,200 men have for some months been engaged in excavation work. The channel will be four miles in length, 30 feet in depth, 265 feet in width at bottom, and 518 at surface. The terms of the contract for two miles through the sand are said to be 20,000*l.* The old circuitous channel, full of shifting sands, will be closed up, and about 30,000 acres, it is calculated, will be laid dry and made available for agricultural purposes.

Norwich.—St. Peter's Church, Hungate, one of the oldest in the city, is being partially restored. The workmen, on removing boarding and matting from the south of the pulpit, discovered the remains of a chapel, dedicated to St. John the Evangelist. The portions laid open are a sedilia and piscina, a portion of the altar stone, and the greater part of the canopy. The colours of the canopy and sedilia—gold, purple, and scarlet—are still plainly traceable.

Wisebech.—The Board of Guardians at Wisebech have unanimously "resolved, that a committee be appointed to consider the present plan [of the workhouse], and if approved of, to appoint an architect to prepare a plan, specification, and estimate of the expense [of its enlargement]."

Wappenbury.—A monument has been erected in the chancel of Wappenbury Church to the memory of an eminent agriculturist. It is of Caen stone, with Tuscan columns of black marble. The design consists of a plinth and sub-plinth of stone, in the centre of which is a marble figure of Ceres, as if sitting in a corn-field lamenting the loss sustained. At the feet is the sickle, and on either side are panels overgrown with ivy, in which are depicted the plough and harrow.

Mansfield.—The Wesleyan chapel here, which was for many years the mansion of the celebrated Lord Chesterfield, whose dining-room now forms the vestry, the wings being occupied as the residences of the Wesleyan ministers, has recently undergone remodelling and renovation. The body of the chapel has been improved, the pewing readjusted, and the accommodations for the poor improved.

Leicester.—An appeal to the public to complete the works of restoration in St. Martin's church has been made by the churchwardens. "From estimates already obtained," they state, "and from calculations made for the purpose of completing the repewing of the remaining part of the church on one uniform plan, the restoring of the great western window of the nave, and the clerestory windows on the south side, the further sum of 750*l.* will be required, namely,—

Expense of repewing	£350
The west window and glazing, about	150
The clerestory windows and glazing, about	150
Architect, gas, and extras, about	100
—550	
Towards which the following subscriptions have been promised:—	
Further donations	£180
Subscriptions	267
—447	
Deficiency	£303

The body of the church, they add, would then be completely restored.

Birmingham.—If, says a local paper, the number of new buildings erected, or in course of erection, the abundance of employment for artisans of every description, the decrease of pauperism, the firm maintenance, if not the absolute advance, of dividends declared by local public companies, and the pleasure-takings of all classes (coupled with the low price of food), constitute a proof of prosperity, Birmingham is at the present time more happily circumstanced than at any period within the recollection of its inhabitants. Immense tracts of land which, two years ago, were green fields, are now covered with new streets; while the new survey and valuation which the parish of Birmingham is now undergoing promises to add largely to the house assessments. The number of paupers relieved in the week ending the 30th of August, 1851, was 658 less than in the corresponding week of last year.

A stained widow, by Messrs. Hardman, and dedicated to the memory of Mr. George Wareing, has recently been erected in the Roman Catholic Church of St. Chad, in Bath-street. The window is in the south aisle, and consists of two lights, the one containing a figure of St. George destroying the Dragon, the other of the Virgin Mary holding the Holy Child. Over these figures are canopies, and lower down in the lights are medallions. The remaining portions of each light, and the rose in the head of the window, are filled with a coloured diaper, on a grisaille ground, while round each light near a floriated border.

Rushall, near Walsall.—In reference to the new church about to be erected here, a local paper states that "applications to the number of fifty-one having been made to the incumbent, and the committee, for plans and specifications on which to found designs for the sacred edifice, a considerable amount of architectural talent was called into requisition, the result of which has been the submission of very numerous first-class designs,—the one selected from which is the production of Mr. James Cranston, of Birmingham, architect."

Plymouth.—The opening of the new building erected on the site of the old Mechanics' Institute, in Princess-square, took place on Wednesday week. The building has been constructed from the plans of Mr. George Wigtwick, architect. On the basement floor are four rooms, two of which are class-rooms, the others being fitted for general purposes. On the ground floor are apartments for the librarian, and two other class-rooms. The library and reading-room are also situated on this floor. Above is the lecture-hall; its entire length being 76 feet, greatest width 37 feet, and height 33 feet: it is calculated to accommodate 380 on the main floor. There is also a committee-room, which can be thrown open in addition, and in which are 90 sittings. The gallery affords accommodation for 350, and on crowded occasions about one-seventh additional standing room is provided for 250, so that accommodation can be provided for about 1,000 persons. The local *Independent*, however, who describes the hall as "coffin-shaped," thinks that the room is not sufficiently large to accommodate the members to be reasonably expected at no very distant period, whilst its shape, from awkwardness of site and the unavoidable circumstance of the immense gallery extending more than half way over the area of the room from one end, it calculates it to promote the comforts of a full audience. The hall is chiefly lighted from the top by an oval dome, the sides of which are formed of sashes, which serve the purpose of ventilators: the walls are panelled, the panels

being formed with plaster mouldings, and around the open part of the hall and in front of the gallery is formed a raised panelling, upon which is carried a continuous scroll-work of flowers. The opening was attended by Lord Ebrington, the mayor of the town, and other gentlemen, by whom appropriate addresses and exhortations were delivered.

Belper.—A sounding-board, in the form of a canopy, carved with crockets, tracery, finials, &c., has been recently fixed over the pulpit in Christ Church. The whole of the congregation are now able, it is said, to hear distinctly. The canopy has been presented to the church by the incumbent. The artist who executed it was Mr. J. B. Robinson.

Bolton.—A gigantic chimney is on the point of completion at the bleachworks of Messrs. Blair and Sumner, Mill-hill. The structure is octagonal, and the entire altitude will be 70 yards and a foot. The only chimney in the borough of greater height, says the *Bolton Chronicle*, is that connected with the machine works of Messrs. Dobson and Barlow, and Messrs. Knowles's cotton mill, which measures about 122 yards.

Bakewell.—The parish church of All Saints has been repewed and redecorated, and was reopened on Thursday week. In October last, it was resolved to repew the church throughout, to remove the Norman piers from the nave, substituting in their place the present ones—which are built in the Early English Decorated style—to make considerable improvements in the organ, and to provide for warming the church by steam carried through pipes. Mr. Hadfield, of Sheffield, was the architect; and Mr. Bath, of Haddon, clerk of works. The repewing has been completed by tradesmen residing in Bakewell. In consequence of the alterations, 200 additional sittings have been acquired, and there is now a total of about 800, a large portion of them, it is understood, free. The total cost of the alterations is 2,000*l.*

Leeds.—The town-council have decided at length to build a town-hall and corporate offices, at an expense of 22,000*l.* without the site, or of 31,000*l.* with it, according to the local *Mercury*.

Newcastle.—The Newcastle and Gateshead Union Gas Company have given notice of an intention to reduce the price of their gas "as soon as possible." The present price is 4*s.* The recent agitation is said to be operating on the company, and a local paper recommends a little more pressure from without, and asks, "why should the people of Newcastle continue to pay four shillings for an article which the inhabitants of Sunderland obtain for three?"—the article in the latter town being greatly superior to that supplied here." The company have recently been increasing their works at considerable cost, but have nevertheless lately announced a dividend of 8 per cent.

Rugby.—The engine-shed for the use of the London and North-Western Railway Company, now erecting by their station at Rugby, is of considerable size. In front there are places for twenty-five locomotive engines, with tenders, all of a row, and a railway for each. The whole is covered by five roofs. The addition of a transept to the school chapel, now building by Mr. W. Cubitt; the works for the water collection, storage, and distribution; the pipe-laying for sewerage; and the laying of a larger main for the better supply of gas, with the building of more than twenty private houses, all show movements in this place. Besides all these, there are the Catholic schools, by the side of Dunchurch-street, from the designs of Mr. Pugin.

Edinburgh.—It has been determined, says the *Edinburgh Courant*, to place the proposed statue to the late Robert Lord Viscount Melville in the centre of the large open space in front of the county buildings. The statue will be in bronze, and has been entrusted to Mr. John Steell. The subscription list is headed by the Duke of Buccleuch, who gives the sum of 300*l.*, and the Bank of Scotland, of which the late viscount was a director, subscribes a like amount.

Glasgow.—The south abutment of the accommodation bridge has reached the height

from which the chains are to be suspended. The gateway arch has a fluted pillar on each side of it. The abutment on the north side is not so far advanced, though it is several feet above the level of the gateway.—At the Victoria-bridge the work proceeds with animation, but there is little yet observable in shape of a bridge.

Barnton (Wexford).—A new Roman Catholic church has been erected here, and, according to the *Wexford Guardian*, was to be dedicated under the name of St. Alphonsus M. Liguori, on Monday last. The church is oblong, consisting of nave, with north and south aisles, spacious vestries on the north-east, and a baptistry on the south, serving also as an entrance near the south-west corner. The whole building is composed of mountain free-stone, the door-frames, windows, quoins, belting, rigging, and belfry, being granite, and over each window and doorway is an arch of hammered green stone, contrasting with the cream-coloured work of freestone. The east window is lancet-shaped, and of five lights, with rosettes and trefoils, and flanked by a trefoil double window at each side, lighting the north and south aisles, and also the whole south side of the church. Over the window, on the apex of the gable, is a stone cross: another surmounts the baptistry: a Grecian, or florid cross, in a circle, surmounts and completes the granite belfry, containing a rosette aperture, immediately over two large-sized bells, beneath which is a lancet-headed window of three compartments immediately above the west or principal entrance. Each side has nine double light windows,—the vestries and baptistry occupying part of the space, similarly lighted. In the interior the arches are high and sharp, with plain corbels between each, from which rise the trusses which appear to support the roof of the nave, double the height of that of the aisles.

CAB AND OMNIBUS MANAGEMENT.

SOME "Propositions for an improved System of Management for Hackney and Metropolitan Stage Carriages" have been circulated recently,* and will aid, we hope, in leading public attention to a subject that greatly requires fresh legislation. Considering the enormous number of these vehicles, the extent to which they are now used, and the amount of annoyance and vexation that is experienced on all hands, it is surprising that people should remain quiet under the infliction. The grant made to Sir Sanders Duncomb, in 1626, of the privilege to let out sedan chairs in London, recites, "That whereas the streets of our cities of London and Westminster, and their suburbs, are of late so much incumbered with the unnecessary multitude of coaches, that many of our subjects are thereby exposed to great danger; and the necessary use of carts and carriages for provisions thereby much hindered:—and Sir Sanders Duncomb's petition representing that in many parts beyond sea, people are much carried in chairs that are covered; whereby few coaches are used among them:—wherefore we have granted to him the sole privilege to use, let, or hire, a number of the said covered chairs for fourteen years."

What might be said of Knightsbridge now on a Monday morning?

"This patent," says the writer of the "Propositions," "was followed by a proclamation against hackney coaches, strictly commanding 'that no hackney coach should be used in the City of London, or suburbs thereof, other than by carrying of people to and from their habitations in the country; and that no person should make use of a private coach in the City, except such persons as could keep four able horses fit for his Majesty's service, which were to be ready when called for, under a severe penalty.' In 1661, the number of hackney coaches having increased to four hundred, and it being found that they created an extraordinary charge upon the inhabitants of London and Westminster, by destroying the highways, it was enacted by Parliament, 'That all hackney coaches in and about the cities of London and

Westminster should annually pay, towards the charge of paving and cleansing the ways and streets in and about the said cities, the sum of five pounds each, solely for the improvement of the public thoroughfares, and not as a contribution to the Exchequer.' In 1712, an Act of Parliament was passed for licensing eight hundred hackney coaches (which were to pay five shillings each weekly) and two hundred sedan chairs (at ten shillings each yearly) to the Exchequer, within the bills of mortality. The fares were thus settled: coaches to go one mile and a half for one shilling, and two miles for one shilling and sixpence."

The writer proposes a central office, with a magistrate sitting every day for transaction of all business relating to omnibuses and cabs; a register of proprietors, conductors, &c., to be open for public inspection; the appointment of inspectors to examine vehicles and horses; the cab-stands to be revised; policemen to be appointed watermen, and paid by salaries; the cab fares to be reduced, and half-mile distances to be marked on the lamp-posts throughout the metropolis; further, that the duty be reduced from 1s. 6d. to 6d. per day.

By association, the omnibus proprietors at this moment are in a position to impose on the public in any way they please, and could run down almost any opposition that might be set up in consequence. Their recent arbitrary increase of the fares throughout the metropolis affords an instance. As quaint, inimitable Mrs. Keeley says, in "Apartments," at the Princess's Theatre,—"Every thing's dear in Exhibition time: why, they charge 4d. now for a threepenny 'buss!'" The public should look about them.

SUNDAY.

IN perusing a late number of *THE BUILDER*, my attention was arrested by a short paragraph among the "Notes in the Provinces," dated Leswalt, and referring to the erection of a column in that parish to the memory of the late Sir Andrew Agnew. The labours of that excellent man, in endeavouring to promote the better observance of the Lord's Day, are therein spoken of somewhat slightly. The paragraph appeared to be an extract from some local paper, and I hardly think that the sentiments therein expressed are really those of the editor of *THE BUILDER*. I infer this from the spirit of propriety which characterises that paper, and I hope its conductor will not think a few words upon the subject of the Sabbath out of place in its pages. I often read in that work some words of good advice to the working man, and I always see that it is edited by a real friend and advocate of the rights of that class.

I am thus led to offer a few words in behalf of one of the best blessings of the labouring man. What, I ask, would shortly be the condition of those who are born to toil without this Divinely appointed weekly interval of rest? and, whether it be our lot to labour with the head or hands, I think its repose must be equally necessary; and I often pity those who, from indifference and unconcern on this subject, or from a too anxious desire to make provision for this world, are led to disregard or mis-spend the Sabbath. On such persons I would urge the importance of giving that sacred day to the pursuit of objects worthy of their solicitude; and I would also venture to point out to those who have many persons engaged in their employ, the duty of so making their arrangements as to afford to their dependents, as much as practicable, the rest of the Sabbath-day, in accordance with the injunction of the Divine Author of this institution, "that thy man-servant and maid-servant may rest as well as thou."

It is, I think, too much the practice unfairly to charge upon the advocates of Sabbath observance, a wish to limit the enjoyments of the poor man; and the excellent individual to whom reference has been made, met with much reproach and scorn for his zeal in a cause which, as a member of the Legislature, he had the courage so earnestly to advocate. But, I ask, ought not this cause to be dear to the heart of every poor and working man?

Ought he not to feel it a privilege to have secured to himself and his family one day of rest in seven, when body and mind for awhile may be emancipated from toil and care? I would not have this day looked upon as one of gloom and sadness; but I cannot help thinking that those who desire its due observance, and in their practice carry out their principles, are far more truly the friends of the poor man than those who, on that day, seek the gratification of their own selfish pleasure, indifferent as to the privations caused to others who are required to labour in their service.

The custom of masters paying their workmen on Friday instead of Saturday appears, moreover, to be one which might be followed with advantage to all parties. Having for many years invariably pursued this plan, I can speak with certainty as to its advantage and convenience personally; and I feel sure that the workmen and their families would deprecate a return to the former mode. I need hardly refer to the objectionable plan of paying wages at a public house; thus presenting to workmen a temptation to drunkenness and leading to the ruin of themselves and the misery of their families. In regard to making Friday the pay-day, I have heard it objected that if this practice be adopted, the workmen will spend the next day in idleness or drunkenness; but I can only say that the experience of many years has shown me that under proper regulations such fears are groundless.

In reading an article in your seventh volume, p. 616, headed "Recollections of Peter Nicholson," the author of so many useful practical works, I was struck with the remark that to him "Sunday and week day were alike." He used to say, "that there is no rest to the wicked;" and "he had always gone to work in his studies as a blacksmith on his anvil." He might even in this world have been a happier man, and I doubt not that in life and in death he would have been a happier man, had he followed a different course.

I fear I shall be considered too prosy, but still I think this subject is not quite foreign to the objects of this paper; and if the editor should think these remarks worth insertion, he would oblige A CONSTANT READER.

BUILDERS' ESTIMATES.

Circumstances under which a builder is entitled to payment for preparing an estimate.

CLERKENWELL COUNTY COURT.

GILLINGHAM v. HOYLES.

This was a claim to recover 11. 10s. for work and labour in preparing an estimate at the defendant's request for the finishing of certain houses of which the defendant was about to become the purchaser.

The defendant admitted that he employed the plaintiff to give him a price, but observed that the plaintiff was only to be employed to finish the houses on condition that his was the lowest estimate. Three or four other parties had sent in estimates, and the successful competitor was 5s. under the plaintiff. The defendant then drew his Honour's attention to a recent report of a case in *THE BUILDER*, in which his Honour had decided that the plaintiff who sued for expenses in making out an estimate was not entitled to recover.

His Honour observed that the case referred to differed very materially from the present claim. There were circumstances under which a party was not entitled to recover for merely sending in a tender, and the case he had so decided was a case in point, the work having been performed for about half the amount of the plaintiff's estimate. But what were the features of the present case? Here the defendant was purchasing property, and wished to get an opinion as to its value. The plaintiff had supplied him with that information, and was surely entitled to something for his loss of time.

The defendant handed in a letter in which the plaintiff originally claimed only 11. and

His Honour, under these circumstances, gave judgment for that amount.

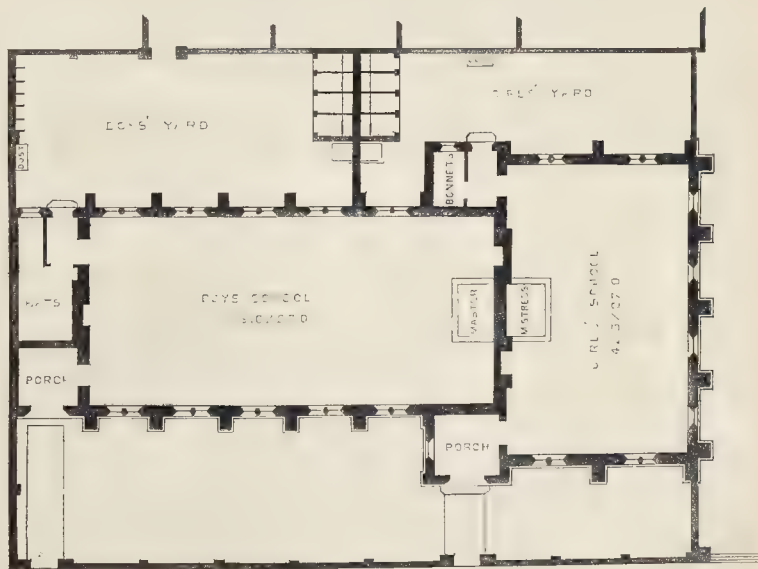
MORE TRACES OF ANCIENT CIVILIZATION IN AMERICA.—Discoveries of the ruins of an ancient city, two miles long, containing vast quantities of broken, burnt earthenware, arrow points, &c. have been made by the Mormons in the south of Utah territory.

* Appleyard, Farringdon-street.



ST. HELEN'S FREE SCHOOLS, PADDINGTON.

MR. MEYER, ARCHTCT.

ST. HELEN'S FREE SCHOOLS,
PADDINGTON.

ANNEXED is a view and plan of (R. C.) free schools, about to be erected at Westbourne Grove North. A portion only of the design is at present being carried out, viz. the Boys' school (59 feet by 27 feet), to be used as a temporary chapel during the erection of the

adjoining St. Helen's Church, including the facings: the stone is the Box ground, Bath, two front porches and the boys' hat closet, forming for the time a sacristy. This portion of the design with the inclosures, exclusive of the belfry, is being executed by Messrs. Smith and Appleford at a cost of 1,200*l*. Mr. Meyer is the architect. The materials used in construction are stone-dressings and brick-

and the facings to principal front are the white bricks from Beaulieu, Hampshire. The roof is open, stained. The belfry is constructed of timber, and covered with lead, and will have crocketed spire, gables, and pinnacles after two existing examples at Cologne, the one over the Minoritenkirche, the other near to the Rathhaus.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Public Amusements considered as an Educational Agency.—On account of the intention of the Belgian Government to take the initiative in the important item of public improvement, a Brussels paper makes the following judicious remarks:—"A zoological garden in the Brussels capital is a thing very much wanted, but we would not like it to become an affair of shares and a private speculation, and, therefore, it ought to be open gratuitously to the public at certain fixed days. However vague the instruction in natural history, which is obtained by the simple viewing of the collections of a zoological garden, still some utility is attached thereto; and we are convinced that nothing which will lead the masses towards the obtaining of instruction ought to be neglected. Analogous to this are theatres, games, concerts, public pageants, and festivals. The importance of these agencies on the public mind has been recognised by the law-givers and philanthropists of all times. A wise commonwealth has, therefore, not only to *school* a people, to procure them a cheap existence, to enact good hygienic laws, it will also amuse (recreate) the people. Public spectacles are by no means a subject so trifling or futile as is generally thought."

Paris: Schooling Working Men.—We perceive that the Paris press is not behind in taking up this important subject. Amongst the several works lately published, that of M. Audiganne "On the Duties and Rights of the Workers" occupies an honourable place. Our author, who has chosen the form of dialogues, treats also of the employment of children in manufactories. Notices on savings banks, public baths, sanitary measures, &c., fill up the book.

Public Works at Tiflis, Caucasus.—The governor of the Caucasian provinces has caused the construction of a magnificent bridge over the river Civa, near Redut-Kale. Conjointly a theatre has been erected at Tiflis by a German architect, in the Arabic style, the interior of which is ornamented in a superior manner, with the busts of great tragedians of olden and modern time—Euripides, Shakespeare, Goethe, &c. Some time ago an especial manufactory for architectural decoration was established at Tiflis by Prince Woronzoff, for supplying the many new structures with appropriate ornamentation. Another prince, M. Eristoff, is editing a monthly periodical in the Grusinian language, where art and literature are also represented.

A New Museum, Rome.—The plan for a new archaeological museum has been sanctioned by Government, and the necessary funds allotted. Besides the collection which has existed for centuries past in the Vatican Library, consisting of monuments of the first Christian era, another will be established in the Lateran, where the sepulchral monuments discovered in the catacombs, and other similar antiquities of stone and marble, will be deposited. The researches made of late years in the Roma sotterranea, have yielded most of these interesting antiquarian relics.

Mediæval Restoration on the Rhine.—Most persons journeying along this river will recollect the old parochial church of Bilk, near Düsseldorf. It is one of the oldest buildings on the Nether Rhine, consecrated by St. Swibertus in the twelfth century. Having fallen into decay, it will be again restored according to its original character.

Art oscillating westward.—Amongst the progressing painters of the new Düsseldorf school, M. Deutze occupies a prominent place. His picture, "Washington passing the Delaware," attracted much interest, and M. Goupil, the printseller of Paris and New York, purchased it for 3,000 dollars,—a work which M. Deutze had completed in less than six months. One thing led to the other: the artist made a smaller copy to be engraved at Paris, while he emigrates to the States, where print-shops and art enterprise are making energetic progress.

Enlargement and Erection of Prisons in Prussia.—All the penitentiary establishments of Prussia are so overcrowded, that an enlarge-

ment and increase has become absolutely necessary. At Ratibor and Münster the works have been carried on for some time, and the new buildings are near their completion. At Wartenburg also a plan for a new building has been made. Besides these new prisons, those of Halle and Werder will be considerably increased.

Paris School of Design, Architecture, &c.—The distribution of prizes of the *Ecole Nationale Spéciale de Dessin, de Mathématiques, d'Architecture, et de Sculpture*, has taken place in the amphitheatre of the Lyceum Louis le Grand. The following were the prizes given, and their recipients:—Architecture, no first prize; second, H. Raskin. Stone-cutting: E. Train, C. Tiné. Carpentry: C. Tiné. Architectural drawing: H. Raskin, E. Train. Drawing after architectural plates: A. Dunet, V. Henry. Many other prizes were given in ornamentation, composition, sketches after round figures, &c., showing the broad basis of this useful establishment.

ARCHITECTURAL COMPETITIONS.

WHEN people are indisposed to help themselves, they often call out loudly for the assistance of others: the waggoner called upon Jupiter, and it seems architects prefer calling upon Parliament to putting their own shoulders to the work which has to be done. If all men were of the opinion that they, as individuals, could not abstain from a given practice, however reprehensible, because others followed it, I fear little progress would be made towards a higher civilisation. Whenever Parliamentary assistance is sought, I hope it will be for something more than the simple regulation of architectural competitions; and considering how gross is the ignorance which prevails upon the position which architects ought to hold, I think members of the profession may be not unreasonably expected to withhold their countenance from a custom which tends to foster the contempt in which architects are held.

The advocates of competitions seem to overlook the fact that the present system is utterly irreconcilable with the usage the profession wish to maintain.

When people about to build can have prepared for their *special* use an almost endless number of designs *without any extra cost*, it is surprising that the public foster the present system of competitions under which they appear to have all to win and nothing to lose? Is it not much more surprising that the profession should be willing to work for the merest chance of obtaining the same amount of pay as if the work were put into their hands without any risk at all? People in their charges generally make an allowance for contingencies—where the business is certain charging less than when it is more speculative: but architects make no distinction whatever in their expectations of emolument, whether they work for a *bona fide* commission, or for the *chance* of obtaining one. Is this reconcilable with ordinary prudence and forethought?

Seeing that the public in *theory* gain so much from competitions, they ought to remunerate each competitor for his time and trouble, and then one most unjust feature of the present system would be abolished. Had they to pay for every design submitted to them, they would restrict their applications, and would be much more likely maturely to consider the designs submitted than at present; and as people in general value most highly that which they have to pay for, they will think better of the profession—esteem it more highly than they do now. If, in addition to this, the instructions to competitors could be established to constitute a legal contract, in default of adhering to which the advertisers could be mulcted in damages (as I think they ought to be), building committees would feel the responsibilities of their office. As long as the rack is not recognised by the legal practice of this country, I do not think that an Act of Parliament requiring reasons to be assigned for the judgment come to could be worked; but any jury might be instructed so far as to judge from evidence how far the committee had adhered to, or violated their own conditions.

But, in truth, competitions, though a very great evil, are only a part of the injurious effects resulting from the present position of architects; effects which are nearly as prejudicial to the public as they are to the profession. After giving the subject much consideration, I am convinced that it is necessary to incorporate architects, in a manner similar to that by which both branches of the medical and legal professions are embodied; and that this is required as much for the benefit of the public as it is by the profession.

The public are just as ignorant and liable to be imposed upon in architecture as in medicine; whilst the restrictions imposed by the Metropolitan and Local Building Acts are derogatory to a properly qualified architect.

It is much to be regretted that the Institute have not given this subject more mature and practical consideration; but I am convinced that it will force itself upon the attention of the profession, and that ultimately some incorporation will be adopted. JOSEPH BOULT.

THE ARCHÆOLOGICAL SOCIETIES AND BRIDGEWATER CHURCH.

We have received a letter from the architect under whose direction Bridgewater Church is being restored, in reply to Mr. Warre's note.

In it the writer says,—

"A fair and just criticism of the works of a professional man cannot reasonably be objected to; but to speak of them in *offensive language*, and to denounce them, moreover, as 'desecrations' before a public body of men known to give, at the least, a theoretical study to the subject, and before the world also (apparently, at all events) emanating from so influential a Society, is a mode of proceeding that cannot but be unreservedly condemned as *injurious* and *unjustifiable*, if it may not also be considered 'presumptuous' in the unprofessional man."

Mr. Warre will possibly be so good as to give your readers, Mr. Editor, the advantage in *this case* of his 'forty years' experience, and explain to them first the real causes of complaint against the architect, and then describe the *beauties* and the value of those portions removed, as well as the opinions entertained by himself and his Society as to the uses to which they were anciently applied when in the possession of the Romanists; for I should wish this controversy to be in some degree useful, which may be the case, if he would take the opportunity of giving you such an account as shall serve for a record of all that has been removed by the hand of the 'Renovator' from this fine old church.

Do believe, Mr. Editor, that I have some veneration for the *beautiful*, and can also appreciate the wonderful talent so profusely displayed in the works of our forefathers, and that I do not esteem my own work before the *good* in theirs.

What I claim both for myself and the profession is this,—that when called upon to restore an ancient building, we shall be allowed the exercise of our judgment in discriminating between the *good* and the *bad*; and if a necessity exist for rebuilding any portion, and that portion is in itself, or does only contain, an excrescence, that we shall not be compelled to reproduce the *abomination* simply because it is *old* or *curious*, or existed in a certain position previously, but that we shall be at liberty to call to our aid the whole powers of our mind in taking advantage of every opportunity that presents itself for improving, correcting, or refining the composition so as to produce, as far as circumstances will permit, a beautiful and harmonious whole.

The time is come in which we must bestir and extricate ourselves from *this bondage*, and the degraded position into which we have been thrust, by throwing off the leading-strings which have so long checked and cramped our labours and strivings after the *beautiful*. W. H. BRAKSPEAR."

We cannot admit that, when an architect is called in "*to restore an ancient building*," he is to set about "improving, correcting, and refining the composition." This is what the "beautifiers" of the last century did, and a pretty mess they made of it.



CHURCH STEEPLE AT VERNOUILLET.

CHURCH STEEPLE AT VERNOUILLET.

I TAKE the liberty of sending you rough sketches of the church steeple at Vernouillet, a small village on the Seine, close to the Triel station on the line between Paris and Rouen. It is curious, as carrying out the principles of pointed architecture, without the use of a single pointed arch from the top to the bottom, if we except the arch under the east side, the other three being round. The tower, which is central, is square and low, with two round-headed arches in each face, of late Romanesque character, and engaged shafts near the angles by way of buttresses. From this rises the octagonal spire, having very tall spire-gables on its cardinal faces, the lower part lighted by a round arch, while the upper part, or gable itself, which rests on an enriched string or cornice, has a triangular opening, the upper angle being rounded off. The slopes are also pierced with long round-headed openings. The front of the spire-light has evidently had shafts, the capitals of which still remain. The diagonal faces have each a tall round-headed arch in the slope, flanked by projecting entablatures or abaci, which rest on detached shafts. I could not see whether there had at any time been pinnacles upon them. The effect is not dissimilar from that which might be produced from a composition in the Italian style. I should think the spire belongs to the very beginning of the thirteenth, if not to the twelfth century; but we often find a tower of

Romanesque detail resting on a substructure of an advanced Pointed style. The church is cruciform, but the nave has evidently been shortened, only two bays and part of a third remaining. This and the transepts have the round arch. The chancel, which has a flat east end, is pointed. Both the transepts have fine doors: the northern one is pointed, the southern round. The member on the edge of the second order appears somewhat uncommon: it is very bold and effective.

I believe there are many instances in which the spire, probably erected at a later period, is carried out with details harmonizing with the Romanesque work below. Notre Dame at Etampes (between Paris and Orleans), has a fine spire of a somewhat similar character. This is a western one, and the west door and window are pointed. On the angles of the tower are tall pinnacles, composed of three stages of open round arches, crowned with a spire.

At a very short distance from Vernouillet is Verneuil, which has also a central Romanesque tower, but finished with a later addition of plain and poor work, with a gabled roof. The interior of the church presents many points of resemblance to that of the last.

Vaux is an unpretending little cross church, with a packsaddle tower, but has a good semicircular apex of early pointed.

Triel is a very picturesque church externally and internally; mostly in the style answering

to our Early Decorated, but with a large apsidal chancel added, of debased Flamboyant. The tower, which is central, is very plain.

The examination of these, with the fine old church of Poissy (which has been well restored) will furnish a pretty brisk day's work.

JOHN LOUIS PETIT.

SCHOOL FOR WORKMEN.

WILL you be good enough to remind your readers that I first published my proposal for founding a School of Art for artist workmen, with a view to their improvement both mentally and manually, and through this of art generally, in your Journal of March the 29th of the present year; and that, in consequence of the interest taken by Lord Shaftesbury in the progress and well-being of the working classes, I addressed a letter to him on the subject, setting forth its advantages, *especially its distinctness* from any thing coming under the head of *charitable institutions*. His lordship's reply acknowledged the interest he felt, and his belief that it would prove most beneficial. I have since addressed the Royal Commissioners on the subject, asking them to give it a share of their attention when the disbursement of the funds of the Exhibition comes under their consideration. But more than this,—I have addressed many members of the architectural profession, who have, but with one single exception, warmly and entirely approved of the

plan, and which they have sanctioned by their offered subscriptions towards a fund I propose to raise for the purpose. I would again urge them, through your Journal, and I trust you will aid me, to come forward in this cause. I think they should be the first to found such a school, not only because they are more interested than any other men in improving the workman and his work,—they employing so many,—but also because architecture is the first and foundation of all the other arts, and should take precedence of them all.

We should first make the workman able to finish in a masterly and workmanlike manner a fine church, and the houses we live in, and the monuments we leave to our illustrious men,—all works of architecture, and perhaps the only ones that can live; and then think of silks and velvets, of cups and saucers, of fenders and fire-irons: these would, indeed, soon follow: they must, then, be improved.

I have endeavoured to induce, and have partially succeeded in inducing, some of the higher members of the profession to form a committee to carry out and superintend my plan; and if I am fortunate enough to succeed, there will, I am confident from experience, be no difficulty in procuring funds for the school-house, casts of mediæval sculpture, &c. By myself, I fear, I can do but little. If, Sir, the architects do not take up this matter, they will find that some other society of men will; and then, instead of the new, or rather the first, school of art established to improve art-workmanship taking the lead as an architectural school, and thus infusing a high spirit into art-workmanship, the architect will find himself led by the upholsterer, by the crockery-man, and the ironmonger. Instead of the skill learned in the church and the dwelling-house descending to chairs and tables and fire-irons, he will find the carving on his arm-chair fastened to the church door, the ornament on his fender transferred to the lectern.

The object, then, of such a school as this should be to show to the workman the very best, and to teach him the highest, and thus to put it in his power to do all; and architecture being, as I have said, the first and foundation of all arts, the architect should take the lead, and be the teacher of the workman, as he was in the old time.

C. B. ALLEN.

RAILWAY JOTTINGS.

IN an article on the wonders of the railway system, the *Times* says:—"We know not what artifices of language could add force to a simple statement which appeared in our impression of Saturday last. The system of railway communication in these islands has advanced to such a point that every day the locomotive engine passes over a distance nearly four-and-a-half times the circumference of the globe. The following brief summary will perhaps serve as the best preface to the few remarks we propose to offer on the present position of our railway system:—Number of engines working on the railways in 1850, 2,426; quantity of coke consumed by them within the year (tons), 627,526; quantity of coal consumed, 896,466; total distance run within the year (miles), 40,161,850; average distance run per day (miles), 110,333. In the year 1850 there were in all 6,464 miles of railway under traffic. On the 1st of January, 1849, when as yet only 5,079 miles of iron road had been opened, there had been of capital expended upon their construction 205,160,000*l.* and at the same period the total receipts for the preceding six months amounted to 5,744,265*l.*, or 5·6 per cent. on capital expended. Allowing 40 per cent. for working expenses, the division of these receipts will stand at 2·2 for expenses, and 3·4 for profits.—The works of the Great Northern in the neighbourhood of Grantham are rapidly progressing. The Peascliffe tunnel is almost finished, and the tip from the Spittlegate-hill cutting has nearly approached the crossing of the Great North-road below Little Gonerby. The station at Spittlegate Church is being covered in as far as the outside buildings, waiting-rooms, &c., are concerned.—The *Morning Chronicle* gives an account of the first public trial of Captain Addison's day

and night signal, which was made on the North Kent line. "The design," it says, "is intelligible enough. Instead of having but one guard, there are here two,—one in the immediate vicinity of the engine; the other, as usual, behind. The signal which gives the warning to these functionaries is so situated and attached to every carriage that it may be turned on by any person of ordinary sense at a moment's notice. It is placed immediately outside the carriage, with which it is connected at one end by a spring, at the other by a latch, restraining its tendency to shoot out; and it is the removal of this latch, impossible except by the manipulation of a passenger, which permits the notice of danger to fly out and apprise the proper functionary that some accident has happened, or is about to happen [or is feared or fancied or made-believe to be about to happen, or it may be, rather, in most cases, to apprise the proper functionary that some urchin inside, "of ordinary sense," had found out the way to "lift the latch," or "pull the trigger," and set off the "stunning" fire-work], which will render the immediate stoppage of the train desirable. The red placard was visible at once by daylight to the vigilant observer; but at night, on the return, when almost a positive illumination was shown, there was still less doubt about the utility of the design. The pulling of a trigger, differing in no particular from that of a gun, let off a percussion cap, which shrouded a mass of combustible matter; and the result was a bright and brilliant flame, visible for miles, and enduring for at least five minutes." Can it be possible that it is for a moment contemplated to put it thus in the power of every nervous old woman of either sex, of every mischievous or curious urchin, and of every tipsy fast gent up to a lark, so to frighten a whole train full of passengers and arrest their progress at will? It surely cannot.

THE SURVEY OF IRELAND AND SCOTLAND.

ALLOW me to refer to an article which appeared in your number published on the 30th ult., under the above head, signed "John S. Sloane."

The writer commences his philippic as follows:—"At a time when so much is being said about the survey of Scotland, it may not be amiss to state a few facts touching the Ordnance survey of Ireland, which, in a humble way, may serve to show the people of Scotland for what they are so eagerly seeking."

Now, let us see what are his facts: for the sake of brevity I will refer to that respecting the survey of the city of Dublin, which is a fair specimen of all the others. It is as follows:—"The much-boasted survey of Dublin, plotted to a scale of 60 inches to the mile, one would think ought to be correct from the number of years they have been engaged at it (since 1837), and the quantity of red coats who have innumerable times paraded the streets, apparently revising it; and yet there is not a street without errors, not the less annoying because in some cases trivial."

There were two maps drawn of the survey of the city of Dublin, one on the general scale of 6 inches to the mile, the other upon the scale adopted for all the large towns, namely, 5 feet to the mile: both of these maps were completed, and in the hands of the engravers, in 1840. Since that time they have been published, and I believe every sheet bears the date of publication upon it. There is an immense demand for these maps, and would it not be absurd to expect that, so long as the demand continues, the Ordnance would discharge their engravers and cease to supply them, when it is, in fact, a part of the Ordnance design, that the profits arising from the sale of the maps shall ultimately cover the expense of the survey? indeed, it may even turn out to be a paying speculation, for I understand it is contemplated to publish the maps upon different scales, reduced from that of six inches to the mile. I have stated that every sheet bears the date of publication; and so long as the Ordnance continue to issue series after series of new impressions, and as they will have them accu-

rate up to the date of issue, they must necessarily embrace the alterations and additions that may have taken place on the ground since the preceding publication,—may we not, then, assume that the Ordnance will continue to publish their maps so long as they have a demand for them; and may we not likewise assume that not until the demand ceases will the Ordnance survey be finished?

As a city map, that of Dublin has been and is looked upon by the best judges as having attained a degree of accuracy and perfection exceeding anything of the kind in existence. As all the efforts of human genius, however, cannot produce perfection, so the Ordnance map of Dublin may have its faults and discrepancies.

The survey of the whole of Ireland—that is to say, the draft-plans—was finished in the years 1841-2; and one of the senior officers of the Royal Engineers, with his staff of assistants, civil and military, was then appointed to conduct the survey of the six northern counties of England, upon the same scale as that upon which Ireland was surveyed. The survey of Lancashire was completed in 1846, and in the following year the engraved impressions were in course of circulation. The engraved map of the whole county is now complete; and, judging from the sale it has had, it may be expected that ere long we shall have another and probably an improved impression of it.

Respecting the correctness of the Ordnance survey generally, it is in the hands of the public, and will speak for itself. I have had an extensive practical knowledge of it, both in Ireland and England, and I would not hesitate to stake my character as a surveyor upon the fact that it is at once as accurate, as complete, and as well finished as any survey can be: indeed, it is an advance in the art: neither labour nor expense has been spared upon it, and *labor omnia vincit* is true to a proverb.

It must be recollected that I am speaking of a scale the smallest area on which calculated with accuracy—that is to say, the smallest area the Ordnance profess to give upon it—is that of a township. No honest surveyor would profess to compute accurate areas of fields from it: for abstract purposes it may nevertheless be sufficiently accurate; but if private surveyors will make illegitimate uses of it, the blame must rest with them.

Respecting the district in the north of Ireland of which J. S. Sloane speaks, I am free to admit his facts, so far as they are fairly represented, and certainly that is not far. The Ordnance Survey commenced in the north, and it was not then designed to embrace all the fences and minor details, but to be a survey sufficient for the valuation of the country, and that would admit of the hills being shaded upon it—somewhat in the manner of the 2-inch map of England. When the survey of Ireland was reported finished, in 1842, a staff of surveyors was sent to the north to supply the detail that had been omitted, and from what I have been told, I believe it to have been finished long since. As to the fact that for railway purposes it was found necessary to survey the houses, there is nothing in it: assuming it to be a proof of the inaccuracy of the Ordnance survey is fallacious, for however accurate it might be, railway surveyors would be obliged to show an enlarged plan in such cases, for the sake of admitting the reference numbers being distinctly and legibly written upon the spaces they represented. W. M.

CATTLE BRIDGES.—Mr. Matthew, of Caermarthenshire, has devised a simple mode of constructing bridges to enable cattle and sheep to pass wide ditches. They consist of poles, five inches square, and then sawn from corner to corner, forming two triangular pieces. These are joined by a number of common iron butt hinges, according to their length, and have a handle at each end to open them: thus, when open, one of these forms a safe and easy foot-bridge, about fourteen inches wide, but when shut presents an angular projection, over which neither cattle nor sheep can pass; and, when shut, one rail forms a protection to the other from the effects of weather.

ARCHITECTURAL AND OTHER NEWS
IN IRELAND.

The foundation-stone of a new town-hall was laid at Portadown last month.

A new custom-house is to be erected at Belfast, on the site now occupied by the harbour-office. The proposed building will contain offices for post-office and excise purposes.

The Commissioners of Public Works have expended, up to the present time, on the Ferbairn drainage, a sum of 29,751*l.*, and a sum of 27,315*l.* is required to complete it, although the original estimate was only 47,000*l.*

The foundation-stone of a new Roman Catholic church has been laid at Balinroke.

Sundry works, consisting of the erection of a new board-room, &c. are being executed at the workhouse of Abbeyfeix, under the direction of the Poor-law Commissioners' architect.

The restoration of the cathedral of St. Canice, at Kilkenny, is progressing. The four great pillars and arches supporting the belfry tower are being re-decorated, and the whitewash with which they were covered for nearly two centuries is being removed: several other restorations are being effected.

The line between Strabane and Newtown-stewart, on the Londonderry and Enniskillen Railway, is in a forward state, and the works are expected to be shortly complete.

The parish church of Grean is being enlarged, and a new church is to be erected in the parish of Doon.

A new Presbyterian church is to be built at Belfast, on the Crumlin road.

The Committee of Natural History of the Royal Dublin Society advertised "*the munificent*" premium of ten guineas to be given for the best set of plans for a building, containing extended museum accommodation, and to cost 2,500*l.* Although several designs were received by them for the same on the 1st of "May" last, no decision has been yet come to.

The exhibition of the Royal Hibernian Academy at Dublin has been open since July. The collection of paintings is far inferior in number to the preceding years. In the antique room the display of sculpture is greatly improved. The architectural drawings are extremely limited, and display few of any importance. The exhibition is now open to the working classes at the reduced rate of one penny.

PALACES AND PARKS OPEN TO THE
PARISIAN PUBLIC.

WE compile the following list from one given in the French journals, assenting at the same time to the belief that there is no other city in Europe so well provided with places for public amusement, recreation, and instruction,—terms which are nearly synonymous, or ought to be so.

Fontainebleau.—Palace built by Primatice, and the successive abode of Francis I., Henry IV., Louis XIV., Napoleon, &c.; possesses a gallery, park, &c.

Compiègne.—Palace built by Francis I., furnished by Napoleon. Great *berceau* in the park.

Auteuil.—Once inhabited by Racine, Molière, Franklin, Helvétius, &c.

Chantilly.—Palace, park, theatre, &c.

La Malmaison.—Inhabited by Napoleon and Josephine, who established here hot-houses, celebrated in their time. It was here that our favourite *Hortensia* plants were first cultivated.

Marly.—Palace and park of Louis XIV. Famous water-works, where 225 sucking and forcing pumps reach the river and raise the water 167 mètres above its level: aqueduct 1,000 mètres long, leading the water to the Versailles water-works. Steam-pump raising the water 500 mètres.

Mais n-sur-Seine.—Built by Mansard, with a collection of curiosities of the times of Charles IX. It belonged successively to Napoleon, Lannes, and Lafitte, the latter of whom converted the park into a *village-modèle* (model village for the working classes). Distance, twenty-five minutes from Paris.

Montmorency.—The finest forest-park near Paris. J. J. Rousseau lived and wrote here.

Meudon.—Palace built by Philibert de Lormes, renovated by Louis XIV. Immense terrace on the Seine, whence Paris and 186 villages are to be seen. Rabelais was parson of Meudon.

Saint Cloud.—Palace and park. Henry III. died here by the dagger of a monk. The palace is rich in art-works, the park most picturesque.

Sèvres.—Great manufactory of porcelain. *Versailles*.—World-known; perhaps the finest ensemble of architecture and parking in the known world. The two smaller palaces of Trianon.

Seaux.—The garden of the ancient château built by Colbert.

Saint Germain.—Ruins of the *Château Neuf*, built by Henry IV.: James II. of England died there; since Louis le Gros the abode of thirty kings and queens of divers names. The ancient buildings are interesting specimens of the art-style of six centuries.

Le Mont Valérien.—One of the oldest sites of Paris, probably built on before the Christian Era.

Rembouillet.—The ancient château with its fine high tower: here died Francis I.: park and gardens laid out by Le Nôtre.

Neuilly.—Ruins of the Orleans palaces, &c.

Miscellaneous.

CASTING IRON PIPES.—The *Glasgow Mail* notices the mode of casting pipes in use at the foundry of Messrs. D. Y. Stewart and Co. of St. Rollox. The writer says that the foundry turns out twenty pipes in a day, each 12 feet long and 44 inches bore. With the exception of drying, the whole process of moulding and casting is gone through in half an hour. The malleable iron case, on its railway carriage, is placed under the moulding machine: the pipe is completely moulded in a period of three minutes—the faucet formed, and the running number impressed: the whole is then transferred to the hot air stove, thence carried round to the cupola, where the core is inserted, and the molten metal, at a delicately determined degree of temperature, is introduced from an enormous cauldron, suspended from a powerful crane. While the metal is being poured in, myriads of the most brilliant and fantastic scintillations are often evolved. Immediately afterwards, and at the critical moment of incipient contraction and setting of the metal, the core is started by means of a hydraulic press, and the huge tube, every part of which is of equal thickness and strength, is carried away and deposited in the yard for cooling, dressing, and testing. Some portion of the process—the writer does not state what—is the invention of the managing partner.

MATERIALS OF OLD HOUSE OF COMMONS.—Messrs. Eversfield and Horne, as will have been seen from the daily newspapers, have had the selling of the materials and fittings of the old House of Commons, the Painted Chamber, &c. The whole product was 1,782*l.* It may be of interest to note a few of the particulars. The Portland stone, ashlar, cornice, string course, dressings, &c., of the building, corner of St. Margaret-street, up to a mark, including two windows with Ionic columns, brought 39*l.* The copper flat, 850 feet superficial, in the offices facing Old Palace-yard, 42*l.* The open panel ceiling of the House of Commons, 11*l.* The wainscot canopy for the Speaker's chair, 10*l.* The brick and stone-work of the north side and ends of the Painted Chamber and arches under, including several ancient Gothic stone windows, 50*l.*

THE WESTMINSTER-BRIDGE-ROAD.—The dangerous state of the carriage-way near the foot of Westminster-bridge, on the Surrey side, occasioned by the breaking in of an old sewer, a few weeks since, has been made good. The loose soil has been withdrawn, and the aperture filled in with rubbish and concrete. The course of the drain has been diverted, so as to form a junction with the recently constructed sewer which intersects the Westminster-road from Stangate-street across to Pedlar's-acre.

SCRAPERS AND SIGNS.—There is a subject that time after time I have intended to write to you about, hoping you would give it your influence to set it to rights. The subject is foot or shoe-scrappers: you see I do not soar very high in my cogitations. Being also a little short-sighted, my meditations on the subject lead me to bless these foot-scrappers a thousand times, the more so that I know there is a remedy for the evil. When recently in Hamburg, I was delighted with the substitute they have there for the really inefficient, after a little use, and dangerous thing they have in this country. At each end of the door-step, and on a level with it, they have a grating, which not only is far more serviceable, but allows the dirt to fall through into a convenient space opening to the front, cut out on purpose, and which admits of its daily and easy removal. There is another subject I also think might suggest a passing observation from you. I regret it is not much more elevated than the other. I allude to sign-boards, that is, as far as they refer to the numerous large new buildings being run up in all directions for offices. Sometimes the builder leaves a narrow space for the names of the occupiers, or a board is put up for this purpose, but it is almost always so narrow that there is no room for making a separate column for designations: even when the name is long, it has to occupy two lines. Now we keep our books as much as possible on the column principle, to save time and trouble, and I do not see why it should not be the same with signs or sign-boards. Names and designations are often so jumbled together in a long list, that it is difficult and time-occupying to find out a required address. This, however, is a small matter compared to the foot-scrappers: I do hope you will give them a kick off the face of the earth.—A LIVERPOOLIEN.

METROPOLITAN COMMISSION OF SEWERS.—A special court was held on Friday, in last week; Mr. E. Lawes in the chair, and Mr. R. Stephenson, Captain Dawson, and Mr. Rendell, commissioners, also present. The chairman stated, that a great number of applications and memorials had been presented, from which he had made a selection; the first of which to be brought under notice was a memorial, complaining of the nuisance from an open sewer at Temple Bar Pier, and requesting that it might be arched over. The proprietors of the Chinese Junk had also memorialised them to the same effect. A discussion then ensued as to the propriety of covering the sewer to low-water mark, which Mr. Stephenson and Mr. Rendell recommended, Captain Dawson suggesting a special rate to defray the expense. The chairman stated that the sewer drained a whole district, and that the district rates were liable to the cost. The surveyor, he said, had reported that this was not so great a nuisance as many of the other outlets to the Thames. He was of opinion that if covered over, the expense would be thrown away as soon as the general plan of drainage was adopted. The estimate for covering over the sewer with plank would be about 450*l.* Mr. Rendell and Mr. Stephenson thought the propriety of incurring the expense would depend upon the time the nuisance would be likely to be endured. If the prospect of the adoption of the general plan was distant, it might be expedient to abate a great nuisance in the meantime. The matter was ordered to be further reported on at next court. Some other complaints were then heard and works ordered, warrants signed, and rates of 3*d.* in the pound on the Wandale, Fulham, and Hammersmith districts ordered.

WEST SUFFOLK ARCHEOLOGICAL INSTITUTE.—On Thursday week, the members and friends of this society paid a visit to Ely Cathedral. The attendance consisted principally of the clergy and their families from Suffolk: there were not many members present from Cambridge. The Very Rev. the Dean, and the architect, attended the party from the nave to the lantern, and through the cathedral, explaining to the visitors every object of antiquarian and general interest, and the late improvements made in the edifice. In the afternoon the palace was thrown open, and the bishop presided at dinner.

THE ADELPHI THEATRE.—The new drama here, called "The Queen's Secret, or the Iron Mask," has three pretty scenes;—an inn on the borders of the Forest of Fontainebleau; the Chateau of Fontainebleau (that rendezvous of palaces); and the Monastery of Lerins, in the Island of St. Honorat. The piece, founded on a well-known mysterious passage in French history, is mainly dependant on the acting of Madame Celeste and Mr. Webster, well supported, however, by Miss Woolgar and Paul Bedford. The versatility of Mr. Webster as an actor is very extraordinary: he can play anything,—from Richard III. to harlequin: the rough countryman, the West-end fox, the stern old Puritan, the Paris *flaneur*, find in him an equally efficient representative.

THE LONGEST SHIP. BEATEN AGAIN.—Under the heading "The Longest Ship in the World" our contemporaries have mentioned that Messrs. Mare, shipbuilders, of Blackwall, and Messrs. Penn, of Greenwich, engineers, have taken a contract to construct, for the Peninsular and Oriental Steam Navigation Company, an iron steam-ship, of the following dimensions and power, viz.:—Length between the perpendiculars, 325 feet; breadth of beam, 43 feet; depth, 32 feet. She will measure about 3,000 tons, and will be propelled by four engines of the collective working power of 1,200 horses; will have feathering paddle-wheels, and a guaranteed average speed of 14 knots, equal to 16 statute miles per hour. Some idea may be formed of the size of this gigantic vessel when it is compared with that of some of the existing steam-ships most celebrated for their large size. She will be 51 feet longer than the *Great Britain*; 60 feet longer than the largest of the Cunard or North American mail steamers, the *Asia* and *Africa*; 40 feet longer than the large steamers, such as the *Panama*, *Oronoco*, &c., now constructing for the Royal Mail Company; and 100 feet longer, and 500 tons larger, than the *Caledonia*, first-rate, of 120 guns. Strange to say, however, the Americans have beaten this by anticipation. The steamer *Eclipse*, now on the stocks at Louisville, Kentucky, is to be three hundred and fifty-nine feet in length. She is to have eight of the largest sized boilers, and her water wheel will be 42 feet in diameter. She will be completed in the fall.

SOLID GAS.—Baron Liebig speaks of the solidification of gas as one of the greatest wants of the age. Coal does contain an immense quantity of it in a solid state, and yields abundance of it in the fluid form of naphtha; but coal may rather be said to yield the gas than even to contain it, far less to be it in a solid state. Mr. Young, of Manchester, however, is said to have discovered a process by which, besides liquid oil or naphtha, he procures the solid paraffine—a substance which, it is said, had never before been produced from coal, though wood has heretofore yielded it. This paraffine, when heated, becomes olefant gas—the illuminating principle of ordinary gas light,—so that it is in reality the solid gas required. The essential point of cost may perhaps thus be brought within the limits of practical purposes. The process is said to be quite simple. The coal introduced at one end of a retort is screwed out in the form of coke at the other, while the liquid and solid products of distillation come away from a separate opening. If successfully carried out on a large scale, Mr. Young's process will yield important results, and among these may be specified the economical production of coke for our railways as well as of gas for our dwellings.

MODERN BALLOONING.—In lately reprobating the stupid abuses, mountebankism, and sometimes something worse, into which ballooning has fallen, we scarcely expected to be supported so soon by one of the "balloonatics" themselves, as he very significantly dubs them. A young artist, one of a party of four, whom we happened to see tumbling down into Fulham in a flimsy article, to what appeared, to themselves as well as to all who witnessed the exhibition, to be certain destruction, cleverly and coolly obviated, however, the very next moment, by one of the exhibitors, who converted the collapsing bag into a parachute by

cutting away the attachments of the neck beneath,—describing the circumstances in the daily papers, says:—"I am too sensible of the mischievous folly of which I and my brother balloonatics have been guilty, to let this opportunity pass without recording my humble, but solemn protest against the whole system of ballooning as at present existing. If any beneficial result was to be looked for—if any scientific ends were to be gained by balloon ascents, I should be silent; but it is madness and folly to permit any enthusiast or any charlatan who may be the possessor of a silk bag which he can afford to fill with coal gas, to risk his own life among the clouds, as well as those of the madcaps who are with him, for the amusement of some hundreds of *gobemouches* who have paid a shilling a-head to see their fellow-creatures commit constructive suicide. When some personage more important than a poor caricaturist has been killed in a balloon, the attention of the authorities will perhaps be drawn to the subject, and this wanton trifling with life be perhaps put a stop to, like any other dangerous nuisance."

FALL OF A FLOOR AT BALLYCLARE.—The flooring of a large loft in an old paper-mill here gave way last week, while upwards of 500 persons were assembled at a lecture on "electro-biology," and three lives were lost in consequence, and twenty-six persons seriously injured. The flooring consisted of heavy 3-inch planks, running transversely to the direction of the beam, supported at one end by the side-walls where it was let into the stonework, and at the other end by the beam, along the top of which the planks met from either side, and to which they were fastened by long iron bolts. The accident was occasioned by the breaking of the beam exactly in the centre, at a moment when a rush had been made thither to witness some experiment, and when it gave away, the flooring shelved downwards from both sides, sliding, as it were, those who stood upon it into the store below. In some places the planks prized up the masonry into which they were inserted, and in one spot a considerable mass of stone and brickwork was detached, which, falling upon the living heap below, caused the most fatal of the injuries recorded. Such cases—and this is not the first of late, even in Ireland—show the necessity of inquiry and examination as to the sufficiency of places of public resort to sustain the probable pressure under every contingency. It is the duty of local authorities even more than of lecturers to see to this.

COLOUR-BOXES AND DRAWING INSTRUMENTS.—The Council of the Society of Arts, wishing still further to prosecute their efforts in bringing a knowledge of drawing within the reach of artisans and others, and feeling convinced that the present high price of the necessary materials is a serious drawback to the attainment of that end, have determined to present the Society's large medal to the person who shall produce the box having the greatest number of the best colours for general use, and brushes, which may be sold retail for One Shilling. The Council will be prepared to purchase not less than one thousand of the successful boxes. The Council further offer the Society's large medal for the best and cheapest set of "drawing instruments," and will be prepared to purchase not less than one hundred sets of the successful case.

THE STATUE IN CAVENTISH-SQUARE TO LORD GEORGE BENTINCK.—On Saturday last, at the vestry of St. Marylebone, a report was presented from a committee appointed, as to the making of two crossings from Holles-street to the garden in the centre of Cavendish-square, that the present crossing and gate might be removed from the centre, so as not to interfere with the statue of the late Lord George Bentinck now about to be erected there,—the inhabitants of the square or parties applying for the change agreeing to pay the cost of alteration themselves. The report was adopted.

WORSLEY HALL.—An illustration of Worsley Hall, at which her Majesty means to rest on her visit to Manchester on 10th proximo, will be found in the eighth volume of *The Builder*, page 270.

THE SUB-MARINE TELEGRAPH.—The line, as now being manufactured, is described as consisting of four copper wires of the thickness of an ordinary bellwire, cased in gutta percha, and twined with a corresponding number of hempen strands steeped in a mixture of tar and tallow into a rope of about an inch diameter. Another strand similarly prepared is wound transversely round this, and finally ten wires of galvanized iron, about a third of an inch thick, are twined round this central core and form a solid and at the same time flexible casing. The whole, when thus completed, has the appearance of an ordinary 4½-inch metallic cable. A huge coil is being formed in one continuous piece at the rate of about 1½ mile a day, and will finally attain the length of 24 miles.

THE EARTHQUAKE AT NAPLES.—An *Official Gazette* of the two Sicilies gives a detailed account of the disasters caused throughout the kingdom of Naples by the earthquake of 14th ult. The Principato Ulteriore was severely visited, particularly in the districts of Carbonara, Lacedonia, Gaiatri, and Monteverde. At Bovino, Ascoli, Lucera, and Sansevero, and other places of Capitanata, most of the houses were seriously injured. In the province of Bari, the town of Canosa has suffered most: 376 houses are in a tottering condition: two churches, the town-house, and the arch of Diomedes, have been considerably damaged. But the scourge was most severely felt in the province of Basilicata, its effects being chiefly concentrated around the Vulture, where the motion lasted sixty seconds; and, according to the account, it had not quite ceased by last advices. One-half of Venosa had been destroyed. At Rionero, fifty-two dead bodies had been dug out of ruins on 16th; at Barile 100; and the town of Melfi, containing 10,000 inhabitants, is a heap of ruins: 700 persons lost their lives there, and upwards of 200 are severely bruised and wounded. The village of Barile actually disappeared. The Neapolitan government have given directions for the prompt reconstruction of the fallen houses, and advanced sums for the purpose. The houses that are in a tottering condition, but may still be saved, have been propped up; those that threaten ruin are in course of demolition. Meantime barracks have been constructed for the houseless population, and four government engineers are directing the labours now in progress for repairing the immense damage done.

THE TEMPLE CHURCH.—On going to visit the Temple Church the other day with some country friends, says the *John Bull*, we were much disappointed at finding the door closed. We now gather, however, from a correspondent of the *Morning Chronicle*, that a sort of half welcome is given after all to those who are fortunate enough to be initiated in the "Open Sesame" of this ancient abode of the Knights Templars, which consists in simply knocking at the door. It is to be regretted that the solution of the mystery of admission is not announced by a slip of paper on the door inscribed with the word "knock."

VENETIAN BLINDS.—Cast-iron is said to be coming into use for common Venetian blinds. We have sometimes thought that good, stout, tinned iron might be economically cut into slips for such blinds. The *Mechanic's Magazine* says, that a Mr. Burt makes laths of iron or metal, embossed, corrugated, or simply curved, perforated and painted or japanned, according to taste. He also claims an arrangement for raising and lowering such blinds, and preserving the parallelism of the laths, without the multiplicity of cords generally employed.

WAGES IN SOUTH AUSTRALIA.—Return showing average wages of mechanics and others in South Australia, for quarter ending 31st December, 1850.—Blacksmiths, 9s. per day, without board or lodging; bricklayers, 7s. to 7s. 6d., ditto; brickmakers, per 1,000, 10s. to 13s., ditto; carriage makers, 7s. per day, ditto; coopers, 6s. to 7s., ditto; day labourers, 4s. per day, ditto; wheelwrights, 6s. to 6s. 6d., ditto; miners, tributaries, according to agreement; boys, 6d. to 1s., with board and lodging; shipwrights, 8s. to 9s. per day, without board or lodging.—*Adelaide Observer*.

IVY ON EXTERIOR WALLS.—The last thing I have to mention on the subject of damp relates to ivy on exterior walls of buildings, which may be said to belong more to the consideration of the architect than to my purpose; but as precaution is allowed to be better than cure, I trust it will not be thought irrelevant to notice its effect on external walls, which is, that if it does not entirely eradicate damp, it may be admitted to be a repellent placed on the exterior. I had my attention drawn to a case of this description, where damp had prevailed for a length of time in the walls of an apartment, but ivy having grown up to cover the opposite exterior side, the affected parts inside had become dry. The gentleman in whose house I observed the improved change accounted for it, I think, with much reason, namely, that the close overhanging pendant leaves prevented the rain or moisture from penetrating to the wall, contrary to all other trees which are trained for bearing fruit.—*The Paperhanger's and Upholsterer's Guide.*

MANAGEMENT OF THE WOODS AND FORESTS.—On the 10th October the new Act will come into force. Its object is to separate the management of the Woods and Forests from the direction of her Majesty's Works and the Public Buildings, and to make better provision for the management of same. The First Commissioner of Woods, &c. is to be First Commissioner of Public Works and Buildings, with a salary not exceeding 2,000*l.* a-year, and he may be a member of the House of Commons. The other commissioners of Woods and Forests are to continue to hold office, but not to be eligible to a seat in the Commons. The other officers to continue in their situations. Officers may be appointed to assist in the Public Works and Buildings. The management of royal parks is to vest in the Commissioner of Woods. The First Commissioner of Public Works is to be an enclosure commissioner, a commissioner of Greenwich Hospital, and of Highland roads and bridges,—a commissioner for building new churches, and president of the Board of Health.

NORFOLK AND NORWICH ARCHAEOLOGICAL SOCIETY.—The general annual meeting of members was held at Swaffham. The proceedings extended over three days. The first day commenced with the general meeting of the members in the Assembly-rooms in the morning, and an excursion to Castlecre in the afternoon; the evening being occupied with a conversation. The two following days were devoted to excursions in the neighbourhood, particularly to Narburgh, Oxburgh, and Middleton. The meeting was fully attended, and a great many ladies were present.

LINCOLNSHIRE ARCHITECTURAL SOCIETY.—The autumnal meeting of this society was held at Spalding, on Wednesday, the 10th inst., Sir Chas. Anderson, Bart., High Sheriff, in the chair. Papers were read on various subjects by the Rev. W. Moore, D.D., the Rev. Geo. Ayliffe Poole, and Dr. Cammack. The society visited several of the neighbouring churches on the two following days. At the general meeting the Rev. Geo. Ayliffe Poole, M.A., and Mr. Geo. Gordon Place, architect, were elected honorary members of the society.

THE PRESENT SYSTEM OF BUILDERS TENDERING.—Sir,—With reference to the great disparagement in builders' estimates, these must arise from the following difficulties. First, badly drawn specifications, and vagueness in their description, leaving builders to exercise their speculative imagination as to the architect's intentions. Secondly, the time allowed being rarely sufficient for correct estimates. Thirdly, the next a greater evil practised by builders themselves, jumping at estimates by the "rack of the eye and twist of the mouth." This abominable system is adopted by incompetent builders, and is alike disgraceful to tenderer and receiver, and only adopted by "horse dealers and sharpers" at our public fairs. Fourthly, builders habitually carrying into effect their dishonest policy of what is termed "spoiling it" for another opponent. Is not the above system detrimental to the builder's family and creditors? Proprietors may boast of their cheap erections,

but has architect, merchant, builder, or mechanic benefited by this cheapness? It is poor consolation for a builder after a life of drudgery and toil, living like a pauper on diseased potatoes, rusty bacon, and bad cheese, gaining only the paltry gratification of seeing his name in your journal as the successful competitor for Mr. So-and-So's building and alteration.—*CANDIDUS.*

THE DISC ENGINE FOR STEAM BOATS.—Our readers may remember our description, some time since, of the patent disc-engine put up by Mr. Bishopp in *The Times* office. Messrs. Rennie have just now completed an engine on the same principle to drive a screw-propeller, in which some of the parts have been considerably simplified. The slips or grooves introduced in the first instance to make the cone steam-tight, have been got rid of with considerable advantage as respects noise and friction.

MONUMENT TO O'CONNELL.—It is stated that Mr. G. Petrie has designed a monument to be placed over the remains of Daniel O'Connell, in Glasnevin cemetery. The monument is to consist of a church on the ancient Irish model, a round tower, and an Irish stone cross of the most ancient form and character, and of the largest proportion. The material is to be the fine grained granite of Ireland.

NORTH LONDON ARTISANS' SCHOOL OF DESIGN.—The committee have decided on appointing Mr. James K. Colling as master of geometrical drawing. There were altogether 8 candidates. We are glad to hear that H.R.H. Prince Albert has renewed his liberal subscription of 25*l.* to the funds of this Institution, which, however, are still not so large as they should be, considering the importance of its objects.

BIRMINGHAM SCHOOL OF DESIGN.—We are glad to hear that Mr. Wallis has been appointed master of the school of design at Birmingham.

TRUE ART: LOSS THROUGH IGNORANCE OF IT IN BUILDING.—We might perhaps be led to disregard the fact, that the knowledge of true Art is still discordant with the character of a people of high civilization, and the conviction and perception of its real beauties is as much a blank as would be the absence of a sense. The pursuit of Archaeology is popular, graphic illustrations of buildings are widely disseminated, the ready use of the pencil is not confined to architects; but still, the power to recognise the beauties of Art in architecture, and the feeling of the important "mission" of Art universal, have no real existence. The want of any national recognition of the high educational value, and of the humanising and purifying influence of that Art,—the ignorance of this value, and of everything that relates to Art, and especially what relates to Architecture, displayed in Parliament whenever these matters are touched upon, is most melancholy to those who believe in something which transcends even that "mercantile value," which we are slowly appreciating,—a value infinite and pervading, and beyond what is dreamed of in all the philosophy of Oxford and Cambridge.—*From the Architectural Quarterly Review, June, 1851.*

"THE LARGEST HOTEL IN THE WORLD."—I went first to the St. Charles Hotel, at New Orleans. The front consists of a huge granite portico, ascended by a flight of steps on each side, and supported on large granite columns. In the centre of the building a cupola rises, surmounted by a flag-staff. The building itself consists of five large wings diverging from the centre, one on each side of portico, parallel to the street, and the other three extending backwards, equidistant: each of these masses of building is uniform, and about four stories high. In this hotel they can make up from a thousand to eleven hundred beds, and during the season, the average number of occupants is about 700. The dining-room is an apartment with four rows of tables, capable of dining 1,500 people. On entering the portico, the visitor finds himself in a large hall, which occupies the whole of the first floor of the centre of the building, and is filled with chairs and tables, well supplied with newspapers and pamphlets. The side opposite the

entrance is occupied by the bar, fitted up with plate glass, and all the necessary requisites. At the back of the bar is a large board covered with hooks, each numbered from one up to five or six hundred: these hooks are for the keys of the various rooms, which are always in the possession of the parties occupying them, unless they choose to have them hung up on the board, when they go out anywhere. In the hall were seated a number of men-servants, whose business it is to watch a large board, on which are hung innumerable bobs of brass (in six or eight parallel lines, each terminated by a bell), under as many numbers, and which, by their shaking, indicate the number of the room where the party is requiring attendance.—Of course, from the great number of lodgers, these bobs are going incessantly. At smaller hotels, where they have not servants constantly watching the bells, the barman pulls at a handle which communicates with a triangle hung somewhere outside, and by certain combinations of blows, indicates the number of the floor, and the room of that floor, where attendance is required. The ground-floor of the portico of the St. Charles is occupied by another bar for general customers, the entrance leading into the street. Under the portico in this hall are two or three shops.—*A Ramble from Sydney to Southampton.*

TENDERS

For an Elizabethan villa residence and offices (wood-croft), to be built near Chesham, Bucks, by Mr. Charles Lennox Peel. Mr. J. B. Watson, architect.		
Davey, Lewes	£3,100	0 0
Holland, London	2,539	0 0
Higgs, ditto	3,525	0 0
Carr, ditto	2,483	10 0
Wilkinson, ditto (accepted)	2,351	0 0

For rebuilding stabling, &c. at the Greyhound-yard, Holborn, for the Holborn Estate Charity. Messrs Cadogan, architects.

Cubitt and Co.	£1,785	0 0
Hayward and Nixon	1,779	0 0
Kelle	1,770	0 0
Macey	1,547	0 0
Nex	1,593	0 0
Lawrence and Sons	1,492	0 0
Chesterman and Son	1,468	0 0

TO CORRESPONDENTS.

"E. W. T." (can scarcely have given the least consideration to what was actually said in the review referred to, otherwise he would not have jumped to so erroneous a conclusion as that "the truth" of "the law of gravitation" was "doubted" or questioned either by the reviewer or by Dr. Nichol, the Professor of Astronomy at Glasgow, who is quoted as an authority for the opinion of the insufficiency of that law to explain certain important facts or phenomena in the solar system). "O.," "J. W.," "G. R. P." (the subject has been often and fully discussed in our pages). "A Builder," "J. B. W." (shall hear from us). "W. and Sons" ("Zola" (declined with thanks), "Messrs. B. and Co." (appear to have overlooked what has been already said). "G. O." ("T. W. A. B." ("P. S. O. M. P. E." "C. H." (nothing yet from Italy), "Scotia" (address the parties). "R. L. S." ("G. H. C." ("J. B." Norwich, "K. and T." (apply to the manufacturers), "A Student" (there is, fortunately, no such offer. Do not waste your time upon a shadow).

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor"; all other communications should be addressed to the Editor, and not to the Publisher.

ADVERTISEMENTS.

BUILDERS' BENEVOLENT INSTITUTION.—FOURTH ANNUARY DINNER, to be held at the Lord and Tavern, on WEDNESDAY, October 23, 1851. THOMAS GRISSELL, Esq., F.R.S.A., President, in the Chair.

Stephen Bird, Esq.	H. W. Cooper, Esq.	G. John Newson, Esq.
George Bird, Esq.	William Ellis, Esq.	John N. Esq.
Joseph Bird, Esq.	E. W. Gammon, Esq.	Wm. Norris, Esq.
Albermar William	Wm. Harcourt Esq.	Thos. Patrick, Esq.
Cubitt, M.P.	George Peck, Esq.	R. Richardson, Esq.
Robt. L. Curtis, Esq.	J. N. Hollis, Esq.	G. S. Smith, Esq.
Messrs. Collins and	Wm. Howard, Esq.	R. Soward, Esq.
Snodgrass, Birmingham	Wm. Hutchings, Esq.	Thos. Stirling, Esq.
John Calver, Esq.	Thos. Howard, Esq.	John Thorne, Esq.
Charles Ball, Esq.	Thos. H. Hales, Esq.	James Uwin, Esq.
N. Barnes, Esq.	James Knight, Esq.	R. Watts, Esq.
Thomas Corrie, Esq.	George Myers, Esq.	

Gentlemen desirous of promoting the interests of the Institution by becoming stewards will be pleased to forward their names to the Secretary, at the office, 47, New Oxford-street.

A. G. HARRIS, Secretary.

MERCANTILE EDUCATION, French.—German, English, Classical, Commercial, and Mathematical, near town. Terms, Six Guineas per quarter, which will include disbursements and books. The school is of established repute, having been for many years successfully conducted by the principal, with who apply, by letter, prepaid to the Rev. A. B. Baltic Coffee-house, Threadneedle-street, City.

ALTAR AND COMMUNION CLOTHS.—THE QUEEN'S LANCIA CAPSULES, PILCHER, DE VORA, TROUS, ROBIN, & HARRISON, St. Brown's street, Bedford-row, London.—Decorations from the most simple to the most elaborate designs, at moderate prices.

The Builder.

No. CCCCLI.

SATURDAY, SEPTEMBER 27, 1851.

SOME interesting and important experiments on the strength of cements, &c., were made on the 20th, 22nd, and 23rd inst., at the Great Exhibition, under the supervision of the jury of Class XXVII., when the large beam of hollow bricks and Portland cement, erected in the area at the west end of the building by Messrs. J. B. White and Sons, of Millbank, was broken down. The experiments were watched with great interest by a large number of scientific men and others. Confining ourselves for the present to the works of the firm we have named, we will record some of the experiments which preceded the attack on the beam. The weights used were iron pigs, averaging 100 lbs. each.

The first experiment was on a block of neat Portland cement 4 inches square, suspended at each end, and 16 inches long between the bearings. The weight was applied exactly in the centre. This was broken down by 1,560 lbs., including the weight of the scale: the fracture was perpendicular. The block was four months old.

2. A block of neat Roman cement (Harwich stone), exactly the same size as the last, seven months old, broke down with 380 lbs. This must have been defective, and we may say, as applying throughout, that single experiments on the strength of materials must never be trusted to for general deductions, the most extraordinary variations being often found in specimens prepared under, what may be considered, precisely the same circumstances.

3. A block of neat Sheppy cement, the same size as the last, broke with 980 lbs. in the scale.

4. A block of neat Portland cement, six months old, 2 inches thick, and $2\frac{1}{2}$ inches wide, required 2,280 lbs. to pull it asunder.

5. Two pieces of Portland stone, 6 inches square (each 6 inches high too), cemented together by a thin joint of neat Portland cement (four months old), were suspended. When 3,700 lbs. were in the scale attached to the lower stone, the top stone yielded where the iron clippers held it. Afterwards the square holes for the ends of the clippers were made deeper in another part of the stone, and 4,500 lbs. were put into the scale, when the iron hook broke, the joint remaining sound.

The materials here used being Portland stone and Portland cement, it was with difficulty that some of the foreigners present could be made to understand that the latter was not made from the former, and we mention the circumstance as an illustration of the erroneous impressions given by improper appellations. It is the same with Roman cement. A scientific French writer in describing that marvellous piece of construction, the Thames Tunnel, deceived by the name, says that the engineer succeeded here by adopting the cement of the ancient Romans, although, as we know very well, the cement in ques-

tion which really was used had no more to do with the Romans than it had with the Pope.

6. Two pieces of Portland stone, the same size as the last, joined together with Roman cement, five months ago (a thicker joint, by the way, than in the previous case), required 2,780 lbs. (including scale) to separate them,—a much greater weight than was anticipated. The cement left the stone; so that its adhesive power yielded, not its cohesive.

Turning now to the principal example of the series,—the hollow-brick beam,—we annex views of the front and end of it, showing its dimensions and construction, and the mode of applying the weight.

During Saturday the beam was loaded in the central part with 15,000 lbs. weight of pig iron, and in this state it was left until one o'clock on Monday, when it was carefully examined and found quite free from any indication of failure. The loading was then resumed until it was weighted with 40,000 lbs., at which time a deflection of nearly one-eighth of an inch was observed: with 41,600 lbs. two cracks exhibited themselves in the four lower courses, at a short distance right and left of the centre of the beam, and then a crack in the centre of the beam. With 51,600 lbs. the cracks extended through the six lower courses and the deflexion increased to five-sixteenths of an inch; with 62,800 lbs., which it bore for a short time, the beam gradually separated into two parts as nearly equal as possible, the line of fracture being vertical and indiscriminately through bricks and joints as they occurred. In falling, the beam thrust the piers considerably out of an upright.

It will be remembered by many that in 1837 an experimental brick beam was (at the suggestion of Mr. Brunel) built by Messrs. Francis and White, at their cement works, Nine Elms, Vauxhall, for the purpose of ascertaining the strength of Roman cement. The beam consisted of hard stock bricks, bonded in the usual way, and bedded and grouted with a mixture in equal portions of the best Roman cement and clean Thames sand, making it completely solid throughout. It consisted of nineteen courses of bricks, the thirteen uppermost courses being two bricks, or 18 inches, in thickness, and the six lower courses two-and-a-half bricks, or 1 foot 10½ inches, in thickness. The sectional area was, therefore, thirteen courses, at 3 inches each, = 39 inches × 18 inches thickness = 702 inches; six courses, at 3 inches each, = 18 inches × 22½ inches thickness = 405 inches, total sectional area 1,107 superficial inches, and in the lower courses were inserted (as we understand) fifteen lengths of hoop-iron, 1½ inch and ⅞ inch.* The beam was supported at each end, leaving a clear bearing of 21 feet 4 inches, and after it had been built about three months it was loaded with 11,200 lbs. of pig iron, placed on a platform, which was suspended at the central part of the beam, which weight was increased at the end of another three months to 24,000 lbs. In this state it was left for twelve months, at the termination of which period it was determined to load it until it broke down, which was effected by increasing the weight to 50,622 lbs.

Messrs. White and Sons had determined, for the purpose of exhibiting the strength of

Portland cement as compared with Roman cement, to erect a brick beam in all respects similar to the last described (except the substitution of Portland for Roman cement); but a short time previously to the opening of the Exhibition, it was suggested to them that if they made use of hollow bricks instead of the ordinary solid bricks, it would add much to the interest of the experiment (as experiments upon hollow bricks were much wanted); and in compliance with this suggestion, they erected, a few days before the opening of the Exhibition, a beam of hollow or tubular bricks, with Portland cement and sand (in equal portions), with iron hooping in the lower courses, and generally following, in all respects, the dimensions and form of the beam built with Roman cement at Nine Elms, as far as the use of the hollow bricks would permit. The weight was applied in the central part of a clear bearing of 21 feet 4 inches, in the same manner as to the Roman cement beam. The use of the hollow bricks occasioned some difference in the sectional area, which we have to take into account; but we shall disregard in the present comparison the disadvantages arising from having merely the narrow edges of the tubes to connect with the cement instead of the broad surfaces of ordinary bricks.

The Portland cement beam, as will be seen by the accompanying diagrams, consisted of ten courses, the upper part having three courses on edge, and four flatwise, and the lower part two courses on edge, and one flatwise. The bricks were all laid as stretchers, and the beam consequently consisted of a series of forty tubes (the number of bricks in section throughout), which were open from end to end of the beam. The average size of the bricks was 5½ inches by 4½ inches, and the rims or sides being about ⅝ of an inch in thickness, the tubular or hollow parts were each equal to 9 inches super. But with the joints and beds the whole measured in the six upper courses an average of 36 inches × 17.25 inches, = 621 inches; and in the three lower courses an average of 16.5 × 26.6 inches, = 439 inches; making a total area of 1,060 inches: from this deducting the forty vacuities, or hollow parts, of 9 inches each, = 360 inches, we have, as the net sectional area, 700 inches.

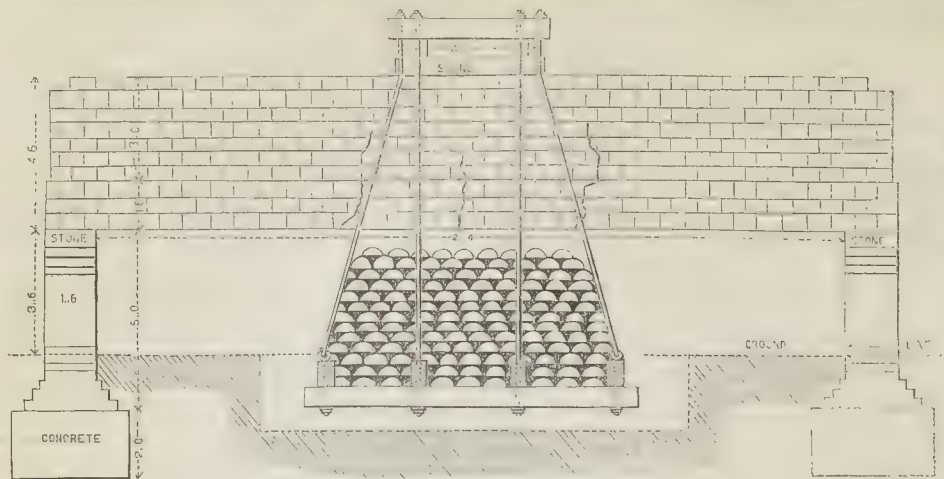
By an inspection of the diagram it will be seen that as the vacuities are distributed throughout the whole depth of the beam, they occasion a loss of strength nearly proportionate to their whole extent, varying of course as their distances from the neutral axis.

On the part of Messrs. White it is argued that the depth of the Roman cement beam being 57 inches, and the sectional area 1,107 inches; and the depth of the Portland beam being 52½ inches, and its net area, 700 inches, we shall have $1,107 \times 57 = 63,099$; and $700 \times 52\frac{1}{2} = 36,750$, as expressions of the relative strength of the two beams, supposing they had been built of the same materials.

The Roman cement beam (as before mentioned) was broken down with 50,652 lbs., and since $63,099 : 36,750 :: 50,652 : 29,500$, it follows that if the Portland cement beam had broken down with 29,500 lbs., the two cements would have exhibited equal strength; but, inasmuch as it took 62,800 lbs. to break down the Portland cement beam, the experiment exhibited a superiority of Portland cement over

* General Pasley says, in his work "On Limes," Ave only, p. 162.

Brick Beam of Hollow Bricks and Portland Cement erected at the Exhibition Building May 1851, by J. B. White and Sons.



DIMENSIONS.

Neat length 24 ft. 4 in.
 " length 21 ft. 4 in. in clear of piers.
 " depth 4 ft. 6 in.
 " thickness .. 2 ft. 3 in. bottom, and 1 ft. 6 in. upper part.

Built of equal parts cement and sand; completed, 12th April;
 centres struck, 22nd April.

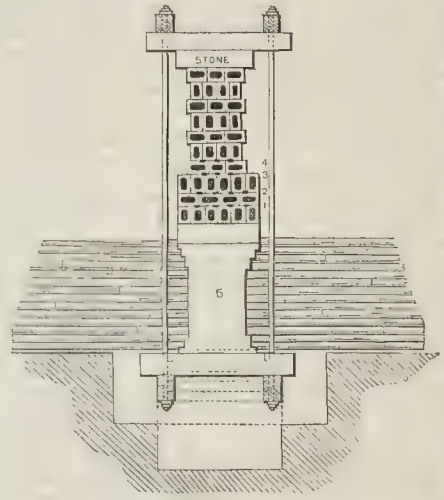
CONSUMED:
 1,200 hollow bricks, weight .. 10,750 lbs.
 32 bushels cement } 6,400 "
 32 ditto sand } 17,150 lbs.

If built in common bricks would require—
 2,700 stock bricks, weight .. 13,420
 50 bushels cement } 8,000 21,420
 (Roman) ditto sand } difference 4,270 lbs.

Weight of scale and iron work .. 1,792 lbs.
 " of stone .. 672 "
 " of beam in suspension } 15,000
 between piers } 17,464 lbs.

In common bricks:
 Scale and stone 2,464
 Net weight of beam 18,743 21,207 lbs.
 difference 3,743 lbs. = 1 13 1 19

ton. cwt. qr. lbs.



Roman cement in the ratio of 2.128 to 1, or, in round numbers, 2½ to 1. This reasoning, however, is scarcely correct, since it does not take sufficiently into consideration the strength dependent on disposition of the material.

From some experimen's made upon Portland and Roman cement, where solid bricks were used with each, the superiority of Portland cement was found to be much greater than this is shewn by experiment,—but when we consider the nature of the structure, and take into account the circumstance of the Roman cement beam having been built seventeen months before the breaking weight was applied, whereas the Portland cement beam had been only erected five months, we are not surprised that the experiment with the hollow bricks did not exhibit the full strength of the Portland cement. It is to be regretted that hollow bricks were used, as it would have been better to have rested the comparison upon two beams as strictly analogous as possible, instead of complicating the

subject with conditions that are extraneous to the immediate inquiry.*

The important part played by the iron bond in this experiment must not be overlooked. Sir Charles Pasley, in his work on cements, describes two beams constructed by him for the purpose of ascertaining, how much of the extraordinary resistance of brick beams built with cement might be owing to the hoop iron bond. These were precisely similar, with the exception that one of them had five pieces of hoop iron bond, and the other none. The latter cracked when the centering was removed, and was broken by a weight of 498 lbs., while the first sustained a weight of 4,523 lbs. before it yielded. "The mutual adhesion of the cement and the iron," says that author, "is so perfect, that no force can separate them without producing the complete fracture of the brickwork, which is thus resisted by all the tenacity of the iron."

* Hollow bricks are usually better moulded and more thoroughly burnt than ordinary stocks.

The tensile strength of wrought iron per square inch of section, may be called 27 tons.

The mean of Mr. Telford's experiments gave 29 tons, as did some conducted under our own superintendence. Mr. G. Rennie says 24.93, and Capt. Brown 25 tons.*

In the hollow-brick beam there were fifteen pieces of hoop iron bond, one-and-a-half inch by one-sixteenth of an inch, nearly; namely, four in the first course, four in the second, three in the third, and two in each of the next.† The pieces of iron were all broken, except one in the bottom course, one in the second, and one in the top course.

This very interesting proceeding suggests many observations, but we must now pass on to the experiments, also on Portland cement, which were exhibited on the same occasion by Messrs. Robins and Aspdin, of Scotland-yard.

* Eight or nine tons may be considered a safe load-strength.

† In the diagram, by mistake, only fourteen are shown.

1. A suspended block of cement, $3\frac{1}{2}$ inches wide, and $2\frac{1}{2}$ inches thick (one month old), was pulled asunder by 3,240 lbs., including the weight of the scale.

2. Sixteen stock-bricks, attached to each other with neat cement, supported at one end, and projecting from the bearing point 3 feet $2\frac{1}{2}$ inches, broke in the eleventh brick with 256 lbs., exclusive of scale, suspended on the extreme end.

3. A solid step, 6 feet 5 inches long, and $7\frac{1}{2}$ inches deep at the back, formed of two parts Portland cement and one part broken bricks, held up at one end, carried itself, and broke off close to the bearing-point when the third 56 lb. weight (168 lb.) was placed on the extreme end. The weight of the step was called $4\frac{1}{2}$ cwt.

4. Two blocks of neat cement, 1 foot $5\frac{1}{2}$ inches long, 9 inches wide, $4\frac{1}{2}$ thick, cemented together with neat cement, bore 6,000 lbs., when the lower part of the lower block gave way.

5. Twenty stock-bricks, united side by side with cement, composed of one of cement and one of sand, 3 feet $6\frac{1}{2}$ inches in bearing, were supported at each end by iron clamps: the weights being applied to the centre, the bricks broke with 1,200 lbs.

6. Six fire-bricks, in courses, cemented together with pure cement, were suspended, and weights were applied to pull them apart: the upper brick broke with 2,836 lbs. in the scale.

7. The five fire-bricks from the last trial were again tested, iron being inserted in the second brick from each end: the upper brick broke, carrying away also part of the lower, with weight of 4,600 lbs.

8. Two pieces of Portland stone, 2 feet by $11\frac{1}{2}$ inches, $7\frac{1}{2}$ inches thick, cemented together with neat cement, took a weight of 7,272 lbs.; when the lower stone yielded, carrying away a small portion of the cement joint.

Our readers will find other experiments on the same material, both by Messrs. White, and Sons, and Messrs. Robins and Aspdin, in our sixth volume, pp. 343, 351, and 471.

MINERAL PRODUCTS IN CLASS I. OF THE GREAT EXHIBITION WHICH RELATE TO THE BUILDING ARTS.*

GRANITES.

BESIDES the Cornwall and Devonshire granites and porphyries which have been noticed, the Exhibition contains representatives from most of the localities in the British Isles. Thus we have a specimen of the granitic, or rather syenitic, rock from mount Sorrel in Leicestershire, in which the mineral called hornblende is substituted for the mica. This stone is commonly used for walling, road-pitching, and as a covering of broken stone where a very hard surface is required, as on the roads near London. Scotland is represented by the Barnton Mount granite from Edinburgh, by the Aberdeen granite, by the two kinds of Peterhead granite, by the granites of Argyshire and the Isle of Mull, by that from Kirkcudbrightshire, and by the Glenorchy and Loch Etive granites and chlorite slates. The Barnton Mount stone is unlike most other granites, being a greyish uniformly coloured variety, compact and fine grained, can be procured in blocks of any size, and would, perhaps, be more extensively used if it were not for the proximity of the celebrated Craig Leith, Red Hall, and Carlingnose quarries, which furnish stone, perhaps of equal durability and certainly easier, and less expensive to work. The Aberdeen granite is generally fine grained, crystals small and undefined, colour a pleasing speckled black and

white, in which the two are about equally mixed. This granite is well adapted for curbstones, street-pitching, and for the larger class of hydraulic works, and has been used in Sheerness Dock and other works. It is also used for statuary and for a variety of ornamental works. Owing to the very crystalline structure of this granite and the metallic lustre of the mica, it takes a very beautiful polish. Specimens of Aberdeen granite may also be sometimes seen with a light pink tinge of colour, derived from the felspar. The Peterhead granite, is of two kinds, one termed the red granite the other the grey. This difference is occasioned by the colours of the felspar. Like the Aberdeen granite they are both susceptible of a very beautiful polish. The Peterhead granite has been used in Trafalgar-square, the British Museum, and the Carlton Club-house, and is well adapted for sculpture and statuary. Besides the use made of the Aberdeen and Peterhead granite for building, paving, and statuary purposes, it is also, by the aid of the lapidary, manufactured into a variety of small articles, for which its beautiful polish admirably adapts it. For instance, it may be met with in the first shops of Edinburgh and elsewhere, handsomely mounted in the shape of pencilcases, penholders, bracelets, brooches, necklaces, handles for paper-cutters and other knives, studs, buttons, seal handles, paper-weights, &c. Considerable employment might be obtained by working up the beautiful granites of Devon and Cornwall, especially those of Dartmoor, into similar articles. The *Encyclopædia Britannica* states that granite stones to the value of 30l. to 50l. have been raised from an acre of ground under preparation for tillage in Aberdeenshire, and sold for paving the streets of London; that the exportation of granite to the capital from this country employed at one time 400 men and 70 vessels of 7,000 tons burthen, and that the value of all the granite exported yearly was stated at 40,000l.

The Argyshire granite from Inverary is very compact, greyish coloured, with black specks, and is much recommended for street-pitching. The Bonar granite varies from a very fine to a coarse grain; the prevailing tint a clear black and white, not so grey as the Inverary. The Argyshire granite from the Forest of Glenorchy contains pink-coloured crystals of felspar. The Isle of Mull granite very nearly resembles the red variety from Peterhead. The specimen from Craignair Quarry, Kirkcudbrightshire, is a black and white variety, with moderately sized crystals not well defined, mixed with largish light pink crystals. This is a strong, compact, highly crystalline granite.

The Glenorchy and Loch Etive granites will be found in No. 7: some of these are mixtures of white felspar and quartz in moderately sized crystals, with black mica or schorl. In other specimens, where the felspar is still white, the grain or crystallization is much finer. In others, the felspar is flesh-coloured, the tint varying in intensity in different blocks, and sometimes even attaining a scarlet red. Sometimes, but in few specimens, the felspar is decomposed. The same number contains specimens of garnets, chiefly of small size, probably procured from micaceous schist, in the neighbourhood of the granite: there are also specimens of chlorite slate from the quarry near Taymouth, which furnished the stone for building the castle of that name. The stone is a light faded green colour, with very fine lamination, and a very smooth surface when dressed. Inverary Castle, the seat of the Duke of Argyll, is also built of chlorite slate.

The channel islands of Herm, Guernsey, and Sark, as well as the Orkneys, furnish specimens of their granites. The channel islands granite has frequently very large crystals of pink-coloured felspar. Other varieties from Herm and Guernsey have a very dark green base, with whitish crystals of felspar. These are excellent for street pitching, and are also very extensively used in the broken state for metalling the surface of the metropolitan roads. The granite from the Orkneys has a cloudy, indistinct appearance on the surface, having large masses of white

and black much intermixed, and sometimes intersected by long-straight veins. The Herm granite is also much used for steps and curbstones, and was employed for the steps of the Duke of York's column, and for the blocks of the tramway laid down in the Commercial-road for the heavy traffic to and from the West India Docks.

The Irish granites are represented by specimens from Dunleary, and from Carne, in the county Wexford. The Dunleary and Kingstown granites resemble that of Aberdeen, except that the colour is lighter, the white tint prevailing to a greater extent. The Wexford granite is porphyritic, sometimes very fine grained, with sparry white crystals in a dark green ground, sometimes with pink crystals of a larger size and coarser crystallization. No. 160 contains some beautiful blocks of serpentine from Connemara, in the county Galway. This exquisitely variegated marble is in two blocks, each of which is about 5 feet long, by 2 feet 6 inches wide, and a foot deep, one face of each being polished. This serpentine is exceedingly well adapted for ornamental work, and has even been exported from the coast of Galway to New York. No. 155 also contains a beautiful specimen of serpentine from the Darcy estate, near Chlden, Connemara. This marble is also exported in considerable quantities. No. 142 contains specimens of green granite from Rosmore, county Monaghan. This has a black ground, with numerous green crystals (felspar?) of all sizes up to one inch by a quarter of an inch. In one specimen the crystals are smaller. Well adapted, when polished for interior ornamental work.

BUILDING STONES OF THE OLD RED SANDSTONE AND DEVONIAN SERIES.

Although a vast extent of country is comprised within this geological formation, yet the specimens of building stone sent up to represent it are comparatively few, and with one or two exceptions are confined to Devonshire. The old red sandstone nevertheless contains many quarries of building stone, but they are little valued locally, chiefly because superior stone frequently exists in the same neighbourhood. Hence, with the exception of a single specimen from the neighbourhood of Hereford, another from Tortworth, in Gloucestershire, and one from Bristol, not much used for any purpose but common fence walling, the old red sandstone is quite unrepresented. We have a specimen of sandstone from the neighbourhood of Taunton, which probably belongs to the rocks of the Quantock Hills, and the other stones classed under the head of the Devonian series are from the coralline limestones of Plymouth and the south-east of Plymouth.

The specimen from near Hereford is No. 194 in Catalogue, from Jennings' Quarry, Three Elms, Hereford. It is a moderately fine grained stone of a yellowish cream colour, and dresses with a clean, sharp arris. It is used in the neighbourhood for cider-mills, and is said to be suitable for sea walls, railway blocks, &c. It is said to stand equally well on its edge and on its bed, but this property is doubtful of any laminated stone, as wherever lamination exists there must be a tendency to scaling off when the stone is placed on its edge. This arises from the percolation of moisture which will be absorbed at the joints, will penetrate between the laminae, and the action of frost will separate flakes or sheets from the face of the stone. The specimen from Tortworth (see No. 29) is also a grey variety, moderately fine grained, with particles of mica, and a somewhat earthy cement uniting the grains—weight per cubic foot $162\frac{1}{2}$ lbs. The Bristol specimen (No. 29) is from the Avon defile, and underlies the great mass of mountain limestone exposed in that section. It is the ordinary dun red stone so extensively prevailing throughout the old red sandstone district, the colour being due to the peroxide of iron. The grains are not well cemented, and generally speaking the stone is of little value, except for rubble walling and buildings of an inferior class. The specimen from Bishop's Lydiard, near Taunton (No. 193), is the same dun red sandstone, but of somewhat

* See p. 597, ante.

better quality, and is extensively used for building in the neighbourhood.

The coralline marbles from Bradley quarry, near Newton Abbot, from Torquay, and from the neighbourhood of Plymouth (Nos. 160 and 193) are remarkable beds interstratified with the slates and old red sandstones of Devonshire, and are supposed by geologists to have formed ancient coral reefs. The specimen from Bradley quarry has a black crystalline base, with white veins intersecting it, abounding with such genera of polyps, as fenestella, reptora, lithodendron, cyathophyllum, astræa, porites, and favosites, the sections of which are very beautiful. It contains also numerous fossil shells, the inhabitants of which had found shelter under the edges of the coral reefs.

No. 160 also contains a very beautiful specimen of marble from Hoor Lake, near Plymouth, and No. 193 contains several other specimens from the neighbourhood of Plymouth. The marble is chiefly of a blackish colour intersected by white veins, and marked by numerous fossils, especially by the favosites and other corals. The Plymouth marble is much valued for interior pavements, &c. and was extensively used in the breakwater and in the works of Dover pier. The specimen from Kingskerwell, near Torquay (No. 193), is a white and pink variety beautifully variegated by the white sections of the fossils. The Devonshire coralline marbles are certainly not inferior either in beauty or durability to those of Derbyshire, or any others which this country produces. Ornamental specimens of them are to be found in various conspicuous parts of the nave, as well as in Class XXVII., showing their application in the manufacture of chimney-pieces, fonts, tables, columns, &c. (see Nos. 4, 6, 39, 55, 108 of Class XXVII.) They may also be well studied in the Museum of Economic Geology, where they are shown both in a rough and polished state worked into various forms.

BUILDING STONES OF THE CARBONIFEROUS LIMESTONE.

The vast oceanic formation known under this name, constitutes, in English Geology, one of the best known varieties of rocks. Thrown up for the most part into a rugged mountain barrier, it surrounds every one of our coal fields, and the basin of the carboniferous limestone forms the vast trough in which thousands of feet in thickness of grits, shells, and carbonaceous layers termed the coal measures are now found reposing. Every true coal field has its surrounding and underlying mass of carboniferous limestone, and not a few have contributed specimens to the Great Exhibition; but it will be advisable first to say a few words on the general nature of this limestone, and the economic uses to which it is applied. The part of the carboniferous series usually termed by geologists the carboniferous or mountain limestone, is that thick mass varying from a few hundred to nearly 3,000 feet in thickness, lying between the old red sandstone and the millstone grit. This mass is composed in its lower part of alternations of limestone and shale: then succeeds a great central mass of nearly pure compact limestone, having every variety of colour, from the lightest grey to the most intense black, and also a great variety of structure. This is succeeded in the upper part of the formation by alternations of limestone beds, with grits and shales, which gradually lead up to the millstone grit, or farwell rock, so termed in some coal fields, because it forms the boundary beneath which workable coal is no longer found. It is chiefly with the central mass of compact limestone that we are at present concerned, as this is the one chiefly used for economic purposes. The stones of the carboniferous limestone are not much used for buildings of a superior character, nor even for ordinary housebuilding, probably on account of their liability to absorb water, and their consequent dampness. The Derbyshire marbles from this formation, however, are much used for interior decoration, and the beautiful polish of which most of the beds are susceptible, should draw attention to the fitness of numerous beds in

this limestone for columns, sills, flooring, and many ornamental purposes. The stone is much used locally for building rubble walls, and for inferior ashlar. It contains a very large per-centage of lime, and therefore burns very economically into quick lime; and many of the more argillaceous beds undoubtedly possess hydraulic properties. The stone is also much used locally for mending and repairing roads, but should never be employed for this purpose except in situations where good drainage exists, as it will make a good road when tolerably dry, but when used in hollows and on heavy clay lands, where the drainage is defective, it frequently makes execrable roads. When burnt into lime, it is highly valued by the agriculturist, as it answers for the amelioration of clay soils much more effectively than the poor weak limes. Probably no mortars are superior to those made from the mountain limestones: the lime should, however, be compounded with ashes or some very dry and gritty variety of pit sand. These limestones are also much valued locally as a flux for smelting iron ores, and even in ordinary cast iron foundries the use of mountain limestone in the cupola will much facilitate the running of the metal. There are other uses of less importance to which this stone is applied, such as paving and curb stones, also in its broken state for garden and park walks and paths; but the above are the principal uses that are worth mentioning.

The exhibition contains specimens of mountain limestone from the Durham coal field, from the northern extremity of the Cleve Hill coal field in Shropshire, from the great Orme's Head, probably connected with the coal field of Anglesea, from Buckley mountain, adjacent to the Flintshire coal field, from the Isle of Man, from the great Midland coal field, near Derby, and many specimens from St. Vincent's rock in the defile of the Avon, the Mendip Hills, and other parts of the Bristol and Somersetshire coal field. So large and varied a contribution of this particular limestone will display its uses and application to a variety of purposes, and I now proceed briefly to notice the principal localities in the order of their geographical arrangement. The first is a specimen from the mountain limestone of Wear Dale, with a beautifully polished surface nearly black and variegated by large sections of fossils probably turbinolia, or some other description of coral lying with their stems inclined at an angle with the bedding or stratification of the stone. If this specimen (No. 204 in catalogue) be a fair representative of the quarry, the stone is highly ornamental, and has few superiors in this country. No. 155 is also a beautiful specimen from Wear Dale, shewing sections of astræa, caryophyllia, and turbinolia. The specimen from the Cleve Hill coal field (No. 189) is described as oolitic limestone, from the Oretan Bank works, and referred to in the illustrated catalogue as a remarkable instance of an oolitic limestone being sufficiently hard to take a good polish. The fact is, this is not an oolite at all as that word is generally understood, but simply a bed of oolitic limestone from the carboniferous series; that is to say, a bed of mountain limestone with an oolitic structure. There are plenty of such beds in the mountain limestone which are sufficiently hard and crystalline to take a polish: in fact, as far as we are aware, all the oolitic beds of the mountain limestone are capable of being polished. The specimen in question is a very light cream-coloured greyish stone, abounding with fossils and oolitic grains imbedded in a crystalline cement. The polish is not very brilliant, but would probably wear tolerably well, if protected from atmospheric influences and from accidental injury. The specimen from Great Orme's Head (No. 194) is from Ross quarry—a pale bluish-grey variety of limestone, which takes a very smooth surface and good polish, but is not sufficiently variegated for ornamental purposes. In No. 194 also is included the specimen from Buckley Mountain adjoining the Flintshire coal field. This is also a bluish-grey variety with a somewhat deeper tinge of colour than the last specimen, and is exhibited not as a marble or building stone, but on account of its properties as a hydraulic

limestone. It probably, therefore, contains a small admixture of argillaceous matter in combination with lime, in which circumstances, according to the experiments of Vicat, lime possesses the property of hardening under water. Many other beds of the Buckley limestone are highly crystalline, and will admit of a very fair polish.

The specimens from the Isle of Man consist of black and grey varieties from the southern side of the island where they occupy a space of about sixteen square miles, covered for the most part by tertiary gravel. Amongst these is a variety of flag stone (*posidonia schist*), from which the steps of St. Paul's cathedral were supplied. They were presented for that purpose by the then Bishop of Sodor and Man. The flag stone resembles some of the beds worked in the black rock at Bristol, and the quarries have been worked for several hundred years. The stone is extensively used for flooring, chimney-pieces, tombstones. A specimen is shewn with an inlaid pattern of red cement, in imitation of encaustic flooring. The specimens of grey and black marble take a good polish, and the former has been used in building Castle Rushen (900 years old), King William's College, St. Thomas's Church, Douglas, and Castletown pier. No. 193 contains specimens of encrinural black marble from St. Vincent's rocks near Bristol, but by far the finest collection of specimens from the carboniferous limestone of the British coal field is comprised in No. 29, which contains twenty specimens from a great number of beds in the defile of the Avon below Bristol. All these specimens are polished on one side, and present a great variety of beautiful marbles, differing much in their structure and in the fossil remains which they contain. Some of the beds have a strikingly marked oolitic structure, the fracture much resembling that of the true oolites, except that the stone is harder, and the cement in which the ova are imbedded is more crystalline than in the true oolites. Many specimens are beautifully veined by streaks of different coloured carbonates of lime which have filtered into their cracks. Many beds appear to be almost entirely composed of fossils: some of these are encrinural, so called from the abundance of encrinural stem which they contain: others are coralline, containing caryophyllia and favosites in abundance, while others are filled with the shells of molluscs of the genera spirifer and producta, and some beds are entirely composed of terebratulæ. These fossiliferous beds all yield sections of singular beauty and variety, according to the general disposition of the fossils, whether at right angles or at other inclinations to the plane of stratification. Many of the beds contain fragments of red jasper, which give a pleasing variety to the polished surface, while others contain angular and broken fragments of older limestones of the very same series which appear to have been consolidated and afterwards broken up before the deposit of the succeeding layer. Mr. Howard, C.E., the collector of the very extensive assortment of Bristol minerals, has added to his specimens of building stones the weight per cubic foot of each specimen, and from the statements thus furnished by him it appears that the carboniferous limestone of the Avon rocks varies in weight from 162 to about 175 lbs. per cubic foot.

The specimen of marble from the Mendip Hills (also in No. 29) is a dull dark grey variety with white veins of carbonate of lime passing through it, but it is probable that these hills contain nearly the same varieties as the Avon defile. An inspection of the marbles exhibited from the Bristol district will naturally suggest the idea that they might be much more extensively employed for ornamental purposes. We believe them to be equally varied and beautiful with the Derbyshire marbles, and yet they appear to attract no attention, and give rise to no industrial employment either on the spot or elsewhere. It is true they are not adopted like the primitive granular marbles of Greece and Italy for statuary purposes, nor to preserve their polished surfaces exposed to the vicissitudes of a climate like that of Great Britain; yet for many pur-

poses of decoration, as for walls, flooring, columns, pilasters, ornamental tables, and slabs, chimney-pieces, mosaics, encaustic work, &c., they appear admirably adapted.

The Derbyshire marble is not well represented in Class I., the specimens merely consisting of a few black pieces unpolished, but prepared for the operation of the turner and his lathe. The mountain limestone of Derbyshire it is well known contains some beautiful varieties chiefly of black and encrinital marbles, which give employment to a great many persons in the neighbourhood who convert them into ornamental articles. Amongst the mineral manufactures in Class XXVII. are many beautiful specimens of the Derbyshire marbles manufactured into tables, chimney-pieces, clocks, inkstands, vases, jars, candlesticks, card-cases, paper-weights, card-baskets, inlaid chess boards, mosaics, models of obelisks, and pyramids, &c. &c. See Nos. 37, 38, 40, 76, and from 79 to 83, in Class XXVII. for Derbyshire marble worked up into these various articles. The Derbyshire alabaster or gypsum, is procured from fissures in the mountain limestone (see specimens in No. 146, Class I.) The famous Derbyshire fluor spar, or fluoride of calcium, is a beautiful and interesting mineral also found in the mountain limestone associated with Baryta, calc spar, and the ores of lead and zinc. The colours vary from amethystine to violet blue, with many beautiful shades of bluish and yellowish green; and Professor Ansted states that other colours may be artificially produced by heat and by sulphuric acid. Nos. 37, 38, and 40, in Class XXVII. contain many very beautiful articles manufactured from the fluor spar.

The Exhibition contains several specimens of carboniferous limestone, which possess no value in reference to building purposes, but are highly interesting in a geological point of view. One of these is specimen No. 5 of the Dublin calp limestone, exhibited by Dr. Lentaigne to show the very singular occurrence of granitic fragments in a bed of that limestone. The specimen is from the Crumlin quarry, near Tallagt, in the county of Dublin. Dr. Lentaigne states that the granite fragments in this quarry vary in size from a cubic foot to a mere speck. They are in most cases angular, and sometimes with sharp spicules, so as to make it very unlikely that they were conveyed by water. In some cases, the fragments were broken and slightly separated, so that the granite was crossed in different directions by veins of the limestone matrix, and in one specimen the granite is traversed by a vein of white carbonate of lime, which is continued into the adjacent limestone. The thickness of the bed in which these granite fragments are found is 15 or 20 inches, dipping 20 degrees towards the granite of the Dublin mountains, and upwards of four Irish miles distant from any granite formation. Another bed containing similar fragments was met with 50 feet below this, according to the statement of the workmen, but none have been observed in the intermediate beds. Nodules of silex are found in the same or other beds. The granite fragments in the specimens exhibited have the quartz and mica perfect, no hornblende, and the felspar quite decomposed. No. 6 in Class I. is a specimen of carboniferous limestone, entirely covered with large fossil shells of Productus.

RECORD OF THE INTERNATIONAL EXHIBITION.—The Bolton local committee have suggested the erection by the commissioners of a column and statue of Prince Albert, as their president, in bronze or other metal, either in the centre of the space now occupied by the Exhibition building or elsewhere; further, that they should erect with some portion of the building materials a new building for specimens, models, documents, &c., connected with the Exhibition, and obtain permission from the Commissioners of Woods to mark the site and dimensions of the present building, if it be removed, by the erection of inscribed monolithic blocks of stone.

MECHANICAL APPLIANCES IN ARCHITECTURE.

THE wholesale condemnation of mechanical appliances in art, recently attempted, is surely very erroneous. It is not mechanism, as such, which we should blame, but the use of mechanism as a directing power—involving the domain of man's spirit. Mechanism, so far from being subversive of man's success in art, is one of the principal means whereby his end is simplified and shortened, and is only to be condemned when it directs as well as aids. As to the gross wonder excited by the time and labour it must have taken to do certain feats, I do not think we less admire the swiftness of the steam-engine when we learn the cause, than if we were told that it was gained by amassed and unusual application of human strength; nay, the very contrary is the truth; and the smaller the cause to the greatness of the effect, is the just proportion of our wonder and pleasure. I would also animadvert on the use of the word "debased," as applied to any style: that which employed real artists, and is admired by men of cultivated taste, is not likely to be debased: we should remember what Gothic was some few years ago: what some now find glorious, Wood condemned as "debased" (the cathedral of St. Mark). We may own that there are fallings off from a certain metre of excellence, but until a style is without rule, life, or art, it cannot be called debased, or thrown from its pedestal. The cinquecento of Italy is not a debased style, for it does not fall short of some perfect standard, nor is it the bad imitation of a good model. It exists *per se*, and is excellent for application to domestic purposes; but one would as soon think of using it for a severe and grand effect, as of writing an epic poem in lyric verse; or of planting a garden with aspens and looking forward to a pine forest.

Is liberty a lie?—is justice a phantom?—is progress a vanity?—No: nor though we fail seventy times seven in gaining them, do they still less truly exist; and their roots are as those of the young trees on the rocky mountain, firmly fixed, though storm and avalanche do their worst: the seed is sown, and will in time spring up, let us hope, into a goodly crop; and for this purpose we recognise machinery as one of the great engines of our success.

It is true that the penny pamphlet is not so fair to look on, as the monk-painted page; but which best serves to spread the generous thought, the mighty truth, the growing love? and can we now with conscience wish the machine destroyed that the hand may delight? True, the steam-engine is not so picturesque as the cavalcade, the tunnel, as the mountain pass. Yet do these bind nations together where those bound individuals. It is not that which pleases most the artist's eye, but that which joins nations in mutual obligations which is most deserving of our admiration and most to be loved. It is individual man indeed who projects the poem, the statue, the painting; but it is machinery which renders it universal. And what commerce is to money, machinery is to art: the money suffers, and the super-scription is effaced, but *man* profits. Art is not the end of art—utility to the human race forms its great claim on our consideration. To this end machinery works, and a mutual advantage takes place, for what man originates mechanism spreads, and what mechanism produces, human art should beautify; and this seems to me the natural action of each. Far be it from us, from any of us, to lose hope for all things: let us see in the present state of the world but a state of transition: what former ages originated, we perfect: what they perfected, we spread: the water was then deep, but flowed in few channels: it may now be shallow, but it fertilizes vast tracts of land.

The landscape of Claude is a finer work of art than the public panorama, but which does most service—affords widest pleasure? The statue is nobler than the cast, but which is of most general use? Not the super-eminence of a gifted few, but the progress of the people generally is the great object of our epoch; and when the manure has been more equally spread over the waste land, who can

tell what sweet fruit in future years it may bear. Let us seek a Providence in all things: nay, let us firmly trust in it, and we shall do joyfully our appointed work: inferior it may be to the men of old, but strong in the belief of its purpose, *let us work*, not regretful of the past, but full of hope for the future.

J. B. WARING.

AMERICAN MATTERS.

The Astor Library, New York, according to the American papers, promises to be a fine building. It is in the Romanesque style of architecture, with an interior commodiously designed. Scarcely any wood has been employed in its construction, the floors of the second story resting on vaults turned in brick and covered with stucco. To give strength to the building, and avoid the danger of fire, a good deal of iron is used. The pillars, pilasters, capitals, and other ornamental parts of the inside are in stucco. The whole woodwork may be burned without destroying the building.

Art.—Mr. Elliot, a distinguished artist of New York, has received an order from one of the merchant princes of that city, but formerly of Syracuse, to paint 2,000 dollars worth of portraits, being twenty in number, of the original settlers of Syracuse. They are intended as a present to that thriving young city, to be placed in one of its public buildings.

The Fire Annihilator.—The American patent for Phillips's "Fire Annihilator" has been purchased by an association of capitalists and business men in the United States. The Hon. Elisha Whittlesey, First Comptroller of the United States Treasury, has been appointed president of the company. We hope it will be better managed than, according to our way of thinking, has been the case in England.

Paine's Gas.—Mr. Paine announces that, having overcome the objections of the patent office examiner, a patent for his new mode of rendering atmospheric air combustible, will issue in its proper order and time. In the meantime, he is ready to contract "to light hotels, factories, or private dwellings, with a superior light, fifty per cent. less than that of any other artificial light known." About six weeks ago his application for a patent was rejected, on the ground that the invention claimed was identical with that of Mansfield's, patented in England in 1848.

Dr. Bethune's Church, Brooklyn, New York.—This is an edifice now in progress of erection for the Central Dutch Reformed Church Society. Its architecture is described as a combination of several of the classic styles. It presents two fronts, the principal one of which is located on Pierrepont-street, the other on Munroe-place: the former has for its façade, projections of 5 feet from the flanking sides, composed of four pilasters on pedestals which support the pediment and all the parts that appertain to the Roman Corinthian order. Both fronts are of brown stone, from Conn and Baldwin's quarries, near Newark, New Jersey. There is a lot on the corner 25 feet by 100 feet, on which a parsonage is to be built. The two fronts will appear to form two distinct designs. The design of the steeple is singular in form and details, and to some extent original; but when it is finished it is believed that it will be free from any inconsistent or distorted features. The extension of the building is of the Roman Corinthian order, and contains ten columns and twenty-four pilasters standing upon pedestals. The ceiling is formed of longitudinal and transverse-segmental arches, over and on the cross of which stands a dome 36 feet in diameter, resting on pendentives. The segmental arches, pendentives, and dome are highly ornamented with large and bold panels and rich mouldings. The interior is to be lighted by plates of glass 4 feet by 5 feet, and three-eighths of an inch in thickness, fitted in the roof; through which the light passes, and is conveyed by inner plates of glass fitted in the panels and segmental arches to the interior. Each plate has an ornamental register by which the temperature of the atmosphere within is regulated: there are also a large skylight and a

ventilator in the dome, and six ventilators under each gallery, through which impure air may pass that cannot find its way to the nave; all of which are under the control of the sexton at one place. The pulpit or chancel of this edifice is decidedly unlike that of any other yet erected in this country. Its prominent feature is that the chancel is formed of and on a stylobate of about 4 feet in height, on which stands an inner temple-like portico, rising to the full height of the entablature at the base of the ceiling. This temple, or portico, is ornamented with drapery, falling from behind the columns and pilasters, and separating about 6 feet from the tops of the columns, giving passage to a stream of light from an aperture above, during the day, and from gas-burners arranged, at night, in such a manner as to throw a halo around the speaker while in the position of addressing the audience. The gas-lights are applied on the abacus of the columns and pilasters, and so arranged as not to expose the burners or flame to the view, except at the most distant points. The entire edifice, when finished, will have cost between 50,000 and 60,000 dollars. The architect is Lefevre, of New York, and this edifice is about the fortieth church of which he has been the architect.

Large Hotel.—The Clarendon Hotel, New York, which is nearly completed, has a frontage of 175 feet: it is Elizabethan in style, and was designed by Mr. Renwick. It has fifty suites of rooms fitted up with baths and closets.

American Excuse for an Eclipse.—Little Boy.—What's the use of an eclipse? Astronomer.—Oh, I don't know! It gives the sun time for reflection.

Free Library for Apprentices.—There is a library in New York where books are lent to all mechanics' apprentices free of charge, on furnishing a guarantee for their careful use and safe return; and all are cordially invited to avail themselves of this means of improvement during the period of their apprenticeship. Journeymen mechanics, and others, may obtain the use of books from the library on payment of one dollar per annum.

One result of such arrangements.—At a recent convention for the Advancement of Science, "Mr. Patterson, of Albany, a journeyman printer, who recently published a work entitled the 'Calculus of Operations,' the object of which is to generalize, render more exact—taking all circumstances into account—and to harmonise the different branches and applications of mathematics, read a paper on the relation between the square roots of negative quantities, called imaginary quantities in algebra, and perpendicularity in geometry."

American Architecture.—A writer in the *Home Journal*, speaking of the rapidity with which new quarters are erected, says,—"Still, if I might be permitted a word of advice to the princely proprietors, I would suggest that they should consult a little more the laws and requisitions of architecture and taste in deciding upon the external appearance of their edifices, and treat us to somewhat fewer monstrosities in freestone than now offend the eye of the connoisseur. Objects of artistic beauty, erected by the liberality and taste of private enterprise, are public possessions of the most precious description, and exercise an incalculably beneficial influence upon the refinement and the morals of the community at large. In the immense architectural expenditure everywhere going on around us in this miraculous island, one is too often compelled to lament the absence of true taste, and the just appreciation of the beautiful. In fact, I know of nothing of which we stand more in need than correct ideas respecting domestic architecture. So far as convenience is concerned, perfection has nearly been reached; but in regard to the beautiful, we are still far, far behind even the Egyptians."

American Sculpture.—Mr. Crawford, an American sculptor in Rome, has in progress a colossal group of Washington and six of his contemporaries, which has been ordered by the State of Virginia. It consists of an equestrian statue of Washington upon a pedestal something like that of the Marcus Aurelius on

the Campidoglio, which itself surmounts a star-shaped base, arranged in steps. At the six angles of this base, will stand statues of six eminent Virginia heroes of the era of independence: The entire height of the whole composition will be 60 feet from the ground; the architectural structure being 42 feet, and the equestrian group surrounding it, 18 feet. Each statue at the angles will be 11 feet in height, or, with the base on which it stands, 12 feet. The whole work, when modelled, will be cast in bronze at Munich.

NOTES IN THE PROVINCES.

Dorchester.—The inhabitants of Dorchester have had a public meeting, at which it was resolved to take measures for the establishment of a general cemetery within the borough under the provisions of the Health of Towns Act.

Brynford, Holywell.—It is intended to lay the foundation-stone of the New Church at Brynford, parish of Holywell, on 29th or 30th instant. This is one of the two churches to be erected in this and the adjoining parish of Whitford, in lieu of the one alienated by Lord Fielding to the Romanists. The foundation-stone of the second church, which is to be in the parish of Whitford, will also, we understand, be laid very shortly.

Tatworth, Chard.—On Tuesday week the new Church at Tatworth, parish of Chard, built for the accommodation of a district comprising the hamlets of Tatworth, South-Chard, &c., was consecrated by the Bishop of Jamaica. The entire cost of the church (including the expenses of consecration), will amount to about 1,400*l.*, nearly 150*l.* of which is still unprovided for. The building is in the Early English style. Mr. Pinch, of Bath, was the architect, and Mr. Davis, of Langport, the builder.

Exeter.—The gas movement is at present engaging the attention of the citizens of Exeter. At a recent meeting, it was resolved to form an "Exeter Cannel Coal Gas Consumers' Company." The prospectus proposes that the committee divide their profits with their consumers, supply gas at 4*s.* 6*d.* per 1,000 cubic feet, insist on payments for laying service pipe, or for reconnecting pipes which may have been cut off in changing the supply of gas, and make no charge for the use of meters. The present company have taken alarm, and have just announced their intention forthwith to reduce the price of their gas to 5*s.*, and to supply meters free of charge. The company remind consumers that, since 1839, "they have voluntarily made six several reductions in the price of gas, in the aggregate from 9*s.* 6*d.* to 6*s.* per 1,000 cubic feet," and they admit that notwithstanding all these successive reductions, "their dividend, including bonus on their capital during the same time, has averaged 9*l.* 2*s.* 8*d.* per cent. per annum." The directors add that they are still prepared "to give the public the full benefit that may hereafter arise from strict economy, increased consumption, or improved modes of manufacture, being determined to sell gas on as good terms as any other company that can be established in the city."

Bridgewater.—On 10th inst., the new burial ground situate at Wembdon, for the borough and parish of Bridgewater, was consecrated. The chapel is a small edifice in the Decorated style, with a lodge attached to it, and was designed by Mr. W. Brakspear, the architect of the restoration of St. Mary's Church. Mr. Abraham Squibbs was the builder.

Totnes.—Lord Seymour some time since purchased the Gate-house, in the High-street, Totnes, and at a cost of about 1,000*l.* presented it to the townsmen, fitly furnished for a mechanics' institute, library, and reading-room. The principal residents of all parties and sects acknowledged the gift, by a public dinner lately to Lord Seymour.

Devonport.—A correspondence has been commenced with the Board of Ordnance with the view of obtaining for use as a public park some of the Ordnance land adjoining the town of Devonport.

Cardiff and Merthyr.—The church of St.

John is closed for repair and alteration. The process of repewing is in progress. The pews are to be remodelled and additional accommodation afforded. The exterior of the building is also to be renovated.

North Malvern.—Trinity Church here was consecrated on Tuesday week. It is designed to accommodate 600 adults in open or free seats, and consists of a nave, side aisles, chancel, organ chamber, sacristy, and bell-turret, having a north and south entrance and porch. The nave is elevated, and flanked on either side with stone arches and columns, trefoiled windows piercing the clerestory over each. The side aisles have sloping lean-to roofs, with coupled windows. The organ chamber completes the north aisle, having stone arches and oak screens between it and the chancel. The chancel is fitted up with oak seats, open and plain, oak altar-rails, and stone reredos, and the east window is filled with stained glass, by O'Connor. The style is Transitional. From the very sloping site on which it is erected, the foundations at the east end are 15 feet below the present ground-line, which is at least 10 feet below the floor-line of the church, thus giving great elevation to the chancel. Mr. Dawkes was the architect. The total cost of the building, &c., according to our authority, the *Hereford Times*, will be 3,500*l.* Lady Emily Foley gave the site and an endowment of 1,000*l.*

Chipping Sodbury.—The foundation-stone of the National Schools, now erecting in this town was laid on the 12th inst. by the lord of the manor, Mr. W. H. Hartley, supported by Sir W. and Lady Cudington, and the leading clergy and laity of the neighbourhood. The buildings comprise a large room to contain 160 children of both sexes, and a master's residence, and are being built in the Tudor style, under the superintendence of Mr. Thomas Watts, of Winterbourn, architect.

Birmingham.—The suburban district about Aston Hall appears to be at length about to be absorbed in the growth of the town of Birmingham, advertisements now announcing the intention to appropriate it as building sites. There is a desire expressed to preserve the hall itself to some useful purpose connected with town requirements.

Gailey, Penkridge.—On Thur day week the Bishop of Lichfield consecrated a chapel called Christ Church, at Gailey, Penkridge. This chapel makes the fourth chapel in this parish. It is in the Early English style, cruciform, with a porch and belfry. There are 180 sittings on the ground floor, and a gallery at the west end (which is said to interfere sadly with the view of the west window) contains forty more, all open. The edifice has been raised by the contributions of the neighbourhood, and by grants from the Incorporated and Diocesan Societies. The site was given by Lord Hatherton, who has likewise given a site for a parsonage, and granted a rent-charge of 30*l.* per annum for the incumbent.

Bilston.—It is in contemplation to provide this densely-populated town with suitable baths and reading-rooms. A scheme has been set on foot to raise a capital for the purpose by shares of five shillings each, upwards of 5,000 of which have already been taken.

West Bromwich.—The new police station and petty sessions room here is now completed. The building is of brick, with a stone facing at the basement of the principal entrance. The centre of the building, on the ground floor, contains four offices, one for the use of the chief superintendent, one for the magistrates' clerks, another for the constables, and a fourth to be used as a store-room. These rooms are approached by the main entrance to the public business department, and immediately over them is the court-room, 40 feet by 26 feet, lighted from the front and rear. Adjoining this is an ante-room, and further on, into the western wing of the building, is a retiring-chamber for the magistrates. The cells are six in number, three being on the ground floor and three above. They are ventilated, and warmed with hot air. The front of the east wing contains apartments for the resident sub-inspector, while at the rear are placed living-rooms and dormitories for the constables. A

coach-house and stabling for four horses are also provided. The design was furnished by Mr. Smith, late county surveyor, and carried out by his successor, Mr. Trubshaw. The building was erected by Mr. Hartland, builder, and superintended by Mr. G. B. Nicholls, architect, both of West Bromwich.

Liverpool.—The Water Committee on Tuesday week, at a special meeting of the Town Council, presented their report on the tenders received for the construction of reservoirs and works. The report was to the effect,—"That, in accordance with the advertisement issued, twenty tenders have been received for the execution of the Waterworks, comprising the Rake and Roddlesworth reservoirs, the Anglezarke reservoir, and the Rivington reservoir, with the various works connected therewith. These works are divided into three portions, distinguished as contracts Nos. 3, 4, and 5, and are separately tendered for. After mature and anxious consideration of the various tenders, your committee recommend that the tender of Mr. John Isherwood, for the contract No. 3, at the sum of 20,866*l.* 4*s.* 6*d.*; and the tender of Messrs. Miller and Lawton, for the contract No. 4, at the sum of 22,350*l.* 19*s.* 9*d.*; and the tender of Messrs. Scott and Newell, at the sum of 56,252*l.* 8*s.* 8*d.* for the contract No. 5, be accepted, and the necessary contracts prepared and sealed." The amounts are considerably below the estimates of the engineer. The Act applied for by the Council, after the reception of Mr. Robert Stephenson's report, makes it imperative on the Council to purchase all the land required for the works within two years from the passing of the Act, which limit of time will expire on 29th July next. The report of the committee was adopted by a majority of 5, 26 having voted for, and 21 against it.—*Bolton Chronicle*.

Wisbech.—On Wednesday, in last week, the foundation-stone of the new Public Hall was laid by the Mayor. In a record, placed under the stone, it was stated that "the hall and buildings connected therewith were erected by shares, donations, and contributions, for the general use and accommodation of the Temperance Societies, Mechanics' Institute, and all other useful purposes, especially having regard to the social, mental, and moral improvement of the people, for whose more immediate benefit they are intended."

Holbeach.—The poor law guardians here proposing to erect an infirmary, appointed a committee with instructions to proceed on a builder's plan selected by the board, and the committee have just reported that, after some preliminary procedure, they "proceeded to stake out the site of the proposed building, and gave directions to Mr. Gilder, the builder, whose plan had been selected by your board, to make another plan, embodying the proposed alterations, and to submit it to your committee on the Monday following, accompanied by an estimate of the extra cost. That such amended and enlarged plan was submitted to your committee on the Monday, and of which they unanimously approve, but on account of the extra cost, amounting to no less a sum than 163*l.*, and which did not even include a boarded floor for the male and female wards on the ground floor, and which is considered absolutely necessary, your committee did not feel justified in proceeding further without first asking for instructions from your board. That, on closely inspecting the plan selected by your board, it appeared, in the first instance, that the rooms were not sufficiently lofty, that neither bath nor receiving-rooms were provided, that a wash-house (so essential an adjunct to an infirmary) was also wanting, and that the building itself was not provided with spouting, nor was the drainage taken into consideration. That your committee are unanimously of opinion that to build an infirmary, which in the end would not answer the purposes intended, would only be an entire waste of public money; and that, in the erection of all works of a permanent nature, a given sum is not so much to be looked at as an efficient building." The committee therefore asked, and were granted the necessary powers to carry out an extended plan.

RAILWAY JOTTINGS.

An alarming fire broke out at the Eastern Counties Railway station on 13th inst., in the premises and arches occupied by a mahogany and deal merchant, whose stock was burnt, some of the arches injured, and the electric telegraph destroyed. Some other adjoining premises were also burnt.—The Victoria Station, at Sheffield, for the Manchester, Sheffield, and Lincolnshire, the Great Northern, and the Midland South traffic, was to be opened on Monday week. It occupies the space from the Wicker viaduct to the canal, crossing the river, the site of the Old Blunk Dam, the cattle market and fair ground, and the back of Sheaf Works. It is built on arches, rising 40 feet above the level of the Wicker. The station fronts south-west, having for its more prominent objects the Corn Exchange, the New Market, the canal warehouses, the Circus, &c. Its front is destitute of ornament, being very simple in its architectural character. The building is approached from Blunk-street by a straight incline, built upon arches, which is 50 feet wide, 320 yards long, and rises at the rate of 1 in 30. As it approaches the front of the station it opens out into an extended area. The station consists of a centre and wings, the latter being extended by a high fence wall, with gateways for the exit of arrived passengers, and beyond these, on each side, by covered stands for cabs. The length of the frontage of masonry is 400 feet. The station is built of rock-faced Greenmoor stone, with chiselled beds and joints, and facings of ashlar stone from Wadsley. A covered verandah, with glazed roof supported by iron brackets, extends the whole length of the centre building, in order that carriages may set down passengers under cover. The entrance or waiting hall is 50 feet by 30 feet, and 25 feet high, having an enclosed office for the booking clerks. The upper floor will contain board-room and other convenient offices. The platform is covered by a light roof of iron and glass of the width of 83 feet, and of the length of 400 feet. This roof is the work of Messrs. Fox, Henderson, and Co. It is ridge and furrow, with wooden gutters. The centre throughout its length is raised so as to permit a line of ventilation. The roof is not sustained by any pillars, but its principals, 25 feet apart, rest on the inner wall of the station buildings on one side, and on an equally lofty wall on the other side. The glass is crown, about the thickness of ordinary pottery. Its area is of the measurement of 34,600 superficial square feet. The platform is of the breadth of 40 feet, and is about 1,000 feet in length. The water that will be collected by the roof will be made available for the water-closets and urinals. The latter will be constructed of Minton's white encaustic tiles, and will be open to the roof. The station has been constructed under the direction of Mr. John Fowler, engineer-in-chief of the company, represented by Mr. King, the resident engineer; Messrs. Weightman, Hadfield, and Goldie, being the architects. The arches on which the station rests were built by Messrs. Miller, Blackie, and Shortbridge. The approaches to the station, the platform, and the completion of the viaduct, are the work of Messrs. J. and A. Ridal; and the station has been erected by Mr. Carlisle, the builder of the Beighton viaduct and the new Market Hall.—Messrs. Peto and Betts, the contractors for the Oxford, Worcester, and Wolverhampton Railway, have issued a notice that they will not allow the sub-contractors on the line to carry on the truck system.—The Great Northern, instead of incurring an outlay in the shape of postages, it is said, has registered a newspaper in the stamp-office, called *The Great Northern Railway Company's Reporter*, and under this title, given in the smallest possible type, it issues all its documents, these passing through the post, whatever be their bulk, as a newspaper privileged by the penny stamp.—Mr. R. S. Norris, of Warrington, has patented some improvements in the construction of permanent ways of railways, bridges, locks, and other erections, wholly or in part constructed of metal; also an improvement in breaks of railway carriages. Mr.

Norris's specification describes a method of casting or forming the chairs on the spot where they are permanently to remain. Moulds are placed on both sides of the rail, where the chairs are to be, and on the permanent iron, wood, stone, or other sleeper or bearer, and melted cast-iron is then poured into the moulds. For the purpose of casting, the patentee employs a portable and travelling cupola furnace, which is moved along the line of railway as the work of casting progresses. This mode of fastening is also proposed to be employed in other parts of railway works.—An important trial is likely, it is said, to come on in the Court of Exchequer during the next Term. In the Act of Parliament passed in 1845, compelling railways to carry passengers in third class covered carriages, certain exceptions were made, which were stated in the Act "to secure to the poorer classes of travellers a means of travelling at moderate fares, at or under one penny per mile." These were exempt from the Government tax. When the companies began to run excursion trains they looked upon this peculiar description of traffic as coming within the meaning of the Act, and did not include their excursion passengers in their return to Government; it did not amount even to one half-penny per mile. The Board of Inland Revenue, however, demand the whole amount of duty that would be payable on ordinary trains. The railway companies who have been running cheap trains have agreed to fight the battle with the Board of Inland Revenue, unless they forego their demand.

ANTIQUARIAN MATTERS.

Bridlington.—During recent excavations in a part of the churchyard at Bridlington, not used for interments, the workmen fell in with an old foundation, of great thickness, running in a line southward from the present south-east angle of the church, to an extent beyond the limit of the excavations. Another foundation stretching from it at right angles extended in an easterly direction. There were several fragments of shafts, capitals and mouldings,—the most interesting consisting of four highly sculptured stones, forming, when put together, the segment of one circle, and parts of two more. The design is a foliated scroll, the production evidently, it is said, of an artist, and not a mere ordinary workman. Fragments of two arches were also found. Close to the easternmost buttress the workmen came in contact with a foundation which appears to have been that of the western wall of the north transept, and, if so, it confirms the opinion that there has once been a north transept,—a subject on which archaeologists have hitherto been much divided.

Taunton.—Alterations are now being made in an old house near the White Hart corner, which was originally the Guildhall of the town. A square mullioned window of the sixteenth century, cut out of a solid block of oak, has been discovered, and also some immense oak beams, which, says the local *Courier*, would, for size and durability, astonish many of our modern builders. Much of the interior decorations are still in good preservation, inasmuch as to make evident that the house contained an abundance of carving, ornamented wood, plastered ceilings, and mantel-pieces. The "Justice Room" contains a notable ceiling, enriched with armorial bearings. The room is wainscotted with oak; and a portion of the original glazing appears in the longitudinal window. Tradition states that this room was the judgment seat of the infamous Jeffries, where he tried the "Taunton Men" who attached themselves to Monmouth. In the area fronting the house stood the ancient Market Cross (demolished in 1790), the site of Monmouth's short triumph when crowned and proclaimed King, of England. Above the "Justice Room" are the remains of an open timber roof of a date coeval with the little oak window already noticed.—An attempt, is about to be made to effect an entrance,—and to explore the subterranean cavern or passage which exists,—under the Castle and which by all accounts leads from the centre of the town to Bishops

Hull, a distance of more than a mile. Several attempts have been made to accomplish the same object on previous occasions, but without success, and the present one, we hear, is principally at the instigation, and will be under the direction, of the Somerset Archaeological Society. An account of the passage will be found in "Savage's History of Taunton," and the use of it made about the time of the Monmouth rebellion.

Denton.—An antiquarian correspondent of the *Manchester Guardian* gives an interesting account of the old chapel at Denton chapelry in its impression of 10th inst. It is described as a very picturesque erection, built, he says, "in the half-timbered style, usually known as 'post and petrel,' or, as our cicerone termed it, 'raddle and daub,' which term he stated to be derived thus:—the frame-work of the chapel, said he, is composed of huge oaken beams placed deep in the earth: between each of these intermediate spaces, termed bays, there are numerous transverse beams: the interstices were originally filled with twisted boughs, &c., known hereabouts as 'raddlings': this wicker-work was well plastered over with clay mortar (daub), which, to render it more adhesive, was well mixed with grass, hay, reeds, &c."

Clementhorpe, Yorkshire.—As some workmen were lately employed in making a sawpit in a field at Clementhorpe, they discovered a Roman pavement, in a fine state of preservation. The outer border is tessellated flooring of 8½ inches: the next portion is in black and white mosaic, of a half-moon pattern: within this is a richly-laced pattern in white, red, and drab, on a black ground. In the centre of the floor are geometrical figures, and at the corners the bell or tulip pattern. The eastern portion only has as yet been uncovered.

Glasgow.—Among other objects of curiosity discovered during the demolition of the old bridge of Glasgow is a key, found in the foundations of one of the centre buttresses. It is about a foot long; the wards nine in number, and remarkably well cut; the ring at the opposite end perfect, and the whole specimen in excellent preservation, and very little corroded. It was lying under the ancient oak trees sawn longitudinally, and on which the buttresses rested. The section of the bridge under which this key lay, was the most ancient portion of the structure, so that this venerable memorial of the builders of Glasgow's first bridge cannot be less than five hundred years old. Another key was found under similar circumstances, in the foundations of the next buttress.

Kilkenny.—In a house in a street leading from the Black Abbey to Friar's Bridge, built on a portion of the ancient cemetery of the Dominicans, and beneath a clay floor, according to the *Kilkenny Moderator*, there have been discovered three tombs of Kilkenny marble, fashioned into sepulchral monuments, with sculptured figures, and evidently of so early a date as the latter end of 13th century. One of them has an inscription which sets forth in the old incised Lombardic characters, and in Norman-French, that "Mester Robert de Sardeloue" was there interred: there is, however, no date. "Sardeloue," it is thought, may, perhaps, have been the original form of the name of the ancient manor and castle of Ardalo, in this district. The local Archaeological Society will no doubt investigate the matter. The monuments, fortunately, will be carefully preserved within the precincts of the Black Abbey, and there are rumours of the probability of fresh discoveries of the same kind being made.

FALL OF A THEATRE.—At Simla, as appears from a letter in the *Times*, the proscenium roof, the orchestra, &c., of the theatre fell in while a fancy ball was in progress, but, strange to say, killing no one but one little boy, although the slight premonitory symptoms of scenery giving way were misunderstood and neglected to the last moment. The building, it is said, had been knocked up for sale, and was very inefficient: one of the walls had sunk.

IRISH RAILWAY AND ARTISTIC INTELLIGENCE.

The unfinished works on the Great Southern and Western Railway are progressing: the ballasting has been perfected, with the exception of ten miles: the various buildings at the Cork terminus have been completed. A sum of 25,000*l.* is estimated as sufficient to finish the entire works. A sum of 12,318*l.* 2*s.* 11*d.* has been expended on works along the line for the last six months: 2,650*l.* was laid out in the county of Kildare and Queen's County in connection with some of the bridges carrying public roads over the railway.

The works on the Londonderry and Coleraine line are expected to be complete about November. A station is about to be erected at Newtown-limavady. The Boyne viaduct, fully described some time since in "THE BUILDER," is progressing: upwards of 400 men are employed. Between Newfoundwell and the road leading to Green-hills, a number of hands are engaged.

Sundry works are to be erected at the cavalry barracks, Longford; additions to the district military prison at the new barracks, Limerick; two wash-houses at the Fermoy, Tralee, and Kilkenny barracks; and one at the Richmond barracks, Dublin; all according to the plans of the commanding engineer of her Majesty's Board of Ordnance.

A new bridge is to be erected at Culleville, on the Dundalk and Enniskillen Railway, and proposals are invited for same according to the plans of the company's engineer, Mr. Thomas Bell.

A new Roman Catholic church is to be erected at Ardirt, county of Kerry, and the Earl of Listowel has subscribed 50*l.*

The sites for the Model School, and Agricultural Model Farm to be erected at Limerick, have been decided upon by the Commissioners of National Education. Mr. Darley is the architect.

The new (R. C.) church with a tower ("in imitation of the well-known round towers of Ireland") in connection therewith, and a large stone cross, to be erected to the memory of O'Connell, from a design furnished by Mr. Petrie, is composed of an oblong body or nave, and a chancel connected to same by an *arcus triumphalis*. The dimensions are as follows:—External length of nave, 45 feet; breadth, 30 feet; length of chancel, 17 feet; breadth, 20 feet; external height of nave, 45 feet; of chancel, 35 feet; height of lateral walls, 15 feet. The sides of the roof will form an isosceles triangle. At each angle of front is a plain flat buttress, and a flat band resting on same, and carried to the apex of gables, on which are placed as finials, crosses. A plinth surrounds the building. In west elevation is an entrance doorway, enriched with simple architrave, and having a cross within a circle placed above. The side walls of nave are perforated by two small semicircular-headed windows, and those of chancel have a single angular-headed window at each side, and a semicircular-headed one in east wall—all deeply splayed. The roof of nave is of semicircular form, and the chancel arch is 10 feet in width by 15 feet in height. The arch is formed of thirteen stones, typical of the Saviour and twelve apostles; and the chancel is entered by three steps, to represent the Trinity. In the chancel, raised on a platform, is an oblong square altar tomb. Above roof of nave is a second apartment divided by cross walls into three chambers. The building is to be of chiselled granite stone, in regular ashler courses. On the south side of church is placed the tower, at a distance of 15 feet: the external diameter is 15 feet; and its height, including conical roof, is 103 feet. The interior is divided by ledgments into six compartments, that at top having four apertures, and the lower ones one each. The doorway is placed at an elevation of 15 feet; is semicircular headed, with cross carved on key-stone; and the pinnacle of roof is ornamented with a cross. In front of entrance doorway, at a distance of 20 feet, is the stone cross of ancient character. It rests on a stone base 10 feet by 8 feet, and rises above platform to a height of 27 feet. It is of simple character.

HOUSES FOR THE WORKING CLASSES AT EDINBURGH.

ON Monday last week the foundation stone of a block of improved dwellings for the working classes was laid in one of the closes of the High-street, Edinburgh, near John Knox's house, at Leith Wynd. The entrance is to be widened and improved. The first practical step has thus been taken by a new Association, set on foot about fifteen months since, and which now has a capital of about 5,000*l.*, subscribed in shares of 5*l.* each. The stone was laid by Mr. Cowan, M.P. The building is to be finished and ready for occupation by Whit Sunday next. It will afford accommodation, in all, for thirty-nine families, and is to be four stories in height, and in length about 126 feet, with the front in the direction of High-street. Light, air, drainage, and water-supply have all been specially provided for, they say: the cistern, which is to be of iron, and placed near the roof, will hold upwards of 2,000 gallons of water, or about 50 gallons for each family. Fire can scarcely be dreaded, as, with the exception of the doors and the joisting in only two of the apartments in each dwelling, there is no wood whatever about the entire building,—the external walls being of stone, as well as some of the floors, and the internal walls and partitions of brick. The brick, in all places where it is much exposed, is glazed on the surface, the edges being insulated, giving a sort of "rustic" appearance to the walls, the effect of which, our authority the *Scotsman* says, is rather pleasing. The walls of the stairs are built with these glazed bricks, and so are those of the sculleries, so that painting or white-washing is unnecessary. Each scullery is to be fitted with strong earthenware washing-tub and cast-iron stand, with pipes for clean water and dirty, cast-iron sink, dust-valve, coal-closet, &c.

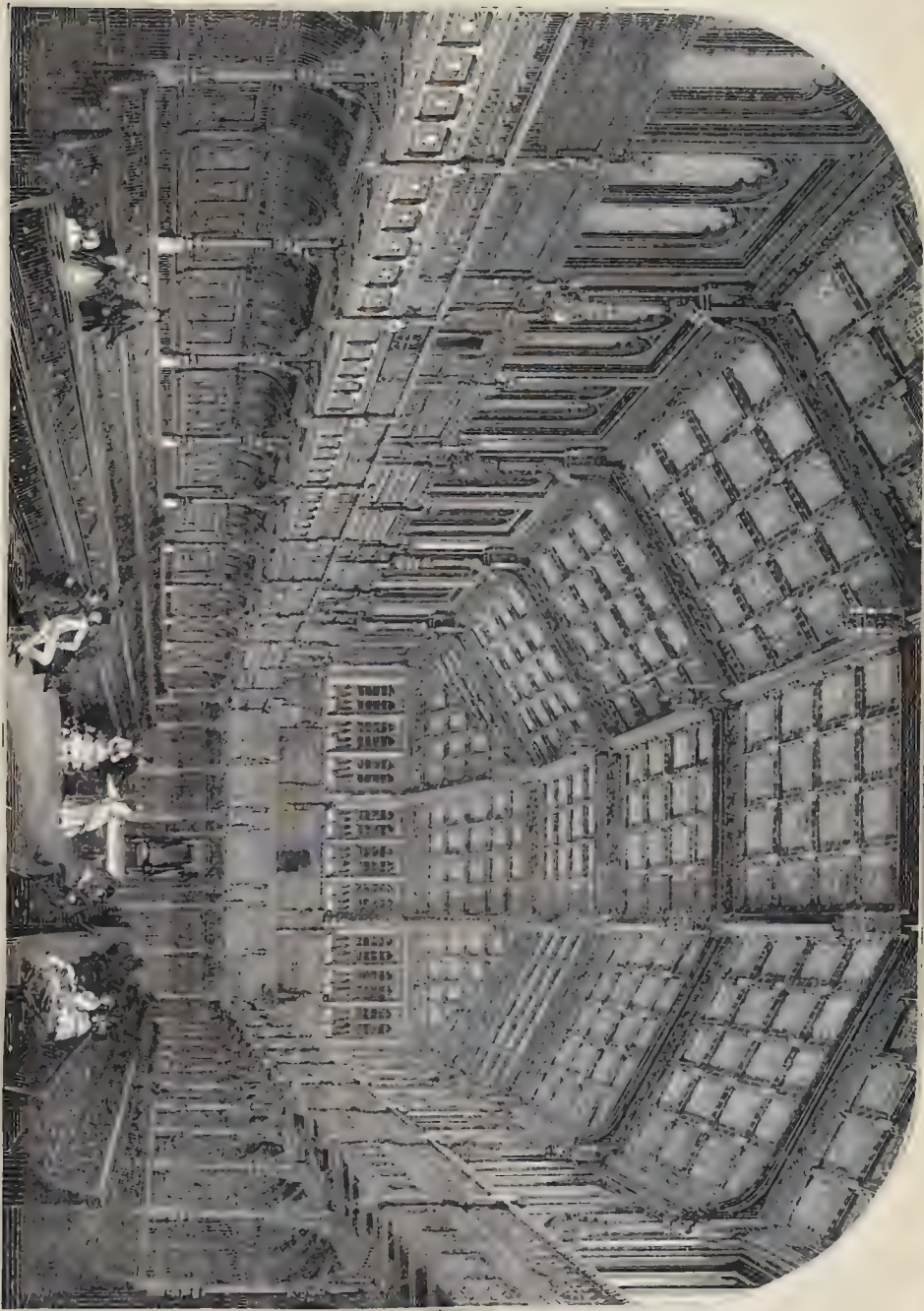
The dimensions of the kitchens are to be 14 by 9½ feet. The bed-rooms are to be the same; while the sculleries will be about 5 feet square. The height of the roof, in each instance, will be 9 feet 3 inches. The estimated expense of each building is 90*l.*, or about 3,500*l.* for the whole; and it is intended to let each dwelling-house at a rent of 6*l.* 10*s.* per annum, which will yield a return on the outlay of about 7 per cent. The contractors for the building are Messrs. W. Beattie and Sons; and the architect is Mr. George Beattie, one of the partners of that firm. A block of the same sort of buildings has already been for some time in progress in the Pleasance, by the enterprise of one of the citizens (Mr. Patrick Ritchie, machinist) under the same builders. His example is also to be followed in Beaumont-place, by Colonel Forbes, who intends to erect a house with accommodation upon a larger scale than that afforded either in the properties in course of completion by Mr. Ritchie, or those to be erected by the Association.

THE NEW HOUSE OF COMMONS.

WE have so recently (vide p. 460) given an account of the interior of the new House of Commons, and the alterations made on its previous appearance, that in giving a view of it as it now appears, the first and only view yet published, we need but refer to the description already given.

In our vol. viii., p. 7, is a view of the original appearance of the interior of the new house, from a comparison of which with the view now given, the nature and extent, as well as the general effect of the recent alterations, will be seen at a glance. The ceiling, it will be remarked, has been brought down 5 or 6 feet in the centre, and in place of being flat over the whole expanse, as before, is sloped down on all sides. The upper half of the windows, which formerly had a central transom, is thereby put out of sight, and as this lessened the light considerably, the cills have been cut down about a foot.

The gallery immediately above the Speaker's chair, as seen in our present view, is that for the reporters to the press. A gallery for ladies is formed behind the open stone-work seen immediately above the Reporters' gallery.



INTERIOR OF THE NEW HOUSE OF COMMONS.—MR. C. BARRY, R.A. ARCHITECT.

THE SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

THIS society held a very successful meeting at Weston-super-Mare, the High Sheriff of the county in the chair.

Mr. Giles, one of the hon. secretaries, read a report from the committee, which showed that the number of members enrolled is 339. It appears that the society have published a volume of transactions, containing the papers read during the last two years. Mr. Freeman read a paper "On the Perpendicular Churches of Somerset."

A paper on the Abbey Church of Bath, by Mr. C. E. Davis, was afterwards read. Mr. Davis remarked that many accounts had been written of the abbey, all of them speaking in the highest terms of the beauty of its design, but agreeing also in the faultiness of the details and the clumsiness of the work. He looked on the building, however, in a different light. He did not consider it as an example of the perpendicular, but as the herald of a new style. At the beginning of the sixteenth century, about which time the abbey was designed, the literature and art of other nations were very generally studied in England, and the traveller came home with a growing admiration of the monuments of Rome. In the design of the Bath Abbey it was evident that the architect was alive to the follies of the day, and endeavoured to avoid them. His aim was to avoid the perpendicular lines and the angles then so much praised; and the appearance of poverty in the building was the result, not of that design, but of the smallness of his funds. The arches of the nave and choir were elegant without extreme lightness; and beauty, not monotony, was the result. The roof appeared to derive support from invisible means, and was a model of grace, elegance, and lightness. (?) The merit of the design of the church could not be doubted: the cleverness of its construction had always been allowed; and he was at a loss to see why rudeness of workmanship should be imputed to it. It was the commencement of a new style, and, having the building before them, all united in praising its general effect.

The Rev. M. Clerk questioned some statements made by Professor Willis in his lecture on Wells Cathedral, at the recent meeting of the Archaeological Institute. Mr. Willis had distinctly said that the west front could not have been built by Jocelyn Trotman. He (Mr. M. Clerk) had great satisfaction, however, in knowing that Mr. Cockerell agreed with him in holding that the west front must be included among Bishop Jocelyn's works. It was certain that the style was of no later date than any other portion of the building; and all the ancient writers were agreed that the west part was the very part which Jocelyn did build. The Canon of Wells plainly stated that he pulled down the previous structure to the very pavement, and re-erected and then dedicated it. Godwin stated that especially that portion west of the presbytery was completely rebuilt by Jocelyn. The date of the consecration was given in Jocelyn's own words, for he said that he consecrated it on the day of St. Romanus, in the month of November, in the year of our Lord 1236. In another document, bearing date the very year of Jocelyn's death, 1342, and in the thirty-seventh of his episcopate, he spoke as if the church were completely finished: "Which, when we came into possession of" (referring to the bishopric), "our Lord and Saviour promising assistance, having called on him for it, we have fitted it for Divine prayer, sacred unction, and every thing necessary for the right performance of Divine service. And since it is right that those who build churches should also care for those who minister in them, we give" so and so, to the persons who are to serve them. These words were in favour of his (Mr. Clerk's) theory. It was finished after the consecration deed. Professor Willis said, he (Mr. Clerk) had not seen that deed, but he thought that Jocelyn would not have stopped building in the last years of his life, when there was a possibility of his completing the structure before his death. The only person who appeared to have contributed to the building

besides Jocelyn might be ascertained by an inscription which appears on the third abutment of the front of the cathedral, with a date about that of Jocelyn's time. Another date on which he and Professor Willis differed was the date of the central tower. He (Mr. Clerk) put it above 1366: Professor Willis made it 1321. His (Mr. Clerk's) reason for believing that the latter date was correct was, that in every case the spandrels of the arches were marked as in perpendicular work, and that there was a regular band of panels, peculiarities which had not, as far as he was aware, been seen at an earlier date. He believed it was about the time when the perpendicular was merging into the decorative. The documents to which Mr. Willis referred certainly spoke of the convocation in 1299 and 1318, and the gift from Taunton Deanery in 1321; but he (Mr. Clerk) believed that there was another portion of the tower added then, but not that which is now visible: the old work was cut away, and the new framed into it. The corners of the tower have perpendicular mouldings, about the date, no doubt, which Mr. Willis assigned to them; but the whole of the windows had inserted into them tracery of a much later date, according to his opinion.

Amongst the other communications, the Rev. F. Warre read a paper on the British Camp on Worle Hill. An excursion was made to Kewstoke and Banwell Church,

GREENWICH BATHS AND WASHHOUSES.

DESIGNS for this establishment were received in competition, in April last, as our readers may remember. The selected design has since been carried out, and the building is now occupied. It stands in London-street, near the railway station (at the corner of Royal-hill), has a Jacobean front, of red bricks, with free-stone dressings and porch. The engine shaft presents a spiral of various-coloured bricks. Although somewhat confined, the accommodation within seems considerable, and includes forty-two baths, first and second class plunging baths, and washing department. The roofs are of iron, light in construction: the centre portion of the roofs is glazed, and is raised up so as to admit a range of upright louvred openings on each side. The baths are of earthenware: the partitions and floors slate. The first class plunging bath is lined with Orsi and Armani's lava, of a blue colour, which gives great brilliancy and greenness to the water. The second class bath is being lined with the same material, of a red colour, and will probably not be so pleasant in effect. Mr. Ritchie was the architect; Mr. Burton the builder.

The sum to which the competitors were confined was 5,000*l*. We said, when we noticed the various plans submitted, that the selected design would obviously cost more than the prescribed amount, and so it has turned out; no less a sum, as we are told, than very nearly 10,000*l*. (including the land), having been expended on it. So much for justice in architectural competitions.

WINDSOR.

A NEW surveyor has been appointed by the local Board of Health here; also an inspector of nuisances, whose salary, offered to the superintendent of police, and amounting to 20*l*. a year, has been taken from the surveyor's, making the latter 80*l*. a year. The candidates for the surveyorship were,—Mr. Edward Corfield, of Brighton, formerly in the employ of Mr. Bedford, of Windsor; Lieutenant T. Smith, of London, formerly of the St. Helena regiment, and superintendent of works in that island; Mr. George Southwood, of Windsor; Mr. Jesse Hollis, of Windsor, who offered to perform the duties of surveyor and inspector for 80*l*. a year; Mr. Samuel Henry Webber, surveyor and inspector to the Eton local Board of Health; Mr. Thomas Jenkins, surveyor, of Windsor; Mr. Frederick Brown, of Windsor, lately acting as assistant-surveyor. The testimonials of the different candidates having been read at a meeting on Monday last, the committee divided, when there

appeared—for Mr. Jenkins, eight; for Mr. Brown five; Majority for Mr. Jenkins, three. Mr. Jenkins agreed to accept the office on the terms offered.—At same meeting a letter from the Commissioners of Woods, &c., to Mr. Voules, on the part of the Board of Health, was read, in reply to a request by the Board that the Commissioners of Woods would sanction two or three little improvements in the Home Park, such as that a pump, and an iron seat, lately put up for the occasion of the cattle show, should be allowed to remain for behoof of the public. In reply, the commissioners state that they will consider the subject, but "that they cannot delegate to the Windsor Board of Health any of the duties with which, as Commissioners of her Majesty's Woods, &c. they are invested, for the management of the royal parks, or for the protection of the public interests therein."—A prospectus, we observe, has been issued for the improvement of Windsor, by new streets, a square opposite the new church, new almshouses, villas, slaughter-houses, burial-ground, lodging-houses, washing-houses, and cottages for the poor, &c.; also for the demolition of unsightly buildings, and the erection of a large reservoir behind the Guildhall, for water supply and drainage. No hasty speculation, it is said, is intended, but merely the preparation of plans for future guidance.

SCHOOLS FOR WORKMEN.

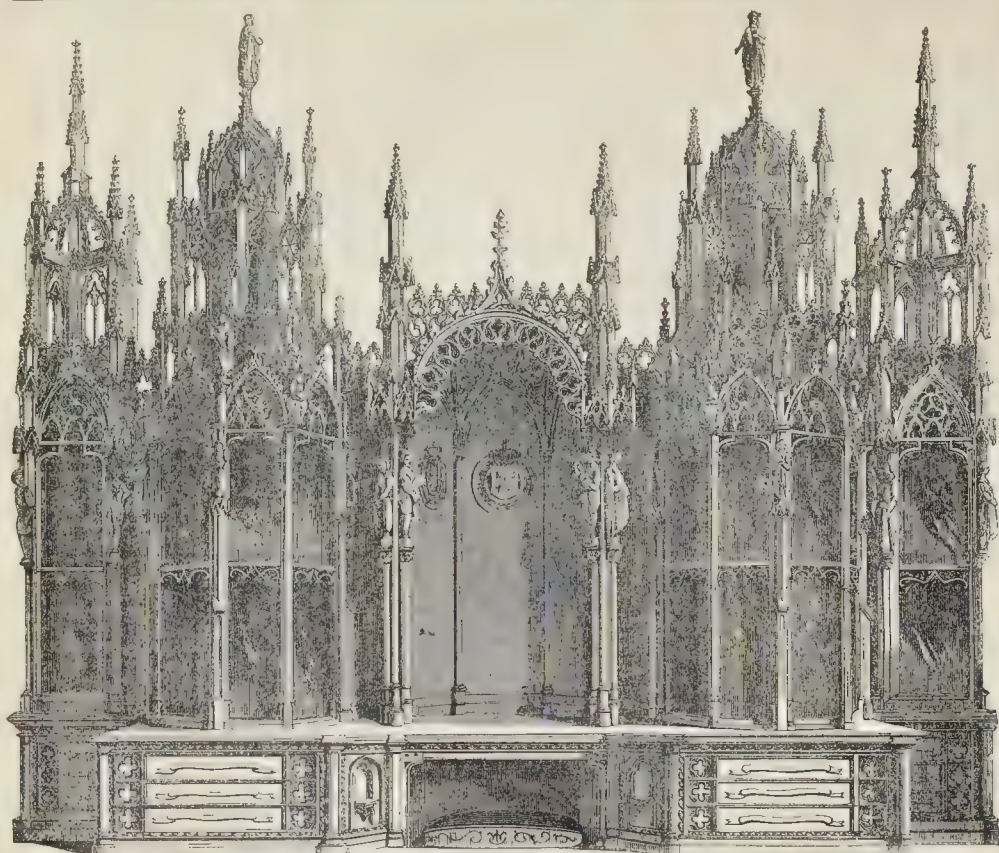
It must be a matter of satisfaction to all interested in the progress of artisan art education to find the subject so frequently adverted to in your columns. In the present day much is done by continual discussion. When many brains are working on one subject, some good will certainly be educed. The proposal advocated by Mr. Allen has its own peculiarities; but I trust you will allow me to point out that his school would not be "the first school of art established to improve art workmanship." In May of last year, as your readers know, a committee of gentlemen who felt deeply the importance of this subject, determined to establish suburban artisan schools, and their first school was opened in Camdentown, under the name of the North London School of Drawing and Modelling. This school may be said to be successful, as it has been well attended. It is strictly a school for the art education of the workmen, and not in any degree a school of design. It appears to many that the system adopted here is superior in its nature to that now advocated. The workmen are led to know and understand the true form of objects which they will have to execute; and a capability of drawing the forms of objects, enables them more excellently to execute such forms when they meet with them in the drawings of designers. By the proposed new plan the workmen are treated more as machines which it is desired to improve than as men of thought and understanding, who simply require knowledge to enable them to perform their mechanical works with more perfection.

I do not understand the advantage of only instructing builders' men. It is true architecture is a leading art, but architects of high standing do not despise the work of designing frames, fenders, and arm-chairs. Indeed, true architecture should include the interior ornaments, and furnishing of a house as well as building the case, and without the carver, moulder, and upholsterer's workmen, the architect's work would be deficient. Indeed it is through these inferior applications that the public mind can chiefly be instructed, and the beauties of true art have thus at last a fair chance of a full development in its higher and nobler branches.

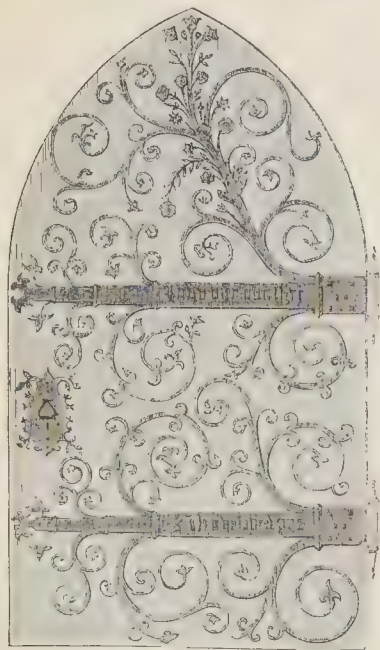
Let artisan art-education be for all comers, and be supported actively, and not only passively, by all who possess opportunity (and their number is legion) of advancing the happiness and pleasures of mankind.

J. NEVILLE WARREN.

The contract for completing the works on the Kilarney Junction Railway has been taken by Mr. Dangan, but the works do not commence until February 1852.



CARVED BOOKCASE FROM AUSTRIA.

IRON WORK FOR CHURCH DOOR,
FROM DERBY.TERRA COTTA FONT, FROM
SWITZERLAND.

THE ILLUSTRATED ART-JOURNAL
CATALOGUE.*

THE completed catalogue of the Great Exhibition issued by the proprietors of the *Art-Journal* is now before us, and forms a truly extraordinary volume, creditable not only to editor, writers, draughtsmen, engravers, printers, and all concerned in its production, but to the country. Every one of about 400 pages is filled with illustrations: if we said, on a rough calculation, that there are nearly 3,000 of them, we should probably not be far from right, and those who know the trouble and expense attending the production of such engravings will best estimate the way in which this work has been carried through. The cost must, indeed, have been enormous, and but for the connection of the catalogue with an established journal, it could scarcely have been published at such a price as would have secured a sufficient sale.

Of course it is not without faults, the most prominent of which, as it seems to us, is the want of any means of judging of the *real* size of the objects represented, but of these we intend to say nothing.

The catalogue is preceded by an able, succinct history of the project and of the building, illustrated with views of the interior and exterior; and then at the end of the volume there are essays—"on the Science of the Exhibition," by Mr. Hunt; "on the Vegetable Kingdom," as exemplified by it, by Professor Forbes; "on the Harmony of Colours," by Mrs. Merrifield; "on the Machinery of the Exhibition," by Professor Gordon; and the prize essay, "The Exhibition as a Lesson in Taste," by Mr. Wornum.

The engravings were executed under the superintendence of Messrs. Dalziel. Mr. W. H. Rogers designed the head and tail pieces.

And why may we not name and give praise to the able and excellent editor, Mr. Samuel Carter Hall, by whom the whole was struck out and superintended. As editor of the *Art-Journal*, Mr. Hall laboured hard for many years with more advantage to the public than himself. But he has now achieved for his journal the pecuniary success which such labours deserve, and earnestly and sincerely we congratulate him upon it.

The examples we give of the illustrations in the Catalogue represent—1. The Gothic Book-case, carved in oak, presented by the Emperor of Austria to the Queen of England. This was designed by M. Bernadine and executed by Messrs. Leistler and Son. 2. A clever terra-cotta Font, from Switzerland, by J. Ziegler Pellis, of Zurich; and 3. Iron work for the Door of a Church, by Mr. W. Haslam, of Derby.

ENRICHED GOTHIC MOULDINGS.

In a paper published in your journal (p. 511, ante), Mr. Little attempts to establish as a "principle" that was in no case departed from by the architects of the Middle Ages, that the contour of their mouldings was "never" disturbed by sculptured enrichment.

This opinion has occurred to many architects; but, on a more extended observation, has been discarded, as certainly not of universal, although it must be acknowledged of very general application. I send you a tracing of the necking mould, of a finial from the sedilia of Exeter Cathedral, which, as you well know, is of excellent design and workmanship; also a tracing of a flat ogee mould surrounding a monument in the Lady Chapel of the same cathedral, and closely resembling in arrangement the Roman water-leaf, with a difference only in the adoption of the well-known and characteristic leaf of the period.

I am very unwilling to believe that these are solitary instances in which what Mr. Little conceives to be a "principle" has been disregarded by the Middle-age architects; but they are the only examples that I can now recollect having met with. The enriched necking mould I send is almost universally used in Exeter Cathedral, and the design varies in almost every case.

I think these justify my remarks, and refute Mr. Little's statement to the effect that for a period of nearly 400 years this system was so entirely set aside that no instance can be produced of the slightest approach to the classic system.

Such questions are useful, and should by all means be raised: I therefore trust these remarks will be received as kindly meant.

W. H. B.

Books.

Catalogue of the Museum of Mediæval Art collected by the late L. N. Cottingham, F.S.A., Architect.

It is to be regretted that the application made to Government to purchase this valuable collection has failed, and that it is but too likely to be taken to pieces under the hammer of the auctioneers, Messrs. Foster having already advertised its sale on 3rd November and fifteen days subsequent. If so, however, it is to be hoped at least that a selection of models, as examples for workmen, will be procured for the Artisans' Work-Schools, set a-going by recent communications in our columns.

The World in its Workshops: a practical Examination of British and Foreign Processes of Manufacture; with a Critical Comparison of the Fabrics, Machinery, and Works of Art contained in the Great Exhibition. By JAMES WARD. Orr and Co., Paternoster-row.

We are glad to see that this little volume, one of the best of those published on the International Exhibition, has run through its first edition, and that there is a demand for a second. Having already reviewed it favourably, we need only now recommend it again as a pleasant discourse on an inexhaustible subject. By way of contrast, however, to the apparently disparaging remarks lately made by some one or other of our own writers in *THE BUILDER*, on theoretical men as contrasted with practical, we may quote the following from the introduction:—

"Do I mean to say that practical minds are not capable of availing themselves of the improvements they may see in the Exhibition? I really do. Take the mass of what are called 'practical' minds, as a body they are nearly as inert to appreciate and apply improvements as the mere loungers and idlers who saunter through the treasure-stored avenues of the building. They will look with perhaps a shrewder eye at the several objects upon the production of which they may have been partially engaged; but the result, in a majority of cases, will prove little more than a negative: they must wait for the thinking few to lead them, from whom all practical knowledge of a valuable nature is derived. These few are the stars that guide the many in the true path of improvement; but as yet they are below the horizon, gathering light, as it were, to shine steadily and clearly on the future course of their humbler 'practical' brethren."

Miscellaneous.

FATAL ACCIDENT AT ST. GEORGE'S HALL, LIVERPOOL.—On Friday before last, the Rev. D. Wilkie died at the infirmary from injuries received by falling through a staircase opening at St. George's Hall. The unfortunate gentleman was viewing the building, when he saw an opening in the floor, and thinking that it was a staircase, he stepped with the intention of descending the stairs. It proved, however, to be merely an aperture, to which the stairs had not been attached. The deceased fell with great force into the lower floor, a height of about thirteen feet, and one of his legs was dreadfully fractured, which injury caused his death. The jury returned a verdict of accidental death, expressing an opinion that precautions should be taken to prevent accidents of a similar nature in future, and suggesting that a guide should be provided to conduct visitors through the building.

ENCROACHMENTS IN ST. PANCRAS.—A "District Surveyor," replying to our correspondent, "F. B. A.," says,—since the passing of the Act 7 Geo. 4, alluded to, the character of the property bordering on the New-road has become entirely changed; the houses for the purposes of private residences being all but valueless: the traffic being now enormously increasing, the old residents have taken wing to quieter locations: one-storied shops are being built for the purposes of trade, over these gardens, and the line of road bids fair to rival Oxford-street. There have been several actions under the Act above alluded to: the last one was compromised by the parties agreeing to set back the shops three feet to widen the footway: it was also doubtful whether an addition to a house could be brought under the term "erection of any building." The entire roadway and footways are now six feet wider than before, no *inconsiderable* boon to the public, and some little sacrifice on the part of the owners of property. As far as the Building Act is concerned, the Commissioners of Works and Building state these erections do not come within the scope of the Building Act. This has been for some time a *venia quæritur* among the profession, many conceiving that they did. The writer further says, it may fairly be doubted whether they can be brought under the Act 7 Geo. 4; the road commissioners have waived any claim that they might have had under this imperfectly worded Act, by tacitly acquiescing in these erections for years past, and are not now in a position to enforce the Act, admitting the Act to be so construed as not to leave a question. Still he thinks the public have no great ground of complaint, as they are benefitted by the footways being each increased three feet in width.

THE PEAT BOGS IN IRELAND.—A new attempt to convert the Irish peat bogs to profitable account, has been made in the county of Kerry, by the Great Peat Working Company of Ireland. For some weeks past several hundred hands have been employed in preparing a supply of peat, and the first stone had been laid of a new station, in the vicinity of Cahirciveen, and within a short distance of the harbour of Valencia. This will be completed, and the necessary machinery be at work, in between two and three months. The object of this company is the preparation of compressed peat, charcoal, and tar. The first of these articles is obtained, it is said, of a density equal to that of pitcoal, and not inferior in any respect as fuel, while in some respects superior, and also more economical. It is prepared in blocks of any required size, the sides of which, from the great pressure to which the peat is subjected, are said to have all the appearance of a high polish, and may even be handled without soiling the most delicately-coloured glove. In the preparation of the charcoal the tar is economised and collected, for the preservation of timber; and for illumination, it is said, a superior gas may be obtained from it, at about one-half the cost of that prepared from pitcoal.

THE COLOSSEUM, REGENT'S PARK.—Looking in here the other evening we found the building crowded with visitors, nor can we wonder, for it is certainly a supereminently beautiful exhibition. Danson's fine picture of "Paris by Night," is an object of general interest to all the foreigners who visit London: its truth and deception are equally startling. Besides "Paris by Night," they have Parris in the morning, if we may be allowed a quibble; for the panorama of "London," by that artist, has been restored to its place, and forms an important feature of the exhibition.

EQUESTRIAN STATUE OF THE QUEEN IN GLASGOW.—At the Glasgow Town Council the sum of 500l. has been voted for an equestrian statue of the Queen, in commemoration of her Majesty's visit to the city in August, 1849. The private subscription towards the same object already exceeds 3,000l. and the work will be commenced forthwith. As division of opinion may exist regarding the choice of an artist, it has been suggested by some gentlemen that the nomination should be placed in the hands of Prince Albert.

* George Virtue, London.

BUILDING SPECULATIONS IN GLASGOW.—At a fortnightly meeting of the Dean of Guild Court, held on Thursday in week before last, new building operations were sanctioned, inferring an outlay, we have been informed, of not less than 50,000*l*. The local *Herald* fears a building mania. The operative masons are becoming restive under their rising prospects. At same court the Fiscal directed the particular attention of the court to a case in the Drygate, in which a proprietor had erected two tenements, about 30 feet square, connected by a brick staircase serving both houses, and in which it was proposed to accommodate fifty-three separate families in single apartments. Forty-eight of these tenants would enter by one door three feet wide, and forty of them would find access to their houses by a staircase, which at some of the turns was only two feet eight inches wide. The tenement was six stories in height, with attics, and the whole erection was of such a character as to put to shame any of the old overcrowded, ruinous fabrics which the court had been so anxious to banish from the dense parts of the city. The court determined to look into the matter. Meanwhile, observes the *Herald*, our modern cheap builders may take a look at the place, for none of them have yet thought of carrying up "shiver" partitions to a height of six stories. We learn that a considerable portion of the building materials were carted from an old wretched fabric which was very properly razed to the ground last year, by Mr. Robert Napier, of Lancefield, who removed it to get quit of the nuisance in the vicinity of his extensive works in Washington-street. The cost of the structure, we are informed, will be about 1,200*l*.; and it is expected that a rental of between 200*l*. and 250*l*. per annum will be received for it.

DISTRAIN FOR RENT.—At the County Court, Liverpool, on Wednesday in week before last, an action was brought to recover 9*l*. 6*s*. for overcharge made by defendant on a distress for rent in which he acted as bailiff. The judge decided that, according to the construction of the fifth section of the statute, the tenant was allowed five clear days to replevy goods or pay the rent, and that nothing more was necessary to be done by the bailiff than to take an inventory, and to secure the goods by keeping men in possession; that no appraisal was contemplated by the statute until the expiration of the five days, and that it was a duty cast upon the bailiff by law to seize a proper amount of goods; and for any assistance to obtain that he would have to pay himself, and he would be liable to an action only if he levied a considerable excess; that after the expiration of five days, he would be allowed a reasonable time for advertising and selling the goods, and therefore there was no necessity to advertise them for sale on the sixth or seventh day. The plaintiff, therefore, was entitled to recover, and he would allow the bailiff 1*l*. 1*s*. for levy, and 2*l*. 10*s*. for men in possession, which would leave a balance due to plaintiff of 8*l*. 16*s*., for which amount the verdict must be entered.

ELECTRO-TELEGRAPHIC PROGRESS.—On Tuesday last about twenty miles of the great submarine telegraphic cable had been shipped at Wapping to be transmitted to the Channel. We have already described this renewed endeavour to effect the telegraphic union of Britain and France. There are still doubts of the sufficiency of the means, and certainly a power of tenacity overcome by a force of 8 tons' weight is as nothing to forces which it may meet with in the great deep. That it is a decided improvement on the last, however, there can be no doubt. The last was a mere wire coated with gutta percha to a thickness like that of a small wax taper. We pointed out both then and previously the imprudence of trusting to gutta percha under such circumstances, and we now find elaborate precautions taken to protect that substance from the destroying agencies of the ocean. These are no more than necessary. We even find from the Berlin correspondence of the *Times* that the gutta percha which covers the Prussian telegraphs is constantly being destroyed by

vermin, such as rats, although placed underground for comparative safety. Tar itself and flax are still vegetable substances, and may be acted on under the ocean—as timber is, for instance, by the *teredonavis*—so as to benotvery long a protection to the enclosed gutta percha even yet, any more than the galvanised iron wire, though that in ordinary circumstances certainly appears to be by no means so corruptible as iron naturally is. May it not become degalvanised in course of telegraphic use under the ocean? We, even yet, have not heard of adequate experimental test or inquiry having been gone into on these points. The present renewed experiment is rather a costly one, and of course it is desirable that the materials used should be as lasting and effective as well as strong as possible.

METROPOLITAN COMMISSION OF SEWERS.—A special general court was held last week, at which the Essex-street sewer question was postponed till next court-day, when plans would be perfected. The court then proceeded to open various tenders for works, and the character of the work previously performed by the different candidates was openly discussed. Sir J. Burgoyne felt it desirable that the claims of the different contractors should be discussed in private: the other commissioners concurred, and it was understood that all contracts would in future be privately considered. In answer to the application made by the inhabitants of Richmond, as to the amount necessary to complete the drainage of that town, in order that they might raise the sum at once, the engineer reported that 2,241 feet of sewer alongside the river, and 50,637 feet of piping were required. 2,900*l*. had already been expended, and the remainder required would be about 4,950*l*. Reports as to various other works were then considered and agreed to.

STRIKE AND PROSECUTION OF BOILER MAKERS.—About 150 men, in the employ of Messrs. Kitson, Hewitson, and Thompson, boiler and locomotive manufacturers, &c., Leeds, recently struck work through a dispute about wages, and still remain out, but the firm are making efforts for filling their places by non-society men. Several of these, boiler-makers by trade, were on Monday week engaged at Newcastle, by Mr. Hewitson, at 2*s*. 6*d*. per week, for twelve months: he paid their fare to Leeds next day, and they were to commence work on Wednesday morning. They, however, failed in doing so, and warrants were obtained against five of them. They were immediately arrested, in what was understood to be the Boiler-makers' Club-house, and brought before the sitting magistrates at the Court House. A conference, however, took place between the defendants and their employers, after which the former expressed their willingness to return to their work and fulfil their contract. The Mayor expressed a hope that the defendants would, like good Englishmen, fulfil the engagement into which they had entered, and that the workmen on strike would endeavour to bring the differences they had with their employers to a close. The defendants were then discharged out of custody, on entering into their own recognizances, in the sum of 20*l*., to come up for judgment when called upon; the understanding being that if they fulfilled their engagement no further proceedings would be taken against them.

PAPIER MACHÉ.—Mr. Charles Frederick Bielefeld, of London, has enrolled a patent for improvements in the manufacture of sheets of papier maché, or substances of the nature thereof. These improved processes are for the manufacture of pressed articles from pressured sheets instead of pulp, and for the production of such prepared sheets. The apparatus which the patentee uses in this manufacture consists of a table, having a rack on either side, by which it is traversed backwards and forwards under a roller, so supported as to give the required degree of pressure to the material, and at the same time capable of being varied in its elevation, in order to reduce or increase the amount of pressure; or it may be a weighted roller for the purpose. The material which the patentee

prefers for the manufacture of sheets of papier maché, suitable for panels for cabins of steam-vessels and other like purposes, is given in the following proportions:—Mix with thirty parts of flour eighty parts of water, thoroughly incorporating the flour, so as to reduce the mixture to the consistency of paste, adding, at the same time, nine parts of alum and one of copperas. With this paste is then mixed fifteen parts of resin, previously dissolved by heat, adding, also, ten parts of boiled linseed oil and one of litharge. These ingredients having been mixed in the above order, are then mixed with about sixty parts of rag-dust, which the patentee finds the most economical, but other matters may be used, such as paper-makers' half-stuff or pulp deprived of its moisture to such an extent as to be no longer fluid.

EFFECTS OF VENTILATION.—The following statement, from the history of the Dublin Lying-in Hospital, quoted by the *Advertiser*, is very striking. In the years 1782-3-4 and 5, of 7,650 infants, brought forth in the above hospital, 2,244 died within the first fortnight after birth, chiefly of convulsions, or what nurses called nine-days' fits. These children foamed at the mouth: the jaws became firmly closed: the face swelled and assumed a purplish hue, as though they were choking. This last circumstance suggested to the physician that a deficiency of wholesome air was connected with the great mortality. Air pipes, with other openings, were contrived: the rooms were freely ventilated; and behold the consequences:—

In 1786, of 1,372 children there died	51
In 1787, of 1,375 " "	59
(An unhealthy season.)	
In 1788, of 1,496 " "	55
4,243	165

Thus, after a proper application of ventilation out of 4,243 children there died 165; whereas the average previously from the same number, in the same place, was 1,632.

THE BURMESE BELL AT LIVERPOOL.—This gigantic bell, which was one of the spoils taken during the Burmese war, and is now erected on the Liverpool Landing-stage, for the purpose of giving warning during a fog, is found not to emit so loud a sound as was anticipated, and therefore proves to be comparatively useless. The metal is so thick that an ordinary clapper is wholly ineffectual in bringing out the full tone of the bell, which requires a power equal to that of a steam-hammer to ring it effectually. In the endeavour to bring out the sound in all its power, the tongue or clapper was several times unshipped, and fell upon the landing-stage, making indentations nearly an inch deep upon the oak floor, but providentially doing no other damage.

INFORMATION FOR HOUSE-AGENTS.—Mr. Craven, as agent for Mr. Robinson, summoned Mr. Thorpe of Brunswick-street, Trammere, on Friday, at the Birkenhead County Court, for the sum of 3*l*. 14*s*. 3*d*. including costs, being a quarter's rent for a house belonging to Mr. Robinson, and which Mr. Thorpe had occupied for part of a quarter. The defendant had let the house to another party, whom Mr. Craven accepted as a tenant, and upon quitting the house tendered to Mr. Craven the full amount of the rent then due, viz. 1*l*. 5*s*. 6*d*., which he refused to accept, and he also refused to give a receipt in full of all demands. The learned judge ruled that Mr. Craven had no right to refuse giving the receipt, and gave a verdict for the defendant.

DEATH IN A SEWER.—At Bolton, on Friday week, a boy died in a pipe sewer, into which he was sent by a man employed by the surveyor to cleanse a length of eighty yards. The surveyor had expressed a doubt of its being properly cleansed, and two boys were sent through it to prove that it was so. A shaft was hastily sunk to extricate the youth, but eleven hours elapsed ere his body was got. The pipe in which it was found was filled with sludge to the depth of 13 inches, the vacant space at top being only 7 inches. The coroner's jury reprimanded the man who had sent the boys in for urging them to go through.

NEW ALMSHOUSES IN ST. LEONARD'S, SHOREDITCH.—According to the newspapers, the first stone of new almshouses in Brunwick-street, Hackney-road, for twenty poor women of the parish of St. Leonard, Shoreditch, has been laid. A sufficient sum has now been obtained by voluntary subscriptions to enable the committee to enter into a contract with Mr. John Wood, of Shaftesbury-street, to erect and roof the houses, build a wall, and place the iron railings thereon, for a thousand guineas: to finish the houses, fit for residence, however, a further sum of about two hundred and fifty pounds will be required. The building is to be constructed on a square, with two fronts, in a mixed style of architecture, combining the Elizabethan and Stuart, and surrounded by a verandah. Each inmate is to have a living-room, a sleeping-room, and scullery. Mr. Knightley is the architect.

MAGNETO-ELECTRIC AND ELECTRO-MAGNETIC APPARATUS.—Mr. W. Millward, of Birmingham has lately specified a patent, which consists—1. Of an improved method of charging or magnetising iron and steel bars to be used as permanent magnets or electro-magnets. 2. Of certain new forms of electro-magnetic machines. The first branch of the improvements is carried into effect by the employment of an electro-magnet formed by a current of electricity produced from a magneto-electric machine, instead of that generated in a voltaic battery; and such an electro-magnet, it is said, may be very advantageously used for magnetising large bars of steel, or for producing very powerful magnets. Any of the known forms of magneto-electric machines will serve thus to convert a bar of steel into an electro-magnet, but the patentee prefers to use one composed of four, eight, or any other number of permanent magnets, having double the number of armatures, and coiled with strong wire of about 60 feet in length.—Mr. F. S. Beatty, of Dublin, advertises an "electro-magnetic engine as a source of mechanical power, to supersede the use of steam as a prime mover," and expresses his desire to treat with capitalists in order to form a company, to be called "The British Electric Power Company."—M. Aristides Dumont, engineer of the Ponts et Chaussées, has made some experiments with electro-magnetic engines, for the Paris Academy of Sciences. He concludes from these experiments that although electro-magnetism cannot compete with steam, small power machines might be usefully turned to account in many trades, and for numerous mechanical operations where moderate forces only are required.

RUSSIAN USE OF DOOR-LOCKS.—"But he laid particular emphasis on the brass door-latches, which in Armenian houses are somewhat unheard of. With these door-latches and locks a comical story is connected. The Prince became acquainted with the use of them at Tiflis, bought a dozen, and ordered some to be fixed on the doors of the "European saloon." The servants of the house, ignorant of the real intent of the singular machines, believed that the Prince had ordered them for musical purposes; for every time they were turned a roaring sound followed in the wide, empty room. It happened, then, that in the absence of the master of the house, several concerts were arranged by the domestic personnel, with the assistance of the brass door-latches. An old blind Tartar had to sing, and the cook, who was considered an authority in such matters, played the brass door-latches. The Prince only discovered the musical tendencies of his household when three locks and latches were broken. "So difficult is it," said he, concluding a very copious narration of the affair, "so difficult is it to introduce into this country European civilization. But I do not perplex myself on that account, and have brought with me half-a-dozen new door-locks from Tiflis."—*Bodenstedt's Morning-Land.*

NEW CHURCH IN WATERLOO-ROAD.—A new church in Waterloo-road, nearly opposite the Victoria Theatre, has been erected for a congregation formerly in Robinson's school-room, close by. It is built of Kentish rag stone, in the Gothic style, with a small steeple, containing a bell.

ROE'S COMBINATION PAVING.—Mr. Freeman Roe has patented a new mode of constructing roads, the object of which is to give greater stability, and to diminish the expense. He proposes to substitute for the present bed of concrete now generally laid for the support of the granite, permanent wooden sleepers, supporting a covered way of the same material, and forming the segment of a circle, and upon this to rest the granite block. When it is necessary to open the road for laying down or mending pipes or other purposes, the wood-work in that part, it is stated, is easily removed, and as easily replaced in the same position as it was previous to its being disturbed. The advantages claimed are, that it is cheaper than the present mode of paving; will better preserve uniformity of surface; and will mitigate the noise in the streets.

PULHAM'S TERRA COTTA. In Class 27 of the Great Exhibition, seems a very good material, and deserves notice. The maker has added, at the west end, several fresh specimens since we gave our general review of the works in this class. In a statement which Mr. Pulham has put forth, it appears that a piece of his terra cotta, broken by Mr. Bellhouse's hydraulic press, required a pressure equal to the enormous force of 460 tons on the foot cube. The application of terra cotta to the construction of fire-proof staircases ought to have attention.

FALL OF A CORNICE AT PIMLICO.—Four men were killed on Friday last by the fall of an exterior cornice newly erected on a building of five stories and nearly 80 feet in length, forming three houses in course of erection near Vauxhall-bridge, by Mr. Grigg, builder. The whole of the cornice fell in one piece, carrying the whole of the stage with it, and snapping the scaffold-poles, precipitating the workmen to the ground.

PROPERTY RATED TO THE POOR.—Some interesting information is given in a return recently issued respecting property assessed to the relief of the poor in the several parishes of the metropolis in the rate collected in June last. The value was 9,760,206*l.*, which was made up in the following manner, showing the value of the property in the several districts:—In Hammersmith the rateable value of the property in four parishes was 139,547*l.* In Chelsea, three parishes, 394,594*l.* In Paddington, two parishes, 389,987*l.* In Marylebone, two parishes, 906,160*l.* In Westminster, twenty-two parishes and extra parochial places, 1,810,814*l.* In St. Pancras, two parishes, 704,517*l.* In Holborn, nineteen parishes and extra parochial places, 985,399*l.* In Shoreditch, nine parishes, 691,670*l.* In Spitalfields, six parishes, 419,852*l.* In the Tower Hamlets, thirteen parishes, 223,474*l.* In Limehouse, five parishes, 263,641*l.* In the City of London, 105 parishes, 877,766*l.* In Battersea, twelve parishes, 231,132*l.* In Lambeth, five parishes, 559,866*l.* In Camberwell, four parishes, 369,238*l.* In Southwark, nine parishes, 477,598*l.*; and in Greenwich, six parishes, 315,561*l.*, making the grand total of 9,760,206*l.*—*Times.*

THE VALUE OF THE THERMOMETER has been shown very strikingly at the Great Exhibition. Mr. Bennett, of Cheapside, has fixed there twenty of his standard thermometers in different parts of the building, and by diligently recording and communicating each day the varieties of temperature, enabled the Executive to adopt such measures to ensure comfortable breathing as the circumstances demanded. Mr. Bennett has not let the opportunity slip to bring himself into notice by this matter, and deserves for his energy whatever advantage may accrue to him.

MARSH-LAND BRIDGES.—In your paper of the past week you mention a little invention of mine, which you designate "cattle bridges;" but this is not the proper title or purpose of the bridge: I call it the "marsh-land bridge," and its worth consists in preventing cattle and sheep from passing over it, as in the case of a common bridge, whilst it affords the farmer and his men free range from field to field, over many hundred acres, at small expense. The mode of making them, as already stated by you, is correct.—NATHANIEL MATHEW.

BRICKMAKING EXTRAORDINARY.—A correspondent states that twelve moulders employed by Messrs. Herois and Rutter, in a field near Uxbridge, have made the enormous quantity of 10,875,000 bricks during the season of twenty-two weeks just ended. This quantity will give an average of 906,025 bricks for each moulder. One moulder made 1,046,000, and another made 1,023,000.

IRON TRADE IN STAFFORDSHIRE.—It is stated, in the *Birmingham Gazette*, that the most expensive descriptions of iron, for Birmingham orders, are being delivered there at 8*l.* per ton, and the lowest at about five guineas net. A report has been very general that an advance of 2*s.* 6*d.* per ton on pig iron has been established, but we are assured both by buyers and sellers that it is without foundation.

MANCHESTER IS TO BE A CITY.—We believe we may announce that, at the private meeting of the council on Wednesday last, it was determined that Manchester should be a city, and the mayor was authorised to take the requisite steps for making application for the grant of her Majesty's Royal letters patent, authorising and declaring that henceforth the incorporated borough and town of Manchester should take the name, style, or title of "the City of Manchester." We understand that the mayor has already made the requisite formal application, and that in a short time we may legally and correctly congratulate our "fellow-citizens" on the civic dignity conferred upon Manchester.—*Manchester Guardian.*

TENDERS

For works to Newington Workhouse, Quantities supplied. Mr. H. Jarvis, Architect.

Harding	£5,287	0	0
Overtun	5,270	0	0
Pauling	5,100	0	0
Myers	5,350	0	0
Tarrant	4,094	0	0
Crawley	3,980	0	0
Davis	4,681	0	0
Brown	4,851	0	0
Taylor	4,800	0	0
Cooper	4,747	0	0
Carver	4,597	0	0
Rudkin	4,425	0	0
J. Cooper	4,450	0	0
Ryder	3,944	0	0
Wilson	3,977	0	0
Colls and Co.	4,374	13	0
Walker	4,350	0	0
Tombs	4,115	0	0

TO CORRESPONDENTS.

"Plans." Can any of our subscribers inform us when plans were first intended?

"J. B." Chichester (thanks), "G. J. F." "W. T." "J. B. W." "Mr. B." "A. Beck" "T. W." "T. B." "J. D. H." "A. Leaseholder" (solicitor) owner should pay for the wall. Applied to an architect, "W. J. H." (we have already admitted a reply), "F. P. R." "J. R." "E. G." "C. P." "T. T." "One who works for his living" (not precise enough, for such a charge), "A. Constant Reader," "R. L."

"Books and Addresses."—We have not time to point out books or find addresses.

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor." All other communications should be addressed to the Editors, and not to the Publisher.

ADVERTISEMENTS.

BUILDERS' BENEVOLENT INSTITUTION—FOURTH ANNIVERSARY DINNER, to be held at the London Tavern, on WEDNESDAY, October 2nd, 1851.
THOMAS GRISSELL, Esq., F.S.A., President, in the Chair.

Charles Dalman, Esq.	Benj. Gough, Esq.	Wm. Norris, Esq.
N. James, Esq.	Wm. Harring, Esq.	Thos. Patrick, Esq.
T. G. Bartlett, Esq.	George Hewitt, Esq.	J. Pennington, Esq.
E. J. Bette, Esq.	J. N. Holland, Esq.	R. M. Peto, Esq., M.P.
Stephen Ford, Esq.	Wm. Herbert, Esq.	J. Randall, Esq. Bath.
George Bird, Esq.	Thos. Howard, Esq.	G. S. Clark, Esq.
Joseph Bird, Esq.	Thos. Hockley, Esq.	Thos. Smith, Esq.
Messrs. Cudlip and	Wm. Hutcliffe, Esq.	Thos. Smith, Esq.
Sandars, Esq.	Wm. Hood, Esq.	J. Toward, Esq.
J. James, Esq.	J. Jay, Esq.	H. Statham, Esq.
H. W. Cooper, Esq.	James Knight, Esq.	Thos. Shilling, Esq.
Thomas Cooper, Esq.	William Lee, Esq.	J. Lu. Pharr, Esq.
Al. Jermat, Esq.	Geo. Lester, Esq.	Thos. Try, Esq.
Culbert, M.P.	Benj. Moss, Esq.	Geo. Pyman, Esq.
Robt. L. Curtis, Esq.	George Myers, Esq.	Isaac Owen, Esq.
Wm. Dennis, Esq.	Thos. Neillan, Esq.	R. Watts, Esq.
William Lilly, Esq.	John Newson, Esq.	J. Williams, Esq.
E. R. Gammon, Esq.	John, Esq.	W. Woodward, Esq.

Gentlemen desirous of promoting the interests of the Institution by becoming Stewards will be pleased to forward their names to the Secretary, at the office, 47, New Oxford-street.

A. G. HARRIS, Secretary.

TO DRAUGHTSMEN AND CIVIL ENGINEERS.
H. MORRELL, BLACK LEAD PENCIL MANUFACTURER, No. 149, Fleet-street, London.
These Pencils are prepared in various degrees of fatness and shades.

H H H H for drawing on wood.	FF light and shading.
H H H for architectural use.	F for general use.
H H for engineering.	B B B for shading.
H H for sketching.	B B B ditto ditto.
H H hard and black for drawing.	B B B ditto ditto.
M medium.	B B B ditto ditto.

Sold by all the principal Stationers in towns or country.

high.—Applications for purchase of the screen, or other works at the same stand, to be made at JORDAN'S MACHINE CARVING WORKS, Belvedere-road, Lambeth, near the Suspension-bridge

		£	£ s d	£ s d.
521	1807	900	882 12 1	1,882 12 1
1174	1810	1,250	1,160 5 6	2,390 5 6
3392	1820	5,400	3,558 17 8	8,558 17 8

Prospectuses and full particulars may be obtained upon application to the Agents of the Office in all the principal towns of the United Kingdom, at the City Branch; and at the head Office, No. 50, Regent-street.

Bedding. And without attempting to compete with our Prices, which the lowest class of Furniture and Bedding, and which are for no other purpose than to be found to be proved on the same principle by which their Bedding Trade has, during the last thirty years, been so successfully extended, and the goods, whether of a plain and simple pattern, or of a handsomer and more expensive character, are of well-seasoned materials, sound workmanship, and warranted.

WEIGHT, SIZES, and Prices of every description of Bedding, sent free by post, on application to their factory.

126 (opposite the Chapel), Tottenham Court-road, London.

The Builder.

No. CCCCLII.

SATURDAY, OCTOBER 4, 1851.

THOUSANDS are killed annually simply by want of thought. In saying this, we view all society, and include a wide range; but even amongst building-operatives alone, the class to whom we would at this moment more immediately refer, the waste of money and of life from the same cause is enormous. We are not speaking of the want of thought of consequences which permits a man to drink, and so kills him body and soul, or to fall into other destructive habits; or the want of thought which makes him a prey to deceptive schemers, and so destroys his energies and shortens his life; but that particular want of thought which leads to what are known *pro éminence* as "accidents," injuring or killing outright, as the case may be.

Where a man unnecessarily risks his life, his limbs, or his health, he is committing a crime against society, and ought to be punished for it, notwithstanding that one often feels something like admiration for the coolness and bravery which are thus displayed, and is led to reflect that the same qualities in other times, or under other circumstances, might have obtained for their possessor the designation of a hero.

"And in what way," some of the class we are addressing may inquire, "do you show that it is an offence against society? My life is my own: it is I who will suffer any pain that may accrue to me through the act; and who has any right to interfere if I choose to run the risk?" Has our querist a wife and family we would ask? If so, who is to maintain these if you kill or incapacitate yourself? Who can say what will be the future of those you have left unprotected and unprovided for, and to what extent society may suffer. Even if you be without dependents on your labour, you are subjecting others to the cost of maintaining you in decrepitude, leaving even higher considerations out of the question, and are committing an offence if you unnecessarily run the risk. And yet these risks are run every day and all day. If any doubt the extent of the evil, let them examine the records of the hospitals, and they will be astonished by the enormous number of accidents to building-operatives that are annually noted there. We would seriously urge on foremen and brothers to reason on this matter with those who are under them; remembering always, however (if they will excuse us for saying so), that harshness and violent reproof are less likely to be effectual in such a case than complacency and kindly argument.

We mentioned in a few lines last week from the newspapers, that several workmen had unhappily been killed by the fall of a cornice from the top of three houses near Vauxhall-bridge. A violent letter, received since then, endeavouring to fix especial blame on the owner and builder of the houses, has led us to examine into the matter ourselves. The

houses are in Lupus-street, in Mr. Cubitt's new district, with a frontage of 66 feet, and four stories above the basement. The men were engaged in running the compo cornice terminating the elevation, as usual now everywhere, when the whole of it fell, together with the low parapet above it, and carried away the men and scaffolding in its descent. What fell weighed ten or eleven tons, so that it is not surprising that it broke the 3-inch Yorkshire stone put in for the balconies at the one-pair windows, short off at the wall, throughout nearly the whole extent of the houses.

How was the core for this cornice formed, then, is of course the first inquiry that suggests itself. Our violent correspondent says, the piece of York stone which formed the core scarcely entered the wall, and so overbalanced and fell. According to a drawing, however, deposited to by the workmen engaged, the stone passed through the upper part of the front wall (here only 9 inches thick) and 1½ inch beyond, while its projection in front was 13½ inches (the width of the stone being 2 feet in all); but then the course of brickwork immediately below it was brought out 2 inches as a corbel. Upon the stone, were eight courses of 9-inch brickwork, to form the parapet. Two cut courses of bricks were laid upon the extreme end of the stone, and projected over it, as core for the cornice, and then a tile from the top of these to the face of the brick parapet made the weathered top of the cornice; the core was therefore in part hollow. On the face of this projection the cement was added to form the cornice, and of course, on the principle of the lever, exerted much more force against the balancing brick parapet than its mere weight.

Under the cornice there were to be when completed, a series of compo trusses, and these the men were preparing on the scaffold. Had these trusses been fixed in their places, supposing, of course, the wall behind strong enough to carry them, the cornice would have been safe enough, but "for want of thought" the men as they cast them, put them on the top of the cornice, to the number of twenty-five or thirty, each weighing a quarter of a hundred-weight. Connect with this the construction of the cornice, and the fact that all the work was green and subject to the jar of the scaffold, and the unhappy result will be seen to be a natural consequence. Our object in this recital has not been to give or relieve any person from blame, but to lead men to think, and to remind them that materials, unless placed statically, must fall. We end as we began: thousands are killed annually for want of thought!

NOMENCLATURE OF ENGLISH STYLES.

THOUGH the doings and sayings of this 1851 seem enough to paralyse the little remaining sense of right and wrong in art, and almost drive one to doubt, with Ruskin, whether any investigation of its mere externals be, in these our days, better than a sort of busy trifling; yet it is difficult to see the long battles waged about "Late Early English," and "Plain Decorated," and the priority of their invention, without being led to imagine a correct and uniform nomenclature of our styles of building (and another for our styles of window-work regarded apart as one branch of building) to be still somehow desiderata. Assuming them to be so, I would hope that the following propositions, simply submitted to the scrutiny of the disputants, might have some effect towards reconciling them, even if it be only to unite them against the new comer, for any union will be better than their present discord.

I. I submit that the various members and classes of work, as pillar-work, vault-work, window-work, &c., composing any system of architecture (and above all others the Gothic system), are so many and so equal in importance, and were developed and varied so independently of each other, that no style or period of the art (taken as a whole) can be properly or adequately named after the peculiarities of any one of these component parts; but only after circumstances external to the art, as locality, date, author's name, reign, dynasty, &c.

II. This principle seems to have been recognised in the nomenclature of styles in every art but our own. Thus, styles of music are not named after the prevalence of certain notes or intervals or kinds of time; nor styles of painting after their peculiarities of composition, outline, colouring, &c.; nor styles of writing after their prevailing rhetorical figures, grammatical construction, or any other internal peculiarity. It is very useful to investigate all these things, but *not to name* styles after them. It is the teacher's duty to show, as far as he can discover, in what things the peculiarity of each style in each art consists; and further, to seek to generalise these things, to bring under one head two or more style-marks previously regarded as distinct and independent, by detecting their oneness as results of one peculiarity of character, different indications of one and the same spirit; and thus to approach nearer and nearer to expressions for each style that may embrace all its peculiarities at once. But, for this very reason, we are wrong in using any such expressions as *names* for the style; for, 1st, you cannot express in a name more than one or two peculiarities, and they are *all* necessary to the style; 2ndly, you defeat the very object of nomenclature by rendering it an unstable thing, liable to continual improvement with every advance of our knowledge of styles, their peculiarities, and their deep-buried motive powers. Names can never be fixed, if they are to be condensed descriptions. They will be rendered false and unsatisfactory, if not useless, by every new discovery. Even in material things, what a pretty mess the astronomers would be in if they had kept and used such names as the Morning-star, the Ring-bearer, the Six-mooned, or the Out-planet. But such a name as Neptune can never be wrong. No discovery can ever call for its amendment.

III. I submit that the ancients, therefore, followed the right method of nomenclature for our art, in naming their styles of it, Corinthian, Ionic, &c., which the shallow conceit of moderns has affected to improve into "Foliaged," "Voluted," "Massy-Capitaled," &c., as if their differences consisted in this or that member being decorated thus or thus. Any one with the smallest perception of the wonderful completeness, all-pervading character, and immiscibility of the different Grecian orders, must be astounded to see so true an amateur as Ruskin treating them as if all their difference resided in their capitals. Now, are we not committing just the same error in trying to name Gothic styles after the varieties of a single feature (and that not an universal one) the window? I say we are doing worse; for the window is not, in *any* style, so indispensable a member as the capital;—the latter coming, in fact, as near to absolute necessity, as near the place occupied by the verb in speech, as I can conceive any building member to do. For I suppose, you will admit that windows are not so indispensable a part of building as either walls or doorways. But neither of these are absolute essentials: they are necessary only where there are no pillars— and pillars are necessary only where there are no walls; so that neither walls nor pillars are universal. But whichever there be, they must have top pieces, *i. e.*, capitals (whether distinguished from the body or not). So that the vulgar naming of orders after capitals, is a far less error than our naming after windows. Just think a moment how we must appear to the unlearned, preaching about "Lancet style," or "Perpendicular," in a piece of building *without* windows, as hundreds of fine and fully characterised specimens are.

IV. Apart from this fallacy of principle, I submit that all the *descriptive* names of styles are also, in the present state of our knowledge, either false, insufficient, redundant, or inconsistent. Thus, "Lancet style" is all four; false because there are no forms in it truly resembling a lancet (or even an outline of one, except reversed like Wyld's globe, solid for void and void for solid); insufficient because these lancet-fitting vacuities are as common in any later style as in the one meant; redundant, because such openings are not necessary to the style; and inconsistent, because it bears no relation to any other name in use, for we have no pen-knife, sword, or carving-knife style, or any other named on the cultereseque system. So, too, with "Decorated," which, I need not stop to show, is wrong in all four ways; every writer seeming now to avoid it, as having the utmost faultiness that any word ever used as a name can be conceived to have. Yet we have seen an exact parallel in the "Florid Gothic," florid having just as much connection with a style or period as *stupid* has. Any style may be undecorated, decorated, or florid. In the town of Ely alone, there are equally florid examples of every one from the Norman downwards. Our "Geometrical," again, sins nearly as much on all four points, and is no name; the style being nowise more geometrical than styles in general, either of architecture or of mere tracery. It is utterly indefensible unless we can distinguish all other styles from it as "Arithmetical" or "Algebraical," or having some other quality not geometrical. So also "Flowing" is inconsistent, unless opposed to some such term as "Stopped" or "Discontinuous;" and it is, therefore, only applicable to the whole of the later Gothic collectively (Freeman's "Continuous Gothic"), including "Perpendicular" and Tudor. "Flowing Curvilinear" and "Flowing Rectilinear" might serve as sub-divisions of the Flowing; but "Curvilinear" alone, as now applied, is egregiously false, even as confined to window tracery, this style actually admitting some straight lines where the previous style admitted none (as you will see on comparing the two transept ends of Southwark). As for "Rectilinear," it has only (but to a peculiar degree) the radical fault common to all the rest, of applying to window-tracery alone (a secondary and quite non-essential feature); and "Perpendicular" adds to this the inconsistency of corresponding to no negative, no "Oblique-angled" or "Non-perpendicular" style.

V. Thus while the original and admirable systematizer of our styles, Rickman, unfortunately chose for the two later of his four periods, names barbarous and inadequate; his more lettered imitators and retailers, who ought to have known better, instead of mending, have extended the false principle of them to the whole nomenclature; and this without the plea of originality, and with the affectation of altering names for the sake of change, needlessly, and generally for the worse.

VI. Assuming then that all these fallacies are inseparable from the false principle of names describing internal peculiarities, I submit the following as a mode of superseding them with the least possible innovation on those left by the excellent and laborious Rickman:—First, for the large and primary divisions (whose number seems to me very unimportant), retaining his Norman and Early English, as right in principle (and the latter peculiarly good from its correspondence with the rise of our language), I replace the two others thus:—As his "Decorated" period is just included in the reigns of the three successive and long-lived Edwards, and as the other Edwards' reigns are scattered, and evidently too short to have any primary style proper to them, I cannot see any chance of misconception if I substitute for this "Decorated English," the term Edwardian (which further dispenses with the qualification *English*, since in no other kingdom has this been a regal name). Then, as his "Perpendicular English" assumed its complete form exactly at the accession of the house of Lancaster (for Westminster-Hall, the last work under Richard II., is hardly complete "Perpendicular"), I can see no impro-

priety in calling this style Lancastrian, even though it did grow up before their accession, and extend after their fall, through the few and troublous years of the York dynasty, in which very little was built. Thus we are brought down to the Tudor style, already an established name. I thus interfere in no way with the duration allotted to each primary style, only substituting the two names, Ed-

wardian for "Decorated," and Lancastrian for "Perpendicular."

Further, with these two innovations alone we can distinguish more transitional and subordinate divisions than in any system I have seen, as the following table will show. Reigns are substituted for dates, as quite definite enough and more easily remembered.

REIGNS.	NAMES HITHERTO USED.	NAMES PROPOSED.
All before Henry II.	Norman	Collectively { Norman.
Henry II.	Early Transitional	FORE-ENGLISH { Mixed Norman. And
Cœur de Lion	Late Transitional	Divisible into { Semi-English.
John	Early English	Collectively { Nascent English or Joan-
Henry III.	Lancet, &c.	EARLY ENGLISH { nian. Mid-Early English.
Ditto, later	Transition to Decorated ..	Divisible into { And Semi-Edwardian.
Edward I.	Decorated, Flowing,	Collectively { Early Edwardian.
Edward II.	Geometrical	EDWARDIAN { Mid-Ewardian.
Edward III.	Curvilinear, &c.	Divisible into { Late Edwardian.
Richard II.	Transition to Perpendicular	Semi-Lancastrian.
Henry IV.	Perpendicular-English ..	Collectively { Early.
Henry V.	Rectilinear	LANCASTER-ENGLISH { Middle.
Henry VI.	English After-Gothic, &c.	Divisible, if necessary, { Late. And
Edward IV., Edward V. ....	.....	into { After-Lancastrian.
Richard III., Henry VII.	Early Tudor	TUDOR-ENGLISH; or Proper Tudor.
Henry VIII.	Tudor Gothic .....	.....
Edward VI., Mary	Late Tudor .....	.....
Elizabeth	Elizabethan	TUDOR-ITALIAN; or Mixed Tudor.

It may assist the memory to observe that all the Richards' reigns are periods of rapid and marked transition; the first from Norman to English, the second from Edwardian to Lancastrian, and the third from debased Lancastrian to Tudor (a change much overlooked, but very decided in expression, even where the features are few and similar).

Mitford uses the term "Plantagenet Architecture" for the Early English; but it is remarkable that this dynasty was just long enough to embrace the four main varieties; the earliest buildings under Henry II. being pure Norman, and the latest, under Richard II., Perpendicular.

The division of such a series into styles has been well compared by Mr. Scott to the division of the spectrum into colours, whose number is almost arbitrary. Yet there are periods of comparative settlement or repose, separated by others of rapid change, and these appear to me to be somehow connected with a certain kind of renovation or return to earlier principles, to greater simplicity and boldness, which took place at least three times. This is most striking at the end of the Early English period, when its small and multiplied mouldings were exchanged for few and bold ones; but a similar retrogression is, I think, observable at the previous transition from Norman to English, and very decidedly at the change from Edwardian to Lancastrian, which in its earliest phase is far more artistic and more dignified in aspect than the previous "Decorated" of Edward III. Every style in this country grew, towards its close, frittered, thin, and poor, and the rectification of this came only with a new style. This tendency is national: our fashions, whenever left to themselves, exhibit it to this day.

The Lancastrian is the last and worst of styles, the first and best of fashions; for fashion, the great antagonist of art, began her tyranny in this country long before the "Renaissance," but on no part of the continent till after that change,—in Islam not to this day. The most hopeful effect I have heard of in the Hyde Park Exhibition has been its setting some people wondering how it is that vulgarity seems a thing unknown in Mahometan and Asiatic art (not, however, in Chinese). They may take it for granted that it is wholly unknown in decoration whose object is beauty, and wholly pervades that whose object is "respectability," i. e. wealth-mimicry,—where the motive and purpose are so base that it has to change its guise and very name as often as any one on the police books (from fashion to gentility, respectability, decency, character, style, &c.). I challenge their respectabilities to make anything that will keep a week without stinking, if they can.

But, to return, though I submit that descriptive names are wrong when applied to styles of an art as a whole, observe that this nowise

interferes with their use to express the varieties of any particular branch of the art (as in painting to express varieties of composition, lighting, colouring, &c.; in music, varieties of time, &c.; or, in our art, varieties of arcuation, fenestration, &c.), and the nomenclature of this kind which I would suggest in the case of tracery, shall, if you have no objection, be the subject of another letter.

E. L. GARBETT.

BITS OF THE GREAT EXHIBITION.

Morrell's Abutments and Tension Rods.—In Class VII. close to the large hydraulic press on the north side of the nave, at the east end, Mr. G. F. Morrell (a name known in connection with good black-lead pencils), exhibits iron abutments and tension rods for wide arches. The abutments are of cast iron, the rods of wrought iron, and one object of the patentee is to induce the substitution of flat brick arches, thus held together, for the wooden or cast iron bressummers now used for shop-fronts. The principle, our readers know, is not exactly a new one, but it is here put into a readily obtainable shape, and should come into use. Messrs. Glover, of Drury-lane, are the agents.

Granite from Sweden.—In the area outside the Great Exhibition, at the east end, is a large cross of granite from Sweden. The material is very compact and fine grained, and apparently well adapted for architectural purposes. We are not aware at what cost it could be obtained in England.

Effect of the Collection.—A "Working Man" addresses us as follows:—"In last week I paid my seventh and last visit to the Great Exhibition, now so soon to be closed. Then, and on each previous occasion, I was greatly pleased to observe that all the many thousands by whom I was surrounded—high and low, young and old, foreign and native visitors—appeared to be as much gratified and delighted as myself; and I could not help reflecting again and again on the manifestation of good nature and kindly feeling displayed by all around me, and was led to inquire into the cause of an effect universally apparent. To my mind it appeared that the magnificent spectacles open to the view of all, and composed of such a multitudinous variety of beautiful, interesting, and useful objects, was so impressive and so exotive of all the better feelings of our nature, that thereby all the baser passions, angry feelings, and irritation, which under other circumstances might be expected to show themselves, were for the time being completely subdued. If that be the true source of such good effects, then I am warranted in asserting, for that reason, among many others which might be adduced, that the People's Palace ought not to be taken down, but rather kept up to inclose in its own light and graceful way some great sight, some

magnificent spectacle of various interesting and useful objects; not merely for a winter garden, which would be a good purpose, and which might be combined with other uses more closely connected with the furtherance of art and industry, fine taste and good feeling, to which henceforth the building ought to be consecrated.* It is not likely that our correspondent's wish will be gratified. There is every reason to believe that the building must come down.

AN INDUSTRIAL ART MUSEUM— STUDY OF DESIGN.

WE are now arrived at the conclusion of the Exhibition: the order has gone forth for its close: the costly and wonderful works of art, the unpresuming objects that aim only at utility, and the stores of nature's treasures, whether from the bowels or the face of mother earth, will be scattered to the several sources from whence they came, unless a timely effort is made to arrest their total dispersion, and by a judicious choice of the purest and most instructive examples to form a centre for an "Industrial Art Museum," which, in this manufacturing country, is imperatively called for: many reasons may be urged in favour of this, and if you think the following ideas and proposals worthy of consideration, I shall be glad if you will give them utterance through the pages of your excellent publication.

In the first place it is admitted on all hands that the excellence of our machinery and handicraftsmen places us as a manufacturing country above all competition; but though the body is there the soul is wanting. High art and pure taste are not our distinguishing features: we have made great advances within the past few years, but means are now at our disposal to make them far more rapidly, and with a surer aim: the suggestions that I would offer are as follows:—

The Royal Commission will have a handsome surplus, which, according to the terms of their charter, they are bound to dispense in furtherance of the objects of the Exhibition, viz., the "advancement of art in relation to manufactures." Now, our manufactures standing as they do, unimpeachable in point of durability, of cheapness, and of utility, it may be asked why the necessity for art and taste? The answer is simple. As enlightenment is daily on the increase, our taste should increase in like proportion, or we suffer in proportion to our defects. I will give two illustrations only to maintain the truth of my position: Paris and Vienna surpass us in shawl manufacture: Paisley wants only art and taste to excel and overcome both. Spitalfields, for its excellence of manufacture, is unsurpassed; but Lyons would quail before an importation of exquisite taste and pure art, such as the educated ornamental artist alone could bestow. The question then arises, how is pure art, the gifted genius of the brain, to be bowed down and wedded to the more ignoble pursuits of trade? I answer thus: let the Royal Commission purchase, with their surplus, the gems of the Exhibition. Considered in regard to their teachable qualities, let them present these to the nation as a "Museum of Industrial Art," to be classified and arranged for constant and continuous reference, so as to make 1851 our starting point in ornamental art: then let the nation respond to the gift by erecting a building for its reception; and, in order to wed art to manufacture, bring the School of Design under the same roof. And yet still more to further this happy union, let the building be in the immediate proximity of and connected with the British Museum, and thus bring before the mind of the student by a constant and close comparison, the excellence of 1851 with the far exceeding superiority, simplicity, and elegance of design of the Egyptian, the Grecian, the Etruscan, the Augustan, and the Raffaellesque ages. The advantages of the comparison will be obvious and need no illustration. This we assume, then, as our starting point: the peculiarities of our day will sink before the grandeur of antiquity, and thus a purer taste and a more noble art will be breathed into our efforts. We shall contemplate the wonders of antiquity as wonders to be equalled, perhaps surpassed

(who knows), but the contemplation of them in juxtaposition with our own best efforts will open our eyes to our infinite shortcomings, and as we are so far before ancient nations in our social and intellectual position, why may we not hope to excel them in art also?

Assuming, then, the collection obtained, the building erected, the British Museum available for contemporaneous study, there remains now but the direction of the studies of the school of design in the channel above indicated, and here the happiest results should ensue. The study of design in this country is little understood: it is imagined that a youth is completely educated if he can make a new pattern stove, or draw a wall paper that shall catch the public eye and command a sale for the happy proprietor, who pays the fortunate youth a few pounds for his drawing, or plagiarism, as the case may be; but thinking persons will agree both draughtsmen and manufacturers are in fault, the one by neglecting his studies for the sake of a temporary reward, and the other by encouraging a low class of taste to the eventual detriment of his trade. To avoid all this, a rigid course of study in the new College or School of Design should be enforced: those only should be admitted to the college who would pledge themselves to complete the course of study. Degrees should be granted, and if funds were obtainable, professorships appointed: this refers to the head school or "college." I will barely indicate the field to which the studies may be directed. Wall decoration embracing the fullest treatment of historical and scriptural subjects, arabesques of flowers, fruit, animals, &c., glass painting, architectural design, sculpture, that should range from the colossal group or the decorative panel to the delicate fretwork of the goldsmith, or the fragile beauties of the potter, metal work, wood-carving, &c. *ad infinitum*, treated in each case as a branch of art study, and not in any case prostituted to the mechanical requirements of trade. A pure design lives for ever. If the mechanical deficiencies of one age do not meet the requirements of the design, the next age will supply them. Art must not be prostituted to meet the demands of the day, but the manufacturer, like Prometheus, must import art into his workshop to breathe fire into the clay and to bend the pliant metal into nature's breathing forms. In the present day the architect, empowered to erect a noble building on which money to an unlimited amount is expended, bestows the usual modicum of classical columns to the exterior after some well known antique model: the windows are after Bramante or Sansovino: the terminating cornice is made up of the well-known ovolo, dentils, modillions, corona, and cyma; and then to turn to the interior, after a panelled marble entrance hall his ingenuity ends, with walls in neutral tints, a plaster cornice and plaster panelled ceiling: he then hands over his charge to the upholsterer. But in the days that we would hope to see, might not the architect and professor of ornamental *British* art go hand in hand, not blindly tracing from illustrated books, but looking to the wide, diversified field of nature, guided as they would be by a long and arduous course of study of the examples of antiquity, to discard the false and grasp the beautiful, and so to present in such original form as the giants of old would have been proud to acknowledge. I would ask, is it possible to find in ancient Rome two examples of any order that shall be the same in all their details of column and entablature? An architect in those days had not dared erect his composition twice: if not then, why now? Is taste less subtle? and if superior to them in our intellectual and social advancement, why are we content with inferiority in this? Let us, then, reform, and taking 1851 as our starting-point, erect our college of design, into which let us admit those who are prepared to give a five years' daily study or a ten years' evening study, and in this college let them be educated in an enlarged course of high art without reference to any mechanical contrivance. The art once obtained, the graduates or professors, as their talents would qualify them, would be a direct means

of infusing a higher standard and aim into the meaningless demonstrations of the day.

And now a few words with regard to the provincial schools. The Birmingham school is a school of metal work, the Manchester school of textile fabrics, and so on; but in laying down this general rule, a high class of art must be taught to bear upon special manufacture, and in any case which may arise of superior talent in either province, power should be given, by means of visiting inspectors, to draught off such talented students to the province most suited to their particular gift; or if genius was displayed of an unusual character, then to the head college, which should have a certain number of exhibitionerships to be allotted and competed for yearly. Thus have I sketched out what, in my opinion, would be a means of bringing a high order of art to bear immediately upon the industrial manufacturing interests of the kingdom, and though my subject is not nearly, yet your patience and space must be by this time fully, exhausted by

E. I.

THE ARCHITECTURE OF ROME.*

THE architecture of ancient Rome affords little scope for æsthetical inquiry. The Corinthian order, which the Romans had the merit of developing, was only a highly ornamented Ionic, and exhibited no such radical difference from the pure Greek Ionic as was visible between this and the Greek Doric. This difference we were the first to investigate. The merits or rather the demerits of Roman architecture, as a fine art, have been summed up by Mr. Hope with a completeness which has left little further to be said upon the subject. We must borrow largely from his chapter on the Roman style, as a necessary preparation for an analysis of the art of the Renaissance, which, though full of error and barbarism, really was an art, having certain comprehensible and consistent artistic principles. These it will be worth our while to understand, if it be only that we may succeed in avoiding them.

The whole system of Greek architecture was developed from the mechanical principle of the upright post and horizontal lintel. This was the constructive principle of the wooden hut, from which the stone temple was, beyond all question, directly derived; and this continued to be the constructive principle as well as the external form of the Greek temple to the last. Every member of Greek architecture, although so selected and modified as to form a part of a wonderfully elaborate and perfect expression of balanced power of support and gravitation, was referable to its constructive antitype; and the artistic excellence of every detail was so far dependent upon this system of construction, that, although the forms might remain under different constructive conditions, they could remain only as a beautiful body remains when the life is gone,—their beauty producing a revolting sense of anomaly and falsehood, and doomed to further corruption and utter dissolution. The Romans, upon the discovery of the marvellous capacities of the arch, very rightly abandoned the Greek constructive system; but they most ignorantly retained, as far as possible, the Greek forms. In Greek architecture the column was the principal supporting member, the wall officiating chiefly as a mere veil to the interior: hence the column had a right to the position and decorations which made it the most conspicuous feature of the building. The Roman arched roof required a continuous wall of great power for its support, and columns, except in the case of an advanced porch, like that which faces the Pantheon, became superfluous. They continued, however, to be used as plentifully as if they had been as useful as ever; and their conspicuousness was increased rather than diminished by the addition of pedestals and by the new method of treatment which was called for by the mere fact of their comparative utility. "Frequently," says Mr. Hope, "as in the triumphal arches of the Emperors, the pedestal became so lofty, that, instead of raising the columns on a sort of cuthurnus, it lifted them on a positive stile, and not only cut

* From the North British Review.

off their connection with the ground, but made them appear as if tottering in the air. Where the pedestal occupied a greater space between the soffit and the stylobate, less remained for the column, which became shorter, thinner, weaker, requiring instead of affording support; its apparent weakness exceeding its real debility, like an appendage not wrought for the building, but borrowed from some smaller structure, and only carried to the requisite height by the aid of materials which did not belong to it. As they became weaker, like the limbs of an unhealthy child, they were stretched to a greater distance from each other, and were no longer capable of bearing an entablature diminished to their own proportions. In order fully to confirm their inability, they were not made to carry any such, but of an architrave directly supported by the wall itself (a continuation of that wall indeed, under a different denomination), such projections or knuts as did not exceed their own diameter, and appeared fitter for the purpose of steadying the useless pillar, than the pillar for that of carrying an unmeaning entablature. The effect produced was that of a second capital, mimicking the first; confusing its form and destroying its appearance; causing as great a multiplication of breaks and angles and of clumsy mouldings, as arises from the equally useless pedestal underneath." In other cases, column and entablature were included by independent arches, "so that the column carrying the entablature, but the entablature carrying nothing, the former only appeared for the purpose of supporting the latter, and the latter for that of tying together the former." The climax of the mal-appropriation of the column was its isolated employment as a high perch for a statue, while all its details and decorations retained a reference to the heavy entablature, as their origin and justification, and the main condition of their beauty. The misapplication of the column of course brought on a proportionate degradation of its form. Vague and arbitrary notions of symmetry, simplicity, variety, &c., took the place of a steady and intelligible reference to the powers of gravitation and support. The Doric shaft owed its effect of enormous and active might chiefly to the flutes, and to the fact that it sprang at once from the ground, without any preparations of base or independent plinth. The "Roman Doric" was a dead cylindrical lump, resting on a plinth surmounted by a base consisting of one great roll-moulding, that looked as if it had been formed from a mass of yielding matter by the pressure of the inanimate shaft. The Greek shaft, whether Doric or Ionic, never expressed its own weight, but confined itself to foretelling and manifestly preparing to meet that of the entablature. The capital of the column was the first point at which suzerainty from weight was declared. Here the Doric and "Attic Ionic" architects showed surprising skill and sensibility. Curves of great active force—always conic sections—were chosen for the outlines of the great feature of the Doric capital, the "ovolo." For these curves, the Romans substituted the insignificant quarter-circle, which expressed just nothing at all but want of skill to draw any other curve, or, at best, a childish and vain attempt to improve the shaft by "harmonizing" it with the semicircular forms of the new construction. The Greek Ionic capital is a powerful, though perhaps unjustifiable, representation of elasticity. The Ionic volutes would be formed by the pressure of the entablature upon a coach-spring, of which the two bars should be equal in length but unequal in strength, the lower bar being much more powerful in the middle than the upper bar, whose elasticity should be uniform. It seems to us that this suggestion of self-formation was intended to be conveyed by the Ionic capital: if it was not so, we do not know how this member can be defended against Mr. Ruskin's charge of being an "exceedingly base" invention; but if it was so, we cannot speak with any high praise of an expression, in stone, of a quality which it is manifestly impossible that stone itself should ever exhibit. How far the subtlety and

quick perception of the Greeks may have pierced the obscurity which this inconsistency produces, in the Ionic capital, or how far the abstract effect, which was conferred upon form by the system of polychrome painting, may have concealed that inconsistency, we cannot estimate. But taking the Greek Ionic capital at the worst, as being obscure and inconsistent in meaning, it is vastly better than the Roman Ionic, of which the no-meaning was very distinctly pronounced by the character of its curves. In Greek Doric the abacus had a very important office as the member which separated the two great classes of supporting and supported members. It was a simple square-cut slab, and afforded the point of perfect repose, around which all other details grouped themselves in harmonious relation. The senseless Roman architects turned this beautiful figure into an actively supporting member, by crowning it with a moulding expressive of resistance to weight: but probably these persons had not the merit of intending even as much as this by their alteration; for they seem to have considered the Greek mouldings as arbitrary decorations, which might be applied, without distinction, wherever it seemed desirable, to ornament a fillet, or to terminate a blank space with a pretty edging. When we arrive at the entablature, we find similar faults from the same causes. The Greek triglyph, in the frieze, represented the notched ends of the beams which stretched from architrave to architrave, and formed the foundation of the flat roof. The roof became arched, and these triglyphs lost their constructive significance, and ought to have ceased altogether. But they were surreptitiously retained; and, not only so, but they were made to seem more dependent than ever upon their departed meaning, by being placed rigidly over the centre of every shaft; whereas the Greeks partially violated the constructive meaning of the triglyphs in favour of a higher artistic value, by binding the corner of the frieze with a pair of them, and so shifting them and those that were next to them out of their right constructive position over the supporting shafts. Equally little regard to the original sense was paid to the other details of the entablature, and the entablature itself lost its organic character by the loss of the originally distinct nature of its three members—the architrave, frieze, and cornice. The Romans failed most remarkably in the point about which they made the greatest ostentation of science, namely, proportion. They shackled their practice by an elaborate code of arbitrary rules, none of which were ever dreamt of by the Greeks, whom they professed to follow; and, at the same time, they forgot the living centre of reference, which was the source of the exquisite Doric proportional system, namely, the simple mass of the architrave,* the relative breadth of which was increased or diminished in proportion to the degree of power to be expressed. "But," writes Mr. Hope, "of all the parts borrowed from Grecian architecture, that which came to be applied as the way most different from, most inconsistent with, its nature and distinction in the original, was the fastigium, the part which we call the pediment. That pediment, which was only the termination of a roof, slanting both ways from its central line or spine, of which, throughout its whole length from end to end," (except in hypæthral temples,) "the continuity was never broken, which was never seen in Grecian buildings except on the straight line at the summit, and the gable formed by the extremity of the roof, in Roman architecture frequently appeared as if cut off from all that belonged to it, and grew out of, or was stuck under, the entablature which it should have surmounted, against the upright wall, over a door, a window, or a niche, even, as in the Temple of Balbeck, placed within a projecting portico—a situation in which it could not be useful even to carry off the wet."

* See *North British Review* for February 1850, pp. 334, 335. We must refer those of our readers, who wish to make a study of the subject in hand to the above Number of this Review: it is not possible fully to describe the extent of the Roman abuse of Greek forms without repeating much that was there said. Whenever, in the present article, a principle in Greek architecture is assumed, it is because it has already been proved in the foregoing essay.

Instead of a single, large, and majestic pediment, naturally and magnificently terminating the building, several rows were sometimes seen of these small and inappropriate triangles; and to complete the inconsistency, they were rendered as unnatural in form as in situation. They were sometimes rounded, sometimes broken, sometimes squeezed within others of larger, sometimes strung round others of smaller dimensions." The grossness of the Roman taste was, however, even more conspicuous in their decorative "improvements" and inventions than in their misunderstanding of what had been invented before them. They "improved" the Doric shaft by substituting for the exquisite horizontal neck-channels a projecting band or "astragal," which, instead of proving the sufficiency of the shaft to do its work, by taking away from its power where power was most needed, seemed to indicate that the shaft required strengthening at that point; and in their stupid devotion to mechanical symmetry they made the slanting and horizontal cornices of the Doric order all alike, by introducing the dentils—representative of rafter ends—into the former, where rafters could not possibly occur. The Romans never seemed to have caught a glimpse of the possibility of inventing a system of decoration appropriate to their splendid discovery of the mechanical virtues of the arch. Where it interfered with Greek forms, they absolutely hid it away, instead of decorating and boasting of it; the horizontal entablature in Roman architecture being sometimes nothing more than a mask to a mass of arched construction.

SITTINGS IN CHURCHES.

At the last meeting of the Lincolnshire Architectural Society, a paper was read by the Rev. F. P. Lowe, on open seats. The following is a portion of it:—

If we go into a church which, by some wonderful stroke of good fortune, has preserved its ancient arrangement tolerably intact, we shall find that

"The floor
Of nave and aisle in unpretending guise
Is occupied by oaken benches ranged
In seemingly rows."

Every seat, except those placed against the north and south walls of the chancel, was turned towards the east: a wide aisle was invariably left down the centre of the nave, leading straight up from the west door to the chancel. Similar passages (connected with the main one by a cross passage from the north to the south door) give access to the seats in the aisles, either running just within the piers, or, if the aisle is wide, or there be a chantry chapel at the east end of it, it is treated in the same way as the nave with a passage up the centre. The transepts were not seated at all, but were generally occupied by altars ranged along the east wall. If the church we have been imagining be either in Norfolk or Suffolk, we shall most likely find the ends of the benches terminating in richly-carved poppy heads, of rather a large size, compared with the total height of the standard: if it be a church in the west of England, Somersetshire, Devonshire, or Cornwall, most likely the bench ends will be square-headed, and the sides very elaborately carved. If we examine the construction of these seats, we shall find the standards all morticed into stout oak sills, which are placed on the floor, which, in most cases, is continued underneath them. Where a boarded floor has been introduced, it is always boarding fastened to the sills, not connected with the floor of the church. The fashion I have seen adopted in many modern restorations of building up a platform and fixing the seats upon it, has no precedent in ancient times. I believe, in many cases, the seats had no other floor than the bare earth, covered with rushes, as we know was the case in some domestic dwellings, and that boards were introduced afterwards in accordance with a more refined state of feeling. There is generally a narrow flat board at the back of the seat, for the persons who sit in the seat behind to kneel at: this is invariably placed flat, not sloping, as modern bookboards are often incorrectly made. If, again, we

examine these old seats with a view of assigning a date to them, we shall not find much reason for placing any of them earlier than the latter end of the fourteenth century. Before that time, I believe, the bodies of churches were left open and unencumbered, and whatever seats there were, were moveable. In the oldest illuminations which represent the interiors of Anglo-Saxon churches, we find the congregation placed on low stools scattered over the building. Nor between that period and the date I have mentioned do churches seem to have been regularly seated. That there were seats in some of them there is no doubt, for some few standards have been found which have been decided to be Early English and Decorated work, and the laborious investigations of the authors of the History of Pews, have discovered two instances in the thirteenth century, in which seats in churches are mentioned,—one in 1240, when Bishop Grosseteste, of Lincoln, enjoins that the patron shall have a seat in the choir,—another in 1287, where a synod, held at Exeter under Bishop Quivil, enacts that, in consequence of the frequent quarrels of parishioners about their seats, no one shall call any seat in the church his own, save noblemen and patrons. We must, therefore, suppose either that the seating was very partial, or else that, partaking, as it would do, of the unadorned character for which our early woodwork is so remarkable, it was removed to make room for more elaborate work, when about the commencement of the fifteenth century, the seats, which in many instances we have remaining, were erected. I confess I think it probable such an universal restoration should have taken place, and rather believe that the seats we now find are, in most cases, the original ones, even where the fabric itself is much older. We find in wills of this period many bequests towards the stalling or pewing of churches; but, I think, scarcely any anterior to the fifteenth century. When we consider that this was the age of Wycliffe and the Lollards, and that the doctrines which bore fruit in the Reformation more than a century afterwards, were then in their germ,—is it a far strained or improbable inference that the introduction of fixed seats was a mark of some change in the religious feeling of the day, probably of a greater attention to the ordinance of preaching as a necessary means of edification? In point of date, poppy heads are found earlier than square-headed panels, and are sometimes enriched by having an animal or kneeling figure carved upon the elbow. Poppy heads (a term perhaps derived from pupa or puppet-head) are usually made to imitate a bunch of foliage, the bud formed of crisp, unexpanded leaves, rising up in the middle, while the projections on each side are formed of leaves of the same plant in a more developed state. Those who wish to imitate this feature should be very careful in observing how naturally, in the old examples, the whole bunch of foliage grows up from the centre, and how the sides spring from the same stalk, and evidently form part of the same plant. I have seen modern designs of poppy heads realising the general outline with tolerable correctness, but which, when looked into, show the bud belonging to one plant and the sides to another, with the leaf of a third stuck on unmeaningly in the middle to hide the point of junction. So easy is it to copy the forms of mediæval art, and yet to miss the spirit of the whole.

The following measurements, which give the average dimensions of more than twenty seats, taken indiscriminately from different parts of the country, may not be without their use:—

	ft. in.
Width of seat from back to back	3 2
Height of standard	3 2
Width of standard	1 6
Width of seat	1 0
Height of seat	1 5
Height of back	2 10

It is now time to consider this question practically,—having seen what the old seats were, and what the old arrangement was, to consider whether, under present circumstances, that arrangement should be introduced again, or whether our experience of past evils render

any modifications of it necessary; and here I hope to be allowed to regret most sincerely, in a picturesque point of view, the necessity of having seats at all. Those who have ever had the happiness of seeing a fine church, with its area entirely free, where the eye is at liberty to wander unchecked from roof to base, and to drink in with eager gaze the various beauties presented without hindrance to the view, will be able to form some idea of what our churches lose by having their area occupied by seats. My regret, however, is, I know, hopeless and unavailing. The length of our services, the habits of our people, and, though the rubrics are (curiously enough) silent, the uninterrupted practice of certainly more than 500 years, all combine to render the realization of such a vision impossible; and as it is the intention of churches to have congregations, and these congregations must be seated, I will not waste your time by any lamentations over an unavoidable necessity. Still I may be permitted to express my opinion, that in placing rows of fixed seats in the bodies of our churches, our ancestors were committing a great mistake: they were admitting a wrong principle, and one which has led to very fatal consequences. While the area of the churches was left free and open, or only occupied by seats moveable at pleasure, the general right of every parishioner to his place in the parish church remained intact; and though it might be rarely exercised, and though, if it were exercised, the building probably might not have held all the parishioners at once, yet the right was there, and no one could point to any spot in the parish church, and say that that spot belonged to him individually, to the exclusion of his neighbours; but when the seats were fixed and appropriated, then came the beginning of the pew system. We are fortunate in having had the full iniquity of that system laid out before us; and, having the experience of former ages to profit by, let us be very careful, now that we are expelling this enemy from our churches, that we leave no loop-hole open by which it may creep in again. It is very difficult, I might say impossible, to disconnect the idea of fixedness from property: it is almost impossible for a man to sit in the same immovable seat for any length of time, and not to cherish a belief that that particular spot belongs to him, to the exclusion of every one else; but if the seat be not fixed, if it can be moved at pleasure from one end of the church to the other, it is difficult to attach the idea of property, either to the seat itself, or the place where it usually stands. Fixed seats, then, I cannot but consider as a more picturesque sort of pew, and I am grievously afraid, in some cases of church restoration, that even the grosser faults of the pew system have not been eradicated, but that they are put up to be let to the best bidder in the same illegal manner that the pews used to be. But, to take a lower view of the question, and one, perhaps, more strictly in accordance with the purposes of our meeting here, there are other grounds on which I would urge the adoption of moveable seats in preference to fixed ones. If we wished to show off the beautiful proportions of a room, we would not fill that room with large and heavy blocks of furniture fixed to the floor, which would catch the eye and distract it from the general effect. So it is in a church. We depend for effect in a church on the general proportions of the whole, and harmony of the several parts: the height of the roof, the long perspective of the rows of columns, the play of light and shade from the windows, all ought to contribute their aid; but, frequently, the first thing that strikes one on entering a church are the rows of standards stretching out in every direction where the fancy of the architect, or more frequently of the building committee, may prompt that a better view of the pulpit may be obtained. This effect is particularly perceptible where the standards have poppy heads, which in general are made much too high and obtrusive. We ought, in fact, to consider seats as necessary evils, and to treat them so, to keep them under as much as possible, lest they grow again into those nuisances from which we are just escaping. The great difficulty with moveable seats is how to manage the flooring beneath them, for of

course where the seats are moveable, the pavement will extend over the whole of the church—the habits of the people would induce them to object to sit with their feet on a tile or stone floor,—but whether that difficulty can be best overcome by matting and hassocks, or whether some loose boarding can be laid down under the seats, I leave to those gentlemen to decide, with whose province I have no wish to meddle, the professional architects who may be consulted on the occasion. I also wish to leave all details respecting the form and make of the seats in the same able hands, only premising that I very strongly recommend square-headed standards, in preference to poppy heads, both because they are less obtrusive, and catch the eye less, and also because in the present degraded state of ecclesiastical carving, the less carving there is about the church the better: in almost every case it is most unsatisfactory: I am therefore very glad that it has been decided to employ square-headed standards at Boston, and I doubt not that the committee have exercised a very sound judgment in the choice they have made. A handsome moulded capping of more or less elaborate design always looks well, and is much more satisfactory than a bad stereotyped copy of some mediæval poppy head, especially where one design is made to serve for the whole church. There are many other considerations both of cleanliness and convenience, which would induce us to prefer moveable seats to fixed ones. However, where a higher motive can be found, I am unwilling to say too much about a lower one, and as it seems to me that a great principle is involved in having the whole area of the church free and unencumbered, and the common property of every parishioner, I strongly recommend moveable seats, as conveying less the idea of exclusiveness and property than any other plan that can be devised. I am convinced that the principle is a sound one, and if any one engaged in church building will only work it out in any church in which he may be interested, every inhabitant of that parish, for generations yet to come, will have reason to bless the memory of that man who has restored to him the best and dearest privilege of a Christian,—freedom to worship God after the manner of his forefathers, in his own parish church.

NOTES IN THE PROVINCES.

Chelmsford.—The first stone of the new lunatic asylum for the county of Essex was to be laid on Thursday in the present week, by Mr. C. G. Round.

Wisbech.—Two plans for the enlargement of the workhouse having been obtained by the guardians, and some discussion on the necessity of an expenditure of 700*l.* or 800*l.* having taken place, it has been resolved to obtain tenders for the largest of the two plans, which had been prepared by Mr. W. Adams, the town chamberlain. The new works are intended to join the north end of the centre of the main building, and will present the same exterior appearance. By the first plan, after deducting 15 feet 6 inches for the staircases, two rooms will be obtained, 44 feet 6 inches by 20 feet wide, one to be appropriated as the male sick ward and the other as the male sick hospital; and a third room, 51 feet 6 inches by 21 feet wide, for the female hospital. By the second or smaller plan, a male sick ward and hospital, 21 feet by 20 feet 2 inches, and a female hospital 28 feet 2 inches by 20 feet 11 inches, may be obtained. The present workshops, which are in the way of ventilation, to be removed.

Melton.—The upper, or boys' school, in the church schools here (which are being reconstructed and enlarged), is now completed. It will be used also for public meetings, as it is the largest room in the town.—The surveys of the highways have been improving the streets and public thoroughfares in this town by taking up the pavement of small pebbles and putting down flag-stones on both sides. The High-street, in addition to the flags, has been lowered at the upper end, and

raised at the lower, so as to give it a more level appearance. The culverting of the town is also being extended.

Leicester.—The Rutland statue, the *Leicester Chronicle* hears, is to be erected in the marketplace of Leicester, "where the conduit now stands," the basement being still "used as a place for supplying water." Rather a comical arrangement; but we certainly agree with our contemporary (and so, we dare say, will His Grace), that "it will be better to place the pump under the Duke, than the Duke under the pump."—*Gateshead Observer*.

Worcester.—While competing corn exchange shareholders were hurrying on their separate schemes, and supplying the towns with a superfluity of a very useful article, we anticipated the result which has now come to pass. The new exchange erected in the corn market here has been already brought to the hammer of the auctioneer, and sold at a sacrifice which will leave considerable responsibilities still hanging over the heads of the shareholders. The sum for which it has been sold, under Chancery auspices, is 1,700*l*. Having thus got into new hands at a sacrifice not sustained by its new proprietors, it is probable, it seems, that it will still be kept open as a corn exchange.

Bilston.—The Congregationalists of this town have recently erected new schools suitable for the education of 600 children, at a cost, including furniture, of about 620*l*. The building comprises, besides a room 65 feet long, fifteen class rooms for adult and separate class teaching. The whole has been erected by Mr. Hickman, builder, under the superintendence of Mr. Bidlake, architect.

Newcastle-under-Lyme.—The corner stone of new baths, erecting under the direction of the Town Council, was laid on Saturday week. They are to be erected in School-street, between the Grammar and National Schools, from plans by Mr. Lynam, architect, Stoke. The building will be of brick, with stone dressings and porticoes. The elevation will be Elizabethan in style. The building will be divided for the sexes, with distinct entrances, and there will be four first-class baths, eight second-class baths, two vapour and shower baths, and two plunge baths—one open, and the other enclosed. The plunge baths will each be 30 feet by 18 feet, laid with white glazed tiles, and will be supplied with hot and cold water, and have dressing cabinets attached. There will be fire places in each of the private bath rooms. The work is being executed by Mr. Chapman, of Newcastle, and the building is expected to be covered in by December, and the baths opened in course of the ensuing spring.

Liverpool.—A plan, by Mr. Newlands, of a salt-water reservoir, to be erected at Everton, 4,350 yards in extent, and capable of containing 2,750,000 gallons, has been approved by the Health Committee. The reservoir is to be divided into two parts, so that one can be emptying while the other is filling. It has been decided to purchase 4,000 yards of land for the reservoir, at five shillings per yard.

Salford.—The chief stone of the new workhouse for Salford Union was laid on Thursday week. The building is now in course of erection in Eccles new road.

Bradford.—The chief stone of the new public hall, to be named St. George's, was laid on the 22nd ult., with great ceremonial, by the Earl of Zetland, as the Grand Master of the Freemasons, after which the event was celebrated by a dinner. The company for the erection of the hall has a capital of 16,000*l*, in 10*l*. shares. The hall will seat an audience of upwards of 3,000 persons, each seat commanding a view of the orchestral platform. There will also be refreshment rooms for each division of the audience. Care, it is said, has been taken to provide sufficient exits. The ceiling will be 70 feet wide, and 152 feet long, in one sweep. These dimensions are 11 feet wider than the hall at Birmingham, and about as much longer. They are the same width as Exeter Hall, with greater length, and a loftier ceiling, with an arrangement that will seat nearly 1,000 persons more.

Wigan.—Within the last few days, says the local *Times*, Wigan has been visited by James

Duncan Wright, *alias* "Steeple Jack," whose ingenious plan of repairing factory chimneys without the aid of scaffolding has made him noted. His object in coming here is to repair a tall chimney belonging to the mill of Messrs. John Woods and Co., Warrington-lane. This chimney is 160 feet above the surface of the ground: each side, at the base, is 16 feet, and it tapers to about 7 feet at the top. It leans very much at the top, being about 3 feet out of line, and on two sides, which are opposite each other, it has perpendicular rents about 100 feet long. It is to take out the rubbish and broken bricks in these cracks, and to fill them with new bricks well cemented together, as well as to bind the chimney with strong iron bars, that Wright has been engaged. His first plan was to raise a large paper kite (about 5 feet by 4), and by means of this he succeeded in placing an iron chain about 10 feet long across the chimney. At each end of the chain is attached a large pulley, round which a strong rope runs. To one end of the rope a piece of thick board about 18 inches by 12, is fastened, and to the rope on the other side of the pulleys, a lead weight (about 126 lbs.) is secured. The apparatus attached to each end of the chain across the chimney is alike. Wright's mode of ascending is to seat himself on the board, and, by pulling at the part of the rope which descends from the other side of the pulley, and which bears the counter weight, he rises easily and rapidly, and can thus ascend or descend at pleasure. He works at one side of the chimney by means of this apparatus, and a man whom he employs at the other side, in a similar way. The mode of raising the materials to the workmen is this: On the top of each of the two sides of the chimney under repair, and near the large pulley, there is a smaller one round which the rope passes. To one of the ropes a box is fixed; and a man below raises or lowers it, and fills it with bricks very rapidly. Of course the rope by which the box is wound up is side by side with that by means of which the workman ascends and descends, and he can, consequently, easily get at its contents.

Hawick.—There has been subscribed a sum sufficient to defray the expenses of the erection of a wooden bridge across the Teviot at Teviot-crescent, and the work is now let, and will be proceeded with without delay.

Leith.—On Friday week the water commenced to pour into the basin of the new dock, by a sluice at the east end. The dock-gates are now completed and fixed, but it will be the work of some time to prepare the wharves, remove the coffer-dam, and complete the deepening of the channel. Meanwhile, all the works in connection with the new harbour and dock are being prosecuted with vigour.

Edinburgh.—"It has been proposed," says the *Edinburgh Evening Post*, "as her Majesty is likely once a year to make Holyrood her residence, that the chapel ruin at Holyrood should be forthwith restored. We could much wish to find the idea carried out, and the object should certainly be pressed upon ministers. The ancient order of the Thistle—the dean of which illustrious fraternity is a minister of the Church of Scotland—have at present no chapel for religious services, but were the Chapel Royal renovated and rendered tenable, the knights would have stalls in this splendid place of worship, as is the case with the Knights of the Garter in St. George's Chapel, Windsor. Government has expended money in restoring and beautifying the venerable Cathedral of Glasgow, and other ecclesiastical edifices, but so very little has been done for Scotland in a pecuniary way, that the disbursement in this case need not be grudged."

Aberdeen.—A feat, says the local *Herald*, of rather a novel kind—new to this quarter of the world, at all events—is at present being performed at a house in the Gallowgate, Aberdeen. The proprietor wishing to add to the height of the second floor of the house, which is a pretty large one, the floors being 28 feet by 24 feet, Mr. Reid has succeeded in lifting the whole of the top of the house entire—roof, garrets, partitions, and all—a height of 31

inches. When the masons have finished raising the walls to the required height, the whole will be gently lowered down again, and thus much expense and labour will be saved. The lifting was accomplished by means of screw power.

Elgin.—The additions to the new markets here are progressing. The two divisions or compartments into which the additions are divided, with the exception of the south front, are nearly ready for the roof. It is hoped the contractors will have comfortable quarters provided for the fisherwomen and others ere the winter set in.

Jersey.—It is the intention of some philanthropic gentlemen, we are informed, says the *Jersey Times*, to construct here a row of model cottages, on the same plan as Prince Albert's cottages in Hyde-park. Each house will consist of two stories, and give accommodation to four families.

Miscellaneous.—The corner stone of a new free school was laid at Oldbury on Tuesday week. New windows have been put up in Boldon Church. The stained glass in the eastern window is geometrical in pattern.

AMERICAN MATTERS.

A Dry Goods Palace, New York.—The enlargement of the magnificent marble structure of Stewart and Co. has been completed, and the new wing opened. This "palace of dry goods," says an American paper, is probably the most costly building ever erected for such a purpose in any city in the world. It is five stories high, and extends from Reade-street to Chambers-street, fronting 151 feet on Broadway. It fronts 100 feet on Chambers-street, and its length in Reade-street is 127 feet. There are also large vaults beneath the street 278 feet in length, well lighted by numerous gratings.

The Improvement of Washington.—The improvement of Washington is placed under the direction of Mr. Downing, whose plans for turning the wide waste extending from the Capitol grounds to the Potomac into a magnificent public park were adopted by the President. Besides this larger work, Mr. Downing has plans for the improvement of Lafayette and Franklin squares, which are now in process of being converted into the finest pleasure grounds for the enjoyment of our citizens. In the centre of Lafayette-square will be placed Mr. Mills's colossal equestrian statue of General Jackson, which will be finished about the 1st of January.

Yankee-Doodle.—An American paper remarks, since the late triumphs of the Yankees in steaming, sailing, &c., "*Yankee-Doodle-do*" should be changed in England to "*Yankee-Doodle-Did*."

The Monument to Jenner.—A committee has been formed at Boston, U.S. to obtain contributions in aid of the project originated in London for the erection of a bronze statue of Dr. Jenner, to be cast from the model in the International Exhibition. In order that every one may have an opportunity of doing honour to the man who benefitted every one, the subscription is to be limited to one dollar each. One old gentleman has tendered the committee "one dollar for every member of his family to the fifth generation," but whether all the five generations have arrived in Boston, or are only on the way, is not explained. An international monument to such a man is an excellent idea.

Bust of Columbus.—The New York Board of Aldermen have passed a motion directing the Committee on Arts and Sciences to make inquiry as to the propriety of employing the American sculptor, Hiram Powers, at present in Florence, to prepare a copy of the celebrated bust of Columbus, at Genoa, to be placed in the Governor's room, City-hall.

Patents.—Mr. H. Waterman, of Williamsburg, New York, according to the *Franklin Institute Journal*, has taken out a patent for improvements in machinery for hardening and straightening saws, &c. What he claims as new is the employment of an apparatus consisting of fingers or cams which support the article to be straightened, compressed, and hardened, combined with, and gripped by a

drop, in the manner specified.—Mr. G. W. Putnam, of Moreau, New York, has patented an improved vice jaw for saw-filing machinery. What he claims as his invention is "the jaws of the vice shaped to correspond to the shape of the saw teeth, and support the same, so as to prevent vibration during the operation of filing, as herein set forth, whereby a better edge is given to the tooth, the wear of the file is diminished, and the process of sharpening expedited."—Mr. Sommers Crowell, of Reading, Pennsylvania, has patented an improvement in railings. What he claims as his invention is, "making the dovetailed tenons, whether to the palings or top and bottom rails, wedge shaped in the length of the railing; the taper at the opposite ends being reverse, and making the grooves in the rails or palings in the same manner, that the palings cannot slide in either direction, binding the whole firmly together, substantially in the manner described."—Mr. Albert Eames, of Springfield, Mass., has patented an improvement in machines for facing and polishing stone and other substances. What he claims as his invention is "the method substantially as described, of grinding, facing, or polishing the surface of stones and other substances, by means of a grinder, rubber, or polisher, connected and combined with a spindle, from which it derives a rotary motion by means of universal and sliding joints, substantially as described, that the said grinder, rubber, or polisher, may be carried over any and all parts of the surface to be worked, whilst its surface is self-adapting as described."

Steam-engine Improvements.—Mr. Beach, editor of the *Sun*, says that during his visit to England he has frequently seen notices in the English papers of great improvements made in the *Atlantic's* engines at Liverpool; but that on examination he finds that "not one solitary alteration has been made; the new pillar blocks and shaft were made of increased size and strength—nothing more." Moreover, he adds, that Mr. Rogers, the chief engineer, "one of the very best engineers that America can boast of," informs him that of three very important improvements made by Americans in the bracing and arrangement of engines, since their attention was first directed specially to ocean navigation some ten years since, "in building the last fast boats (the *Asia* and *Africa*), the Cunard line adopted two of these American improvements, and in the extra fast boats now building they are to go the whole figure, and fashion the engines entirely after the most approved American models." He also adds that "one of the engineers of the Royal navy, after scrutinising closely the American engines, was so highly pleased with it as to say to Mr. Rogers, that it should be adopted for the next naval vessel built, if any exertions of his could effect that object."

Cast-iron Pipes.—The prices of cast-iron pipes for street use, says a writer in the *Journal of the Franklin Institute*, has become so much reduced in consequence of the low price of iron and improved method of manufacture, that a comparison between the prices of this year and those paid in 1820, may be interesting.

Prices in 1820.		Prices in 1850.	
22 inch pipe, per foot.	86 25		
20 "	5 0	.....	82 75
16 "	3 33	.....	2 18
10 "	2 40	.....	1 3
8 "	1 66	.....	82
6 "	1 10	.....	62
4 "	64	.....	40
3 "	45	.....	26

BLACKWALL DOCKS.—The extensive dock formed by the East and West India Dock Junction Railway, at Blackwall, contiguous to the eastern entrance of the West India Docks, has been opened for the admittance of shipping. It covers a space of nearly 7 acres, and its depth of water amounts to upwards of 24 feet.

COMPETITION, MARKET DRAYTON.—The late competition for the new workhouse at Market Drayton has been decided in favour of Mr. Barry, of Liverpool. The plans have been sealed by the Poor-law Board and the work will be commenced immediately.

VENICE.

AN esteemed correspondent, an ardent lover of the beautiful, writing to us last week from Venice,—once the

"Fairy city of the heart,
Rising like water-columns from the sea,
Of joy the sojourn, and of wealth the mart,"

says, "Venice is the first place at which I have wished to stay longer than was necessary to see the lions. We have only made a slight acquaintance with some of its exterior features as yet: but to be at Venice is quite sufficient occupation: everything is new, and almost everything is beautiful. The windows of our sitting-room look across the grand canal: opposite to us is the Isola san Giorgio, and beyond us we can see the tall masts of vessels: close to our right is the Piazzetta of St. Mark, with that wonderful column, and its winged lion, which has been so prominent a feature in all the pictures one has ever seen, and in all one has dreamed of Venice, from childhood till now: close, of course, to the Piazzetta, is the Piazza of St. Mark, and there a very good military band has been playing this evening. I think the Campanile is my greatest wonder here; it is so much more gigantic than I anticipated. We just went into the cathedral this morning, but did not attempt to take more than a general idea of it: one of the mosaics caught our attention; it represented the building of a church (I suppose), and the workmen used, instead of ladders, inclined planes of wood, with strips nailed across for steps,—exactly the same as those they have here at the present day. The Italian scaffolds also amuse us: they are suspended from the roof of the house, instead of being supported from below: one we saw was different; it had the supporting beams on which the planks were laid, driven so far into the wall that it needed nothing else to secure it. The profusion of rich and precious marble everywhere, is one of the greatest wonders to us." Our friend's opinion of *Milan Cathedral* would satisfy Mr. Ruskin:—"The effect it produced on me," says the writer, "was a sensation of happiness, like what one experiences when in the midst of delicious flowers, beautiful music, or whatever else is most lovable."

A THEORY OF THE AURORA BOREALIS.*

THIS magnificent phenomenon is based upon the same simple laws of nature by which thunder-storms and water-spouts are produced, as explained in a recent number.†

The greatest exhaustion of nature takes place in the torrid zone, and diminishes gradually towards the poles; and in proportion to this exhaustion, the Omnipotent Ruler of the Universe has provided laws, ordinary and (to us) extraordinary, but always simple, to restore the balance, and keep up the equilibrium suited to His creatures on earth. Thus He supplies us, in His ordinary way, with a never-failing stream of cold water, and a never-failing current of fresh air, from the poles to the equator, where they are most wanted; and in the same manner He supplies us from the never-failing source of the poles with a constant current of positive electricity, taking its course above our atmosphere, likewise towards the equator.

My last communication has shown to your readers, that the greatest quantity of positive electricity exists in the upper regions of the poles, and they will perhaps have concluded, that the negative electricity exists also at the poles in its greatest accumulation, both fluids bearing generally the same proportion in their corresponding spheres of the earth. The accumulation of positive electricity at the poles is greatest from the intense cold and the rarity of the upper regions, and that of negative electricity arises from the earth being bound with snow and ice, and thus retaining it without any evaporation. The accumulation is greater also at the north than at the south pole, the former having more land and the latter more water, and the one possessing more electricity than the other. The evidence of this

accumulation of these reservoirs of electricity, lies in their attraction of the magnetic needle; for, the greater the quantity of electric fluid, the greater the amount and force of its inherent magnetism: and the greatest power of attraction is in the northern hemisphere.

According to all accounts, the *Aurora Borealis* takes place after a thaw. By this means, then, and in proportion to the rapidity of the thaw, the immense quantity of negative electricity bound there in the earth, and accumulated moreover on its warmly-kept snow-covered surface, is liberated, and finds its way into the upper regions by creeping up the sides of the numerous hills and mountains of these places, or is carried up by the rising vapours. Whether these vapours will form a cloud of fog, rain, or snow will depend on the temperature of the air, and no doubt determine in what form and colour the amalgamation of the fluids is to take place. To me it seems more likely, from the nature of the *aurora borealis*, the cold state of the upper atmosphere and the general rapidity of the thaw, that the forming clouds carry up the electricity of the earth, instead of, as in the case of thunderstorms, their bringing the positive electricity down. If, without the assistance of any cloud, the hills and mountains serve as conductors, the effect will of course be different, and the *aurora* will be produced like the sheet lightning of our summer evenings, in which the presence of oxygen may have a share.

By these means, however, the *aurora borealis* takes place: it is the union of the positive and negative electricities in a different climate, and under different circumstances, and, no doubt, for different ends. Its sensible effect upon the magnetic needle, before it reaches the point of culmination, must be obvious, considering the disturbance caused by the quantity of the fluids brought into action from a state of rest.

Without practical observation and more extensive research, it is impossible for me to give particular reasons for all the changes of this phenomenon, as to shape, direction, colour, &c. The shape of an arch, however, may be accounted for by the atmosphere's forming a ring round the earth,* and the circumference of the earth being greatly narrowed towards the poles, the arch of the atmosphere at the poles must naturally be more contracted and lower in proportion than the arch which it forms nearer and round the equator; and the electricity of the upper regions floating on the air in the same way, will present to our view the *aurora borealis* in a curve or arch. It must also be remembered, that the atmosphere at the poles is not as high as towards the equator, from the narrowing circle of the earth, as well as from the density and heavy state of the air. Different streams of electricity from different mountains, the extent of the electric liberation, will cause different forms and sizes: the negative cloud will affect the condition, and, according to its direction, also the course of the *aurora*: the rotation of the earth round its own axis, as well as currents of the upper atmosphere, will influence its motions; and its colour and brilliancy will change according to its contact with atmospheric air, or the composition of the clouds that bear the negative fluid, whilst refraction and reflection form, no doubt, one of the most important considerations.

The presence of oxygen seems to me of the greatest moment as to the colour of this wonderful work of the Creator; and that there is, like water, air, and electricity, also a constant flow of pure oxygen in the upper regions from the poles to the equator, in immediate contact and regular fusion with our atmosphere, I have no manner of doubt; and this gas exists likewise in its greatest and densest quantity both in and above the air at the poles.

My reasons for this theory may appear in another number of your paper.

WM. ADOLPH.

A NEW LIGHTHOUSE has lately been erected on the Island Lagosta, in Dalmatia, instead of the temporary one hitherto existing there.

* It appears that a complete ring of vapours or clouds girds the tropical region of the earth, and may even appear as a ring to other planets.

* The recent appearance of this phenomenon gives additional interest to this communication.
† See p. 592, ante.

GAS AND WATER SUPPLY.

Newbury.—A correspondent of the *Reading Mercury* says, with reference to a recent note on the gas question in this town,—"The remarks which you extracted last week from *THE BUILDER*, appear to be fully entitled to further consideration. The plain fact is this, that gas can now be manufactured at a cheaper rate than in former years, from the circumstance of coal itself being cheaper, and the transit from the pit to the consumer being so very much reduced in charge. In London the price of gas is much below our rate, and although I allow that the great consumption admits of so much lower a charge, yet there is not the proportionate difference in the rate per foot of Newbury and London gas. As to the towns in the North, the price is 50 per cent. below us: it is true, however, that the coal-pit is close to the retort, but it is also true that the Cannel coal used there gives in one foot as much illuminating power as three feet of our gas coal. However, we live in cheap times, and we must have cheap light: the day-light is now admitted free of duty, and the gas light must not stand at the old protection price. The influx of coals will soon rival the influx of corn, and I do not see how the gas company has any right to insist upon two burners where there was formerly only one, before they sink the price."

Preston.—The local *Guardian* is agitating the water and gas questions. The water supply appears to be in a very unsatisfactory state, although few towns are so favourably situated as Preston for a constant supply of good water, and in few places should the inhabitants and the town be furnished with it at so cheap a rate. Yet what is the fact? says our authority. "While at Greenock, Ayr, Warrington,* Paisley, Campbelltown, and other smaller places, a cottager renting at 5*l.* is supplied with water at an average of 3*s.* 6*d.* a year, in Preston he must pay 6*s.* or 7*s.* Even in Nottingham, where an expensive mechanical process has to be employed, small cottagers are supplied with water from 20 to 30 per cent. less than cottagers in this town. In Glasgow, the Gorbals waterworks, to which there are three filters, are constructed to supply water at the rate of 32 gallons per day for each inhabitant, yet the charges are 25 per cent. less than in Preston, where the company cannot supply more than a third of the above quantity to the town, and that in a totally unfiltered state. In short, if a complete return could be obtained of the prices charged for water throughout the kingdom, we venture to say that Preston would appear among the highest." The Gas Company, according to the *Guardian*, has not been "quite so illiberal and unaccommodating." "The company (says a defender of it) having obtained rising dividends by good management, made a reduction in the price of gas amounting to something like 35 to 40, and he believed even to 50 per cent., at different times," and, added Mr. German, with inimitable naïveté, "they had never exceeded 10 per cent. dividend." What a "Madam Blaise" of a company, to be sure! The force of self-denial could no further go. All joking apart, however, we believe that even if the gas company were again to reduce its terms, it might still divide its 10 per cent., for what the company might temporarily lose in price, it would ultimately gain in permanently increased consumption. The success of past reductions (though they have not been so spontaneous as Mr. German appears to think) confirms us in this belief. A reduction in the company's terms would offer an immediate inducement to so desirable an improvement, whereas an obstinate adherence to the present charges may drive the local board to seek for the means of self-defence in gas-works of its own."

Chorley.—The high price of gas here also is complained of. A defender of the company, however, argues that "as the average dividends paid to the shareholders for a number of years past has very little exceeded the legal rate of interest, even to the holders of the

* In Warrington the charge for water is at the rate of 1*s.* in the pound on the rent, and this includes supply for all domestic purposes, and also for water-closets.

original shares, it is self-evident that the company have done all in their power to serve the public consistently with self-protection." Here is the stupid mistake of all gas companies who have defended and maintained high prices. Would they but consult their own class returns to Parliament in something like an enlightened spirit of self-interest, they would at once be assured of its being "self-evident" that it was precisely because they had done little or nothing to serve the public that their own profits had continued at so low an ebb. In the present instance it is said that "with an extension of the company's works, and a contemplated increased consumption of gas, it is highly probable that the present price to the consumer may be gradually reduced," and the sooner the better for all parties.

Wareham.—The Gas Company here, it seems, have been "labouring under disadvantages in securing public and private gas-lights," a difficulty sufficiently accounted for by the fact that their charge is 10*s.* a thousand cubic feet. They have, therefore, or "notwithstanding," as they have it, reduced the price to 8*s.* 4*d.*, and we doubt not when they have repeated the experiment two or three times in all, they will find that their difficulties and disadvantages have all vanished along with their high and unprofitable, because impracticable, prices.

IMPORTANT TO CONTRACTORS OF SCAFFOLDING.

THE EXECUTORS OF CONNOR P. SMITH.
BROMPTON COUNTY COURT.

Where a contractor erects scaffolding, and the building falls into Chancery, it is held he cannot take the scaffolding away, or recover its value from the alleged mortgagee of the buildings.

This action, brought to recover 50*l.* for hire of scaffolding, elicited some legal opinions of value to the building profession. The case lasting several hours, a digest must suffice. From the evidence, it appeared the plaintiffs are executors of Connor, an Irishman, who came to London, without a penny in his pocket, or any recommendation, and found friends amongst the boys of his dear country, who, with a most benevolent Catholic priest, Father Moore, of the Oratory of St. Loretto, Commercial-road East, nourished Connor, until he, in English parlance, was up to the mark. Connor's first job, although of stature for a Magog of Guildhall, was to feed the hawk. His next advancement in the masonic art (he died a good mason) was to carry the hod. His wages were, without overtime, fifteen shillings per week, and, upon an average, Tim Connor received from Messrs. Cubitt eighteen shillings per week. Tim's fortune was made. A red-herring and a penny loaf breakfasted him: his dinner was supplied by counting the rings of the ladder he had to toddle; and when the bell rang and time-keeper struck, Tim left the boys, to have, alone, a sumptuous feast—a pint of coffee, an egg, an onion, and two pounds of bread. Tim, in a year's time, learned the art of bricklaying. By industry and abstemiousness, in two years he started as a scaffolder. No Norway pines came from Spitzbergen with their tapering lengths but Tim was in the market. He would run up a scaffold "five minims high." In course of a few years Mr. Connor expected to be called "Sir," and which was followed up by being termed "Squire," and his field a "firm" under another name. This prosperity was too promising to last, for the "firm" got hold of a nice piece of ground with some builders' skeletons, mortgaged five or six names deep, over and over again. Tim had supplied the scaffolding to this promising speculation, and at last advanced his capital to complete the undertaking, without requesting a legal man to examine the title-deeds—for he hated the names of the varmint. The sequel may be soon told. Tim lost all his hard earnings, and got seriously involved, which so affected him, that he at last drank so deeply of the "erater" as to die with delirium tremens. His will, which was produced, is one of the most extraordinary documents ever seen. There is scarcely a scaffold-pole which is now rotting outside his promising estate he has not privately marked, and these he has left in batches of three poles or planks to separate friends; and it may be with truth affirmed, that the boys of Calnel-buildings, Cato-street, and Saffron-hill, are left exceedingly rich in "castles in the air." One little obstacle, however, in the way of obtaining their rights is the defendant, the first mortgagee, and the Court of Chancery. The executors, as a last resource, now sued the defendant for the hire of the scaffolding, and great were their lamentations when a verdict was given for the defendant, with costs.

INTERIOR OF THE CHAPTER-HOUSE AND CLOISTER, MAYENCE CATHEDRAL.

This cathedral labours under a disadvantage to which many of our own have been subject, but from which mostly they are in course of emancipation. The houses are so crowded against its walls, that the principal entrance can be gained only by narrow passages, between mean and offensive buildings. The east end, however, abuts upon an open space. The mass of the fabric is in the Romanesque style; but there is much work of the thirteenth and fourteenth centuries; and one of its six towers is a modern and not very successful imitation of ancient work. The interior, which is plain, except as regards some fine traceried windows, is chiefly remarkable for its numerous monuments to Archbishops of Mayence, the premier Electors of the German empire, and to other dignitaries. They are said to be seventy-eight in number, and range through a period from A.D. 1200 almost down to the present day. Many are of great beauty; but the later ones are of very questionable taste.

Not the least interesting portion of this noble pile of building is the chapter-house and cloister. The chapter-house, which is of the Romanesque period, is entered through a fine fourteenth-century door on the south side of the cathedral, which has replaced without wholly removing the traces of its elaborate predecessor of the Romanesque date. The archiepiscopal chair belongs to the original work. The monumental slabs in the floor are mostly deeply carved, and were originally placed in an upright position against the walls, as their fellows within the cathedral still remain. They are suffering much from their present position.

The cloister is a work of the fourteenth century, enclosing three sides of a quadrangle, completed on the fourth or north side by the cathedral itself. The work is good, but suffering from neglect. The doorway to the right in the engraving opens into a small chapel, which borrows its light from the cloister.

CHEVREUIL'S SYSTEMATIZATION OF COLOUR.

The first chromatic circle by that distinguished investigator has been completed, and consists of the simple and binary colour fixed on cotton by dyeing processes. The seventy-two colours of the circle are placed at equal distances, and as these distances have been determined now, and as twenty-three of them, at least, relate to twenty-three colours of the solar spectrum, already fixed by *Fraunhofer*, of Munich, the reproduction of the chromatic circle any where becomes a matter of comparative ease. M. Chevreuil is occupied in the determination of the colour of the most remarkable bodies, organic and inorganic. On the other hand, Messrs. Salvétat and Ebelman, at Sevres, are making chromatic circles of porcelain. At the Gobelins there are making in dyed wool nine other circles, comprising each the seventy-two colours of the first circle darkened by black,—and thus, in fine, it will be possible to determine all the colours called *rabattues* or *rompus* (terms peculiar to M. Chevreuil), as the first circle enables us to determine the colours called *franches*. By aid of this ingenious systematization we can determine that the brick colour, one of the most general, is the "first orange-red of the first circle, darkened by three-tenths of black;" that the colour of oak is "the orange of the first circle, darkened by five-tenths of the black." The correspondence on and copying of colours at great distances, have thus become matters of mathematical accuracy.

IMPROVEMENTS PAY.—LAND IN THE CITY.—The new street to London Bridge is now in shape, and the frontages are being let at very large rents. We understand, for example, that for about 100 feet in Cannon-street, from Crooked-lane to St. Martin's-lane, extending about 60 feet up the former, but not anything like so deep throughout, the sum of 720*l.* per annum has been obtained. Further, the person who has obtained it expects to get much more in proportion for a part of it.

INTERIOR OF CHAPTER-HOUSE AND CLOISTERS, MAYENCE CATHEDRAL.



FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

The Stones of Venice in 1851.—It is a melancholy fact to consider, that most of the Venetian Palaces, erected and adorned during the flourishing periods of this Italian republic, have got into the hands of strangers and foreigners, who will have very little interest in preserving their historical records and memorials. The Palace Pesaro, one of the finest on the *Canal Grande*, belongs now to the Austrian General Lienberg, who restores it Vienna-fashion. The Palace Vendramin Calergi has been acquired by the Duchess de Berri; that of Cavalli belongs to the Duc de Chambord; and the Palace Rezzonico to Don Carlos of Spain. The Palace Grassi has been purchased by Emperor Ferdinand of Austria; that of Foscarini converted into military barracks. Madame Taglioni, as we have already mentioned, is said to have acquired half a dozen of old Venetian patrician palaces on the *Canal Grande*, amongst them the famous one called *Ca' d'oro*. [Sic transit . . .]

Reform of the Berlin Academy of Arts.—Considering that many young persons devote themselves to the study and practice of art, for which they have neither vocation nor talent, and which leads them to a life of continuous struggle and even distress—the academy has enacted regulations by which the capabilities of students are tested at an early stage. At the same time a certain legitimate sternness and consequentiality has been impressed on the management of the study in the Academy, by order of the superior board of management, amongst whom are Cornelius, Schadow, Begas, &c.

Hanoverian Archaeology.—M. Mitthoff, inspector of architecture to the court of Hanover, has been engaged for several years past in studying and drawing the older architectural and other art monuments of the Nether-Elbe, which, dating from the eleventh century downwards, have hitherto been but little known. M. Mitthoff has now published the result of his researches under the title "*Archive for Nether Saxon Art-History*," accompanied by several plates in folio, containing designs made after nature and to measure. For obtaining a large circulation for the Archive, each province will form a separate work, so as to be accessible to persons interested in single localities. The first part contains the ancient monuments of Hanover, of which we mention the following plates: elevation of the market-church and town-hall; plan, perspective interior view and profiles and details of the former chief altar of the market-church (*Markt-Kirche*); memorial stone of the Aigidia Church; plan, perspective view of the choir and font of the same; three mediæval private houses, elevation, and detail of interior: friezes of the year 1499; parts of mediæval so-called partition houses (*fachwerks-gebäude*); elevation of the apothecary wing of the town-hall building: descriptions and plates of mediæval costumes and armoury of the Nether-Elbe lands are also added to M. Mitthoff's work.

RAILWAY JOTTINGS.

THE Vale of Neath Railway was opened on Tuesday week, from Neath to Aberdeen, a length of nineteen miles. From the Neath station, after crossing by bridges of wood, the Neath canal and river, the line passes in a northerly direction, by Aberdulais, Resolven, and Glynneath, about nine miles from Neath. The station there is the point of debarkation for the Pont-nedd Vaughan waterfalls, Dinas Rock, and other objects of interest. Immediately after leaving the Glynneath station, the railway ascends the Pontwalby Hill to Hirwaun Common, or the table-land at the top. From this point, for about two miles and a half, the line is a sort of steep cut in the hill-side; and where necessary, the earth taken out is formed into embankments. The principal works on this portion of the line are the viaduct over the Gwrelech brook; the Skew bridge, beyond Pontwalby; and the viaduct over the dingle of Ynis-onws. The Skew bridge is inclined to the line some fifty or sixty degrees. It has a brick arch with a stone top.

The viaduct at Ynis-onws consists of four bays, each of about 43 feet span, and is about 60 feet high. The line afterwards enters the Pencoedrain tunnel, and passes on to Hirwaun Common. Here are the extensive ironworks belonging to Mr. Crawshaw. About a mile beyond Hirwaun, at "Geley Tara," the Vale of Neath divides into two branches, the main line conducting the traveller to Merthyr, through the Merthyr tunnel, which will be about one and three-quarters of a mile in length. This work, with other portions of the line to Merthyr, is now in process of construction. When the main trunk to Merthyr is completed, the whole length of the line will be twenty-two miles. It is a double line, and is laid on the seven-feet gauge. Intermediate between Neath and Aberdare it has five stations—Aberdulais, Resolven, Glynneath, Hirwaun, and Merthyr-road. The principal gradients on the line are, that opposite to Blaengrach, 1 in 100; that near Rheola, 1 in 300; and that at Pontwalby, 1 in 50, the greatest gradient on the line, we understand.

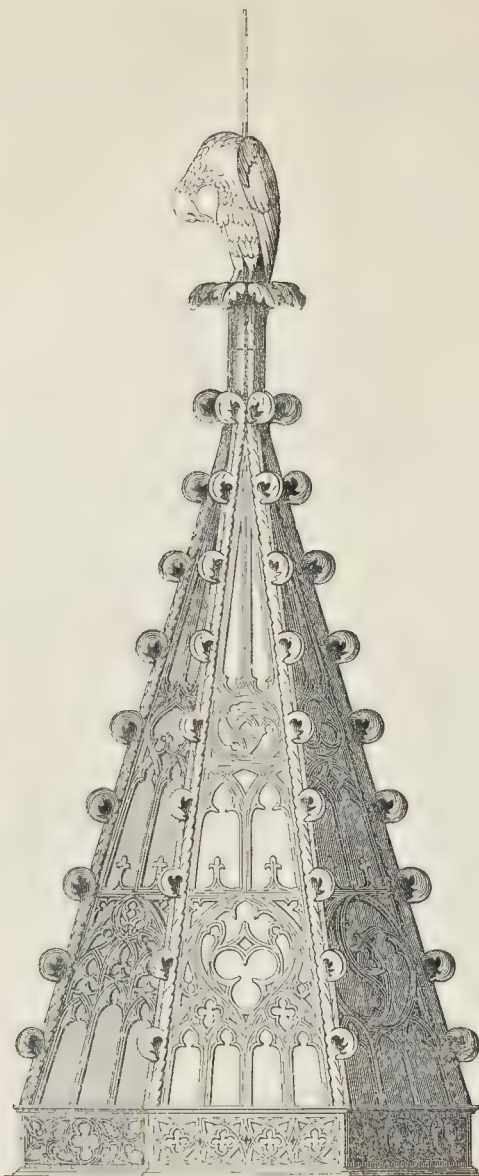
On Friday week the South Wales line was further opened from Chepstow to Gloucester, a distance of 27 miles. A connection with the Great Western is formed at Gloucester, but at Chepstow the communication is not yet completed, owing to the bridge over the Wye not being yet constructed. This causes a delay of twenty minutes, but the saving of time by the opening of the line so far amounts, nevertheless, to two hours and a half; and the journey from Paddington to Swansea by railway can now be done by express train in six hours forty minutes, distance about 210 miles. The line runs almost all the way close to the river up to Chepstow. An excursion train was to leave London on 28th ult. for "Chepstow Castle, Tintern Abbey, and the magnificent scenery of the Wye," to return on Monday; the fares being 12s. and 8s. there and back!—The viaducts of the Oxford, Worcester, and Wolverhampton Railway, at Coalbourn, near Stourbridge, and at Blakedown, near Kidderminster, are nearly completed; that at Hoo Brook is about being commenced; and those over the river Avon at Fildbury, Hampton, and Aldington, are in hand. The greater part of the permanent way from Worcester to Stoke Prior is laid. In the Mickleton tunnel the company are carrying on the works themselves by sub-contractors.—The Directors of the York, Newcastle, and Berwick line are said to have entered into contracts for the erection of extensive workshops adjoining the old station at Gateshead. The company are to concentrate their several works at Gateshead. Mr. R. Cail is the contractor for the masonry; Messrs. Hawks, Crawshaw, and Sons, for the iron roof; and Messrs. R. Stephenson and Co. for the machinery.—The aggregate amount of traffic on railways in the United Kingdom, published weekly from the 1st of January to the 13th September inclusive, amounted to 10,313,333; corresponding period of 1850, to 8,968,238; of 1849, to 7,814,169; and of 1848, to 7,046,682. The gross receipts for the eight railways having termini in the metropolis amounted to 167,798l. for the week ending 13th September, and for corresponding week of last year to 131,095l., showing an increase of 36,703l. The increase on the Eastern Counties amounted to 1,358l., on the Great Western to 6,601l., on the Great Northern to 5,257l., on the London, Brighton, and South Coast to 2,333l., on the London and Blackwall to 410l., on the North Western to 11,944l., on the South Western to 4,975l., and on the South Eastern to 3,825l., making the total increase as above 36,703l., being 7.7 per cent. of the total increase of traffic on railways in the United Kingdom, leaving an increase of 26.3 per cent. for the other lines; the aggregate receipts on which amount to about the same as on the metropolitan lines. In the week before last the returns exhibit the following results—337,253l. were received on 6,456 miles of railway; for the corresponding period of 1850, on 6,151 miles, 287,488l. were received, showing an increase of 305 miles, or 4.95 per cent., and in the amount received of 49,765l., or 17.31 per cent. The total amount received since 1st July was 3,724,891l.; for

corresponding period of 1850, 3,143,837l.; showing a total increase in 11 weeks of 581,034l.

—A self-acting fire alarm and railway whistle, invented by Mr. D. Lloyd Price, of Brecon, watchmaker, has lately been added to the Exhibition. The novelty of this invention consists of a sensitive expanding compound metallic segment, which may be adjusted to suit any temperature by means of a small screw. At Somerset House it was tested by being placed in a room containing about 2,000 cubic feet of air. The machine being adjusted a few degrees above the temperature in the room, a sheet of paper was ignited, and was found sufficient to raise the temperature so as to set the alarm in motion. The mechanism consists simply of a pulley and weight, and a small lever detached by a helix, the whole enclosed in a case about 15 by 18 inches, including the small permanent voltaic battery. Once fixed, the inventor states that it would not require to be touched for years, and would always remain, like a sentinel, ready charged, giving instantaneous notice of the approach of the enemy.—A letter from Vienna says, a new invention has come into use on the Northern Railway, by which the guard can cause the engine to be stopped at any moment. It consists of a wire or cord attached to the guard's box, and running along the tops of the carriages, and communicating with the steam whistle. By pulling this cord, the guard has it always in his power to produce a sound that will call the engineer's attention.—The trial of the locomotives on the Mont Somermering has terminated. The prize of 20,000 ducats (1,000l.) has been awarded to the "Bavaria," a locomotive constructed by M. Maffei, of Munich. In informing M. Maffei of the granting of the prize, the Austrian government, in accordance with the conditions laid down, gave him an order for twenty other locomotives of the same kind.—The *Carlisle Journal* of Saturday week has an interesting article on the introduction of the railway system into Spain. "It is proposed to form a railway from the seaport of Santander, on the north coast of Spain, to Alerdel Rey, a distance of 85 miles; thence to Valladolid, a further distance of 75 miles; and ultimately to Madrid; the entire distance being 340 miles. This will constitute the most direct route of communication from London to Madrid. The journey between the two capitals now occupies a fortnight. As soon as the intermediate terminus at Valladolid has been attained, which will be in the course of four years, the distance will be accomplished with comfort in four days, and eventually, when the entire chain of railways shall have been completed, in three. This is no idle surmise. The work will be done. Already the contracts for the two first portions between Santander and Alerdel Rey, and between the latter place and Valladolid, have been let, and the works are to be proceeded with immediately." The contractor is Mr. George Mould, of Coldale Hall, near Carlisle. The line will cross the Pyrenees at a height of 2,800 feet above the level of the sea. The gauge will be that of England, namely, 4 feet 8½ inches, which it has been determined by the Cortes shall be the national gauge of Spain. Mr. Mould, it is said, has contracted to finish the line in all respects,—furnishing engines, plant, and so forth, and putting the whole into the hands of the company, in complete working condition, in the year 1855. The government guarantees the company 6 per cent.

COMPETITION, BRADFORD.—A new chapel and schools are about to be erected by the Independents at Lister-hills, on the Thornton road, Bradford. The chapel will accommodate, including the children, nearly 900 worshippers, while spacious schools will be attached. The style of the building will be of the Geometrical Decorated period. Several designs were submitted to the committee in competition, and, after examination, that of Messrs. Lockwood and Mawson was adopted.

THE ARCHITECTURAL ASSOCIATION.—The opening conversazione of the ensuing session takes place this Friday evening (3rd).



CARVED FONT COVER, ULM CATHEDRAL.

FONT COVER, ULM CATHEDRAL.

THIS example of German Mediaeval wood-work is curious from the great variety of ornament it exhibits. It is octagonal in plan, and has a different arrangement of tracery for each of its eight sides. It appears to have been painted blue in the panels, vermillion in the hollows of the mouldings, and to have been gilt on the fillets and prominent parts of the work. The font itself is richly sculptured: the whole stands under a stone canopy, sup-

ported on light piers. The cathedral is a magnificent specimen of fourteenth century work, consisting of a choir, with apse and nave, with double aisles on each side, and a fine western tower, which, however, like many of its continental brethren, still wants the spire with which it was originally intended to finish it. The font and its woodwork appear to be coeval with the structure itself, which contains many features deserving the attention of the architect.

IMPROVEMENT OF WORKMEN.

I HAVE read with much pleasure the various articles dedicated to the improvement of the working man, which have appeared in your useful journal, some emanating from yourself, and others from various correspondents, and the recent excellent suggestions tending to improve and elevate the workman: may you and others go on in the good work and prosper. But there are stumbling blocks in the way, such as I fear will take many years to remove, "interested motives" of narrow minded employers especially. This may seem strange, for I fancy I hear you say, it is the interest of

a master to have his men clever; but there are some who do not think so, and grind their men down so much in their wages, that if they can live better than paupers, they have not a penny left for improvement, moral or otherwise. An establishment recently lauded by one of your contemporaries, does more in a week towards debasing the intellect of those who work for them, by placing it out of their power to devote either time or money to the acquirement of knowledge, than you or a dozen like you can do to elevate them in the scale of intellectual beings in a month. And this is not the only evil, for by their grinding system they are enabled to produce an article bearing the name, and approaching the outward appearance, of a similar one, and of course at a much less price than that made by a house that pays its workmen living wages,—so similar that the uninitiated are deceived; and, struck by the difference in price, purchase the lowest, and only find out their error when it is too late; for in this, as in the case of the quack and physician, there are nineteen fools to one wise man: the quacks get the nineteen and make a fortune: the honest tradesman gets the one and just lives. In the face of such doings it seems almost hopeless to strive, for whilst the public grasp at the cheapest with so much avidity, they are encouraging a class of men, who are daily and hourly lowering the character of the workmen, in fact reducing them and their families to a degree scarcely above a "pauper," by their grinding system.

ONE WHO WORKS.

CHURCH NEWS.

Canterbury.—St. Margaret's church has undergone some extensive repairs and alterations. The chancel has been terminated by an apse, which removed the slanting end. The southern aisle has been slightly shortened, and by opening two arches under the tower a baptistry has been formed. A vestry has been added on the northern side opposite to the southern entrance-door. A stair turret has been placed at the north-western corner of the tower which serves as a support, and supplies a means of access to the belfry. The mullions have been restored in the windows, and the church cased with flint, having stone dressings. The interior of the apse has been fitted up with open seats of oak, and a slightly raised floor has been extended from the entrance of the apse to the length of the eastern arcade.

Maidstone.—It is proposed to enlarge St. Peter's church, by extending the present transept and west end so as to obtain altogether about 1,000 sittings, of which 554 will be free. There will thus be 350 additional free sittings. The sum required will be about £2,000.

Cheltenham.—The alterations and improvements in the parish church of St. Mary, which have been proceeding for several weeks past under the superintendence of Messrs. Humphris and Mr. Dangerfield, are now completed. Increased accommodation has been obtained for about 100 persons, by the removal of the old school-room and the wall which separated it from the church, and the erection of a new gallery. The roof of the north gallery has been new timbered and renovated. More light has been introduced by the construction of a window in the front wall of the porch, and several ventilators have been formed in the galleries.

Greinton.—The chancel of the church, dedicated to St. Michael and All Angels, at Greinton, is being restored and beautified, under the superintendence of Mr. D. Mackintosh, of Exeter. The east window, by Mr. Alfred Beer, of Exeter, contains figures of the Saviour's crucifixion, resurrection, and ascension, surmounted by angels bearing sacred emblems. The side windows contain figures of Sts. Peter, Andrew, Philip, James, John, and Paul, the crest of the lights being filled in with ornaments in the Early English style. These windows are the gift of Mr. S. T. Kekewich, of Peamore, lord of the manor.

Stanton (Chippingham).—The repairs of the larger part of the parish church of Stanton

St. Quinton, having been completed, the 18th ult. was appointed to celebrate its restoration. The repair has been made at the expense of the patron, the Earl of Radnor, Viscount Folkestone, and the Rev. C. G. Cotes, the rector. It consists principally of the rebuilding of the south aisle and porch; and the general restitution of what was decayed in the tower and main body of the church. The interior has also been cleared and put into order; the pews being replaced by open seats, and the original oak roof being brought out by the removal of a modern ceiling. The space beneath the tower (which stands between the nave and chancel) has also been improved, by raising a low and heavy belfry floor, and by re-opening two old and badly displayed narrow light windows which were discovered blocked up by masonry in the thickness of the tower wall. The work was executed by Mr. Millar, of Seagry, under the direction of Mr. Hakewill, architect.

Lymm.—The parish church of Lymm, Cheshire, has been nearly altogether re-erected, and was consecrated on Thursday week. The lower portion of the tower of the old church, built as is supposed in 1522, was considered of sufficient strength to be allowed to stand. This, says the *Manchester Courier*, is the only portion of the ancient church retained. The edifice is in the decorated style, and consists of a nave, side aisles, transepts, and chancel. The tower is at the west end. In the south aisle stands an ancient arch, surrounding a pedestal which once held a piscina connected with the side altar. A chapel connected with the ancient church, belonging to the Domvilles, in the new edifice still appears. In different parts of the church are three stained-glass windows, executed by Wailes, of Newcastle. The first is in the south aisle, and is given by Mrs. Leigh, of Manor-cottage, York: the second is on the east side of the south transept, and is placed there by the late Rev. William Fox's surviving children: the third is in the Domville chapel, belonging to Lymm-hall, and is given by Mr. James Barratt, the proprietor. The church, as now restored, is expected to accommodate 916 persons, nearly one-half free. A carved head, found under the foundation of the old church, and which must have been of an earlier date than the church itself [built, it is supposed, in 1322], is now affixed on the south-east end of the church, near the door of the vestry. The stonework of the new building was given, for the most part, by Mr. Trafford Trafford, from a quarry near Outrington-hall. The pulpit also is built of stone from the quarry at Outrington, and appeared to the *Courier* greatly to resemble Caen stone. The architect is Mr. John Dobson, of Newcastle-on-Tyne, the designer of the railway station in that town.

Olley.—Farnley Chapel has been rebuilt by Mr. F. H. Fawkes, of Farnley Hall.

CLERKENWELL IMPROVEMENT ACT.

THIS new Act transfers to the Corporation of London the powers given by earlier Acts to the Clerkenwell Improvement Commissioners, and empowers that body to borrow a sum not exceeding 80,000*l.* for the proposed improvements. It is enacted, by clause 1, that it should be lawful for the mayor, aldermen, and commons of the city of London, in council assembled, to complete the new street at Clerkenwell, and to alter and improve the line of the said new street, commencing at West-street, Saffron-hill, and terminating at Coppice-row, Clerkenwell. Also to widen and improve the eastern end of Charles-street, Great Saffron-hill; and to widen and improve the eastern end of Cross-street, Great Saffron-hill, and to form a new street from Great Saffron-hill through Larkwood-court, into the said first-mentioned new street.

Clauses from 6 to 9 inclusive, furnish power to the Corporation of the City of London, with reference to the removal of the burial-ground of the parish of St. James, situate in Ray-street, Clerkenwell, which they are authorised to lay—or any part thereof, as may be thought to be expedient—into the streets or ways; compensation for the same to be settled by the Lord Bishop of London for the time being.

The 12th and 13th clauses enact that as the improvements by the Act authorised to be made will dislodge many labourers, artisans, and other poor persons, it shall be lawful for the mayor, aldermen, and commons to erect and build on the land by this Act vested in or authorised to be purchased by them, or on land which may be purchased by them for that purpose, under the power hereinafter mentioned, such and so many improved dwellings and lodging-houses for the poor, and to fit up the same with such conveniences and in such manner as they shall from time to time think expedient, and to let the same when so erected, built, and fitted up as aforesaid, to such labourers, mechanics, and other poor persons, at such weekly and other rents, and upon such terms and conditions, as they shall see fit; the mayor, &c. to purchase any houses or land in the vicinity for such purpose.

We may hope now to see the new street completed: its present condition is very discreditable.

The last-named clauses are very important, and give an opportunity for the erection of properly adapted dwellings for the industrious classes which may have a good effect on similar erections by individuals afterwards.

RECOVERY OF BUILDERS' BILLS.

CHAPMAN v. WATERLOW.

THIS was an action in the Shoreditch County Court, September 27th, before Mr. Sergeant Storks, to recover the sum of 8*l.* for driving three piles in the river Thames for the purpose of mooring the oyster boats at Billingsgate Market.

The defendant, who is carpenter to the corporation of the city of London, disputed the claim on the ground that the work was so improperly performed that it was perfectly useless, the plaintiff having cut 5 feet off one of the piles, from which he was ordered by the clerk of the works to cut only 18 inches; and having also dug a hole 3 feet 6 inches deep to let in one of the piles, instead of driving it from the surface.

The plaintiff, who is an experienced pile-driver, explained that the reason of his reducing the length was that the timber was not sound; and accounted for digging the hole in consequence of there being a complete forest of timber embedded in that part of the river, some of which was frequently found in a horizontal position. He had previously dug a depth of 2 feet 6 inches, and found an obstruction. The mode which he adopted was the proper one to ascertain whether there was any obstruction, after having probed the earth in the first instance, which was done. The piles were driven from 8 feet to 10 feet deep, and were sufficiently secure to answer every purpose.

Henry Lovell, one of the workmen employed by the plaintiff, deposed to the piles having been used for the purpose they were intended for ever since they were fixed, and that the work was substantially performed. Another witness gave similar evidence, and stated that during the last week he had counted no less than seventeen or eighteen vessels moored to the piles at one time.

His HONOUR asked the defendant's solicitor if he meant to contend that the plaintiff was entitled to nothing?—The defendant's solicitor said he did, and should be able to prove that the plaintiff had not only failed to use ordinary skill and judgment, but that he well knew at the time that he was not doing the work properly.

His HONOUR.—But why was not the City carpenter, who was the contractor, present to see that the work was properly executed. The plaintiff was merely the workman, and if the work was of any use he is entitled to something. You must prove that the work was of no value whatever.

The defendant's solicitor.—The plaintiff is not a journeyman, but a tradesman employed by the defendant.

His HONOUR.—But there is no special contract between the parties.

Defendant's solicitor.—But the work is so inefficiently executed that my client has been obliged to secure it for temporary purposes, and will be compelled to draw the piles and drive them again. The learned gentleman referred his Honour to the case of *Farnsworth v. Garrod* (1 Camp. 28.) which was an action brought to recover the value of work and labour in building a wall to a house, and in which case it was held by Lord Ellenborough that the action being for meritorious services, and there being no beneficial service, the plaintiff was not entitled to be paid.

His HONOUR.—I am obliged to you for so high an authority, which sustains all I have said. In the case you have cited the work was not only use-

less but positively dangerous. The question is, whether what the plaintiff has done is utterly useless and of no effect, or whether the party is entitled to anything, and if so, what? It may be that he is entitled to 8l., or that the work is not worth 8s. It is entirely a question of *quantum meruit*.

Mr. John Gouldham, clerk of Billingsgate-market, was of opinion that the piles were not driven a sufficient depth. The witness stated that it was found necessary to secure them to the platform with bolts.

The defendant's nephew deposed that the plaintiff cut the timber shorter than he was directed. Witness urged him to complete the work before the commencement of the oyster season, in order that the bolts might be fixed, but for which there would have been no necessity had the work been properly done.

His Honour said, that the last witness put the defendant's case completely out of court. The only case for the defendant was, that the work was of no use, when, in plain English, it had been used ever since. He quite agreed in the abstract principle urged by the defendant's attorney, that a man who undertakes to do work, undertakes to do it properly. But where was the City carpenter sleeping all this time? He was the contractor, and was bound, in the discharge of his duty, to see that the work was properly done. It was not only the authority to which he (his Honour) had been referred, but there was an abundance of cases, in which it was held that a man cannot recover upon a *quantum meruit*, unless he prove the work to be of some value. In the case which had been cited, the wall was not only of no value, but worse than useless, and it was upon that principle the case was decided. A party must not only go the length of saying that the work is of no use whatever, but that it has not been used for the purpose for which it was intended. In this case the piles were used; and could it be said that the man was to have nothing at all? The action here was not upon a special contract, but upon a general order, and it was perfectly clear that the piles had been used up to the present time. Everything that had been set up in law in support of the defendant's case had been beaten down by his own witnesses. The plaintiff was clearly entitled to recover, and he (his Honour) should order the amount to be paid immediately. The real history of the case was, the Board of Works were not satisfied with the defendant, and he had thrown the blame upon the plaintiff.

IMPROVED DWELLINGS FOR THE POOR.

The last report of the *Society for Improving the Condition of the Labouring Classes* gives the following instances of measures now being taken:—

Some time since a deputation from the East and West India Dock Company visited the society's lodging-houses, and also the family houses at Bagnigge-wells: the deputation consisted of John Scott, Esq. chairman; Edward M. Danube, Esq., deputy chairman; Edward Knight, Esq., superintendent; and H. Martin, Esq., engineer. The result has been the erection of about sixty model-houses for workmen in the docks, near the West India Dock station on the Blackwall Railway, consisting of two and four rooms each; the rent of the two-roomed houses being 2s. 3d. and 2s. 6d. per week, and for the four-roomed houses, 4s. to 4s. 8d. per week: they are now completed and tenanted, and present altogether a most comfortable appearance. The Company have also, within a few rods of the above dwellings, set out forty allotment gardens, of about 12 poles each, with which the tenants are much pleased.

The Earl of Abergavenny, the Baroness Le Despencer, and the Marquis Camden, have commenced building new cottages on their estates. The Marquis Camden has just completed a pair, near the first station from Tunbridge Wells, on the Hastings Railway, with three sleeping-rooms to each, which the steward, W. Roper, Esq., informed the agent did not cost more than 120l., and which he considered might be built anywhere for 150l.

The Messrs. Randall, of Maiden-lane, King's-cross, are rebuilding the whole of their workmen's cottages. Nine have been completed, five are in progress, and about ten more remain to be done.

The agent has also inspected the new iron model lodging-house for very respectable mechanics, erected also in Maiden-lane, by a gentleman from Liverpool, and which was

proposed to be opened on Wednesday, the 20th ult. It is intended for fifty-six lodgers. The interior has much the appearance of a ship's cabin, very neatly fitted up. The building alone (which is 75 feet by 25 feet) cost about 700l.

Books.

The Industrial Arts of the Nineteenth Century. By M. DIGBY WYATT, Architect. Part I. London, 1851: Day and Son, Lincoln's-inn-fields.

THE intention of this work is to present a faithful record of the characteristics of those productions displayed at the Great Exhibition which best illustrate the present condition of the Industrial Arts, accompanied by such descriptive matter as the taste and knowledge of Mr. Wyatt may supply. The first part contains four plates, beautifully lithographed in colours by Day and Son, viz., Kiss's "Amazon," specimens of lacquer work from Lahore, dagger and sheath in Damascene work, and specimens of embroidery from Tunis. To the author we suggest the value of a scale to the drawings, or other means of learning the actual size of the original; and to the publisher, the introduction of tissue paper. In our copy we have a double of the dagger on the letter-press opposite.

As an example of the written matter, we give a passage from the introduction: the writer is speaking of the coincidence observable between the mental and physical requirements of nations and the development of appropriate manufactures,—the forms and processes of which have been from age to age commemorated on great occasions: he says,—

"There can be little doubt that what the Olympic games and the imperial solemnities and triumphs were to Greece and Rome, her expositions have been to France. As the traditions of the industrial arts of Greece and Rome faded away, and new processes were developed by the Christian element, the carvers, the painters, the embroiderers, the mosaic-workers, and goldsmiths of Byzantium held their festival in the inauguration of Santa Sophia. In the glorious feasts of Haroun-el-Raschid, the oriental variations from Greek practice asserted their independent existence. The sum of the modifications induced by lapse of years on the fountain of art workmanship springing from these sources were respectively represented in the inauguration of the cathedral of St. Denis and the mosque of Corduba, the former illustrating the nascent processes of Gothic, the latter of Moorish art, the former of these two series of processes to accomplish their destiny, and reach their climax, in the construction of Cologne Cathedral, the latter in that of the Alhambra. The great religious anniversaries of the middle ages were so many vast fairs at which exhibitions of industry took place: the glorious festivals and *mascherate* of Sienna, Florence, Pisa, and Venice, were celebrations of the first triumphs of commercial enterprise, and their records, perhaps, better illustrate conditions of mediæval supply and demand than those of any other states throughout Europe."

If carried out as it is begun, this will make a truly beautiful work.

The Plate Glass Dealers and Builders' Assistant. London: Blades and Co.

A USEFUL tariff and ready reckoner for plate glass, which should have the effect, at all events, of pointing out at what small cost the great advantage of plate glass may now be obtained.

NEW NATIONAL GALLERY.—The commission appointed to consider the question of a new site, report that they give the preference to one on the side of Kensington Gardens adjoining the Bayswater-road. A paddock between Kensington Palace and that road would have also been recommended, but, though not within the boundary of the gardens, it would necessitate the destruction of many beautiful trees, and also interfere with the gardens.

Miscellaneous.

THE SUB-MARINE TELEGRAPH.—The cable telegraph appears to have been a bungled business altogether, being not only blemished with "imperfect or dangerous" junctions, but actually half a mile too short! The worst of it, too, is, that it was precisely where it has run short, namely, close to the French coast, that the former line got chafed and broken amongst the rocks, necessitating the formation of this very cable which has thus run short of the spot whose dangers it was formed to compete with! Moreover, it appears that even in the mere running of it out, such was the tenderness of the article, that in clearing hitches, into which it somehow got entangled, "the general impression on board was that some portions of the uncoiled strand must have pierced the gutta percha covering, and touching the copper wires have destroyed the insulation." It was found, certainly, that, in the meantime, the insulation still exists, but what sort of instrument is this to brave the dangers in store for it, if thus liable to utter destruction even in the laying of it down? As to the "joins" or imperfections in it at intervals, it would appear from what is said of them that the "cable" does not merit the name it bears: at least we never heard of such imperfections or such out-and-out "joins" at any one or more intervals in any line of new cable, however long. The *Morning Herald*, we observe, closes a long detail of the mishaps which occurred in paying it out, by saying very dubiously, "The question is, how long will this submarine electric telegraph last?" This is indeed a dubious question. But it remains to be seen yet how the dangers of the French coast are to be met at all; for these are just where they were, a mere gutta-perchaed wire being spliced on to the end of the cable and run ashore as before.—The *Spectator* describes a renewed attempt to remedy "the cutting in two of the telegraphic cord on the rocks forming the French shore." This consists in simply stringing on a gutta-perchaed wire a series of cast-iron beads or bored balls and cylinders or bugles. Here it does not seem to be observed, that not only would the whole strain still rest on the mere gutta-perchaed wire, but the evil would be increased both by the weight of the cast-iron and the constant friction of the "beads and bugles" on the gutta-percha.

BUILDERS' BENEVOLENT INSTITUTION.—As would be observed by many of our readers in our impression of 13th inst., the fourth anniversary dinner of this now well-established and thriving institution has been announced for Wednesday, the 29th inst., at the London Tavern. It is very desirable that a strong and imposing body of stewards should be now enlisted, and as the sole liability of any one steward consists merely in a one-guinea ticket, for which the London Tavern provides him with an excellent if not an irresistible *quid pro quo*, we hope that gentlemen desirous of promoting the interests of this beneficent and valuable institution by becoming stewards, will be pleased to forward their names to the secretary without delay. The chairman to be supported on the occasion, as already announced, is Mr. T. Grissell, the president of the institution.

INSTITUTION FOR DECAYED LONDON MERCHANTS.—An edifice is in course of erection at Rowlands Castle, Hampshire, to be called Stansted College, and to be devoted to the maintenance of "six decayed merchants of the City of London, having no resources of their own, or an income not exceeding 20l. a-year, being widowers or bachelors of good character, and Protestants, above sixty years of age." The building is expected to be ready for habitation early in the ensuing spring. The inmates are to receive each 40l. yearly, with a monthly allowance of 6l. towards the expenses of a common table, and coals. Provision has also been made for the remuneration of a chaplain, medical officer, and servants, and certain trustees, in whose names 20,000l. have been invested by Mr. Charles Dixon, of Stansted, Sussex, as a fund for the purpose.

The Builder.

No. CCCCLIII.

SATURDAY, OCTOBER 11, 1851.

Tour present number, we place before our readers the ground-plan of the intended Record Office, recently commenced on the Rolls Estate, Chancery-lane, together with a view of the north front.* The building will stand between Chancery-lane and Fetter-lane, and will face northward a new-street to be hereafter formed from the West-end to the City, and of which Carey-street widened will make a part. The present position of the Rolls House and the Rolls Chapel is shown on the plan: these will not be removed at present;† the central portion, only, of the new building (between the wings), will be erected at first, and the Rolls House will probably be used for the accommodation of the deputy keeper of the records, the secretary, and their clerks. The site suggested for the future enlargement of the Repository, is where the Crown Office in Chancery, and the Judges' Chambers stand. The land is the property of the Crown, and the leases had been allowed to run out, so that no purchases or compensations were required.

The present unsafe and improper position of the national records is well known. They are dispersed in the White and Wakefield Towers, in the Tower of London; the Rolls House, the Carlton Ride, the Chapter House at Westminster, and other places; exposed to dangers, it has been pointed out, such as no prudent tradesman would expose his business books to. The necessity for a safe general repository for the records has long been felt and discussed. Mr. Deering prepared plans for such a building, for the late Record Commissioners, so long ago as 1832: plans were also made by Mr. Barry; but it has been reserved for Mr. Pennethorne to carry out the intention. The conditions prescribed to him included these:—The provision of a thoroughly fire-proof and sound structure, completely within the boundaries of the Rolls estate; and sufficient space not merely for all the records now in the custody of the Master of the Rolls, but for all such as may reasonably be expected to accrue for, say, fifty years to come. Those already in his custody are computed at 122,000 cubic feet, including press-room: others to be committed to him such as those of the (sweetly-smelling) Palace Court, the Durham Records, &c., may be reckoned at 40,000 cubic feet, and it has been calculated that the accumulations of fifty years may amount to 50,000 feet. That portion of the new building which has been commenced, including the basement, will contain 80 cubes, each 17 feet by 25 feet, by 15 feet in height, of which 52 are calculated to be applied to the reception of records, 20 in the basement to workshops, or documents scarcely classed as records, and eight on the ground floor, for the searching room, and the rooms of the assistant keepers and clerks, who may

be required in attendance there. The Eastern wing, the second portion to be erected, would include the equivalent of 48 cubes, each 17 feet by 25 feet by 15 feet. The Western wing, the third portion to be erected, would include the equivalent of about 100 cubes, each 17 feet by 25 feet by 15 feet: a part of this portion, when built, would occupy, as we have said, the site of the Rolls House and Rolls Chapel, or the chapel might be embodied into it; but many years will elapse before it may be necessary to erect any of this portion, and the Rolls House may even then be left standing until every other part (except its own site) has been covered.

The three portions would in the aggregate afford 228 rooms, viz. 200 applicable for the reception of books and records (including the basement), and 20 for the establishment; the remaining eight being occupied as space for the wells for two staircases.

The 200 rooms would receive little short of half a million cubic feet of records. The whole length of the north front is 420 feet.

On a former occasion, Mr. Braidwood stated it to be his opinion that no single depository should contain more than 7,000 cubic feet, and that the best proportioned room would be 17 feet by 27 feet, and 15 feet high. In the present plans this width has been adopted, but the length has been reduced to 25 feet, that being considered the extreme length to which the light would well travel down the passages between the records. There was another consideration that weighed in the arrangement, and an important one, namely, the provision of strength to bear the great weight of the records. The floor of one of the depositories, 17 feet by 25 feet, would (exclusive of its own weight of about 26 tons), have to carry a weight of about 64 tons (which weight would of course be proportionately increased, if the width of the room were increased). Three floors of this size would thus cast a weight of 270 tons on the bearing or party walls, for which reason, and to avoid iron columns, as much as for security against fire, it has been deemed advisable to build the depositories small.

In the course of an inspection of various existing record depositories, made with Sir Francis Palgrave, the deputy-keeper, Mr. Pennethorne found by trials, as to the convenience afforded of obtaining access to the documents, that for records of an ordinary size it would be sufficient to provide passages 3 feet wide, and that 4 feet would afford ample means of access to the largest folios now in the custody of the Master of the Rolls; consequently, these widths have been adopted in the calculations made for ascertaining the capacity of the new buildings. From this inspection they did not obtain much information as to the necessity, or otherwise, of artificial warming, or as to the means of rendering the depositories fire-proof, for they did not find even the most valuable documents placed in a fire-proof depository, except at the record room of the Court of Chancery, and at the Prerogative Office; but even at this latter, the walls would become a mass of confusion, if the indexes, which are in the other part of the building, should be destroyed. The only really well-arranged and perfectly fire-proof depository they saw was the muniment-rooms of the Duke of Bedford, at Montague-street, Russell-square. This building is erected entirely of brick and iron: the doors,

shutters, and presses are all iron: there is not a particle of wood used for any purpose: it is warmed by hot-water pipes under the stone floor, the furnace being outside the building.

On the subject of warming the Record office the deputy keeper entertains a strong opinion adverse to the introduction of hot air by flues, or of hot water, preferring open fire-places, but maintaining that artificial heat of any kind is unnecessary. In a memorandum drawn up by him to support this view, Sir. Francis gives the following examples, and very interesting they are:—

"1. About three years ago a small room was built in the Rolls Garden, for the purpose of containing papers brought from the Treasury. This is a case of yesterday, yet it is not without considerable value. The papers deposited in the room have been thoroughly soaked in foul water, in consequence of the overflowing of the drains, in the cellars of the Treasury, in which they had been long deposited. Some of the documents thus soaked were reduced to stinking pulp, and amongst those which were sound, are many from which the ink has been completely discharged by the wet. After having been thoroughly dried, they were put into chests, and the chests deposited in this building, the walls being composed of single bricks, and the roof covered with slate; and having occasion recently to open the boxes, I found the papers perfectly sound.

"2. The record room of the Court of Chancery: this is a room vaulted with brick and paved with stone, being the ground-floor of the late Six Clerks' Office, and just above the level of the street (i. e. Chancery-lane). Here the bills, answers, and other Chancery proceedings are kept, and have been so for about seventy-five years. There is no artificial warming, nor any mode of warming; nor are there any means of ventilation, except by the occasional opening of the doors: the windows are never opened, but here all the documents are perfectly sound: seventy-five years is not a short period. The records themselves are not of the best description for preservation; for the parchment used during the last century, like all other record materials, is very much inferior to that employed in earlier times, and therefore more liable to decay: if I may use such a figure of speech, the constitution of a record of the time of George the Third is not a quarter as sound as a record of earlier periods; and a record of seventy-five years back is, in point of fact, a very aged and decrepit record compared with one of the time of Edward the First.

"3. The Tower. No artificial heating or warming of any sort or kind has ever been applied or could ever have been employed in the Wakefield Tower, or in the Council Chamber, the Ante-chamber, and the Chapel, all in the White Tower, which repositories contain the rolls of the Chancery, and a vast number of other documents on parchment, vellum, and paper, the latter including some of the earliest specimens known in England, namely, letters on cotton papers from the Knights Templars and the southern parts of Europe of the reign of Edward the First.

These all are in perfect preservation. Very remarkable among them are certain documents designated as the 'Brevia,' which I found built up in close heaps on shelves against a naked stone wall in the White Tower. Several of the bundles had never been opened from the time of their first deposit: at least such was the case with a bundle of the time of Richard the Second. This was so perfectly preserved that the pounce flew off from the surface of the parchment when I opened it.

"4. In Norwich Cathedral is a vaulted stone chamber, coeval with the original structure, built in the reign of Rufus, constituting the upper story of an apsidal chapel. This apartment is, and always has been, the treasury and muniment room of the cathedral; and here are deposited numerous Anglo-Norman charters and ancient rolls of every description, from the time of Henry the Third. Many are deposited in an ancient and shattered press of wood in

* See pp. 642 and 643, in our present number.

† The chapel has some curious monuments: the Rolls House was built by Colin Campbell, 1717.

the middle of the room, affording full access to air, atmospheric damp, and dust. The room has never been warmed, and never could have been warmed; and when I saw it in 1846, the windows were so broken as to afford the utmost facilities of ingress and egress to the birds, the consequences of which visits were very visible; but all the records are in perfect preservation, so far as the effects of time are concerned. Such as are damaged have only been so by actual violence.

5. Domesday, the earliest existing English record, is deposited in the Chapter House of Westminster Abbey, in the vaulted porch, never warmed by fire. From the first deposit of Domesday volume in the Treasury, at Winchester, in the reign of the Conqueror, it certainly never felt or saw a fire, yet every page of the vellum is bright, sound, and perfect. This is equally the case with the Chirographs of Fines and Rolls of the *Curia Regis*, beginning in the reign of Henry the Second, till recently, in the same repository; and, generally speaking, every record in the Chapter House, except certain leagues, treaties, and books, which have come into actual contact with rain-water, in the reign of Queen Elizabeth, and certain others lying upon a neglected corner on the ground, which appear to have been damaged by the overflowing of a drain.*

Mr. Braidwood, on being applied to, strongly recommended open fire-places for safety: he thought that no furnace or close fire should be permitted within any premises which are meant to be absolutely safe from fire. Sir W. Hooker, of Kew, from experience in his *Herbarium*, agrees in the opinion that in a properly prepared and situated, and properly ventilated room, the action of the external air, with its alternations of wet and dry, can have no injurious effect upon dead vegetable matter. "Dry ground, however," as he properly says, "for the building, and dry walls, are indispensable."

The floors of the new repository will be formed with wrought iron girders and flat brick arches of less than 5 feet span, laid on the top with white Suffolk tiles. The sashes and door-frames will be of metal; the doors of slate; the roof iron. The brick walls inside will be coloured, without plaster. The hall, which is entered from the south side of the building will be lined with Portland stone, and have a panelled ceiling formed in zinc, and emblazoned. Externally the walls are of Kentish rag stone, with dressings of Anston stone. It is Late Gothic in style, with something of a German character, and promises to be very successful in effect. The peculiarities of the elevation result from the construction and provisions of the building. By referring to the plans it will be seen that two windows are provided for each room, and as the rooms are 15 feet high, divided by a gallery, or iron floor, it follows that the windows must be unusually lofty to light both floors, and to throw the light 25 feet down the passages between the records: these circumstances make the front a mass of window; precluding any plain surfaces, and rendering ordinary forms and proportions inapplicable. Again, the weight to be carried, and the consequent necessity for stiffening the front wall, weakened as it would be by many and lofty windows, has induced the adoption of deep buttresses. These together, the extent of window and the adoption of deep buttresses, will produce in execution a bold effect. The structure presents the peculiarity, observable in another of Mr. Pennethorne's buildings, that there is no entrance in the principal façade.

The clock turret seen in our view, but which

is over the entrance on the other side, is novel in design. It is not included in the present estimates.

Messrs. Lee, we may add, are the contractors for the building; Messrs. Grissell for the iron-work. The total cost of the part now in progress, which is expected to be ready for occupation in about twelve months from this time, will be about 40,000*l*. The walls are already up to the middle of the ground-story.

THE EXHIBITION—A GOSSIP.*

My object is not to explain the Exhibition, even generally, but rather to make use of the Exhibition, or more correctly, some prominent works of art-manufacture contained in it, as one huge illustration of the general principles I have advocated throughout, in my lectures.

There is not one point that I have urged that is not there practically demonstrated to be of essential importance; and I think I shall be able to now clearly show you that the very first business of every designer is to make himself master of the elements of all established styles, not only for the sake of knowing these styles, but to enable him to effect any intelligible ornamental expression whatever. You must know all: to study one style only will perhaps prove more fatal to your success than to study none at all; for, in the latter case, you are open to improvement and new impressions, while in the former your mind is, as it were, a stereotype of a few fixed ideas with which you stamp your uniform mark on everything you touch; as the ignorant knights of old made their sign manual with their sword-hilts, or their thumb-nails.

We have seen "nature" very often sentimentally held up as in antagonism to the so-called historic styles, or absolutely in antagonism to art: this is only the outrageous presumption of ignorance. I need not demonstrate to you that true art can never be the antagonist of nature.

The treasures of art are derived as legitimately held up as in antagonism to the so-called historic styles, or absolutely in antagonism to art: this is only the outrageous presumption of ignorance. I need not demonstrate to you that true art can never be the antagonist of nature.

However, what is nature? We hear of three kingdoms of nature,—the vegetable, the mineral, and the animal: one cannot be more natural than the other; therefore, on the score of nature herself, we cannot give the preference to any one in particular.

The naturalists generally have not gone to nature, but only to one small class of individuals in one of its kingdoms. Let us by all means go to nature, but with a strict impartiality, selecting our forms simply with a view to the most appropriate contrasts or combinations in accordance with the sentiment of the design we have in hand, at once repudiating, *in toto*, the notion that mere imitation can in any way compensate for an incomplete or imperfect arrangement of the parts, as prescribed already by the very sentiment or principles of the contemplated design. This brings us to another point,—how far using the elements of past times may be deprecated as a slavish repetition of ancient or mediæval art, and ignoring the wants and sentiments of the present age.

Such a result may accrue if we cannot separate old elements from old sentiments: we must, however, go very much out of our way to verify any such disaster, and certainly only

* The following is the substance of a very interesting lecture delivered by Mr. Wornum, at the Central School of Design, on the 3rd inst. We give, too, in our present number a continuation of our papers on the Building Stones in the Exhibition, and shall probably continue them, notwithstanding the close of this wondrous collection of works of industry. On Monday and Tuesday next the exhibitors and two friends each will be admitted to the building, and on Wednesday the Royal Commissioners will meet the jurors and exhibitors alone to close the Exhibition finally. We have received many letters urging that it should be kept open longer for certain excellent purposes, but have reason to believe it would be useless to print them.

by, in the first instance, adopting an old sentiment, as in the so-called mediæval court in the Exhibition. But there are, as I shall show as we proceed, very many works in the Exhibition eminently suited to the wants and sentiments of the present age, though composed as ornamental designs, entirely of old elements.

The fact of ornamental elements being established favourites of remote ages, does not make them old in a bygone sense, unless they have sprung from a sentiment that is a bygone. Many ancient and middle-age forms, if reproduced now in their genuine original character, would be at best but whimsical revivals; but beauty can never really be antiquated or old-fashioned, whatever the conventionalities of the day may be. What is inherently beautiful is for all time; and the repeated attempts at the revival of classical forms, with a steadily increasing interest on the part of the public, in spite of fashions or conventionalisms the most opposite, is at least one sure test of the inherent beauty of these forms.

It is a morbid taste to hunt after variety purely for variety's sake; and it is perfectly legitimate to preserve all that is beautiful, however we may continue to prosecute the search of the beautiful in other provinces; and there are still unexplored regions of nature left for us. It must be evident that efforts at variety, unless founded on the sincerest study of what has been already done, not by our own immediate rivals in our own time, but by all people at all times, are at most but assumed novelties; but if such really, the chances are that it is their only recommendation, as was the case with the Rococo, the novelty of which represents the exclusion of all the beauty of the past.

What is recommended by use never grows old: it is only what is fostered by fashion that will be superseded as a new fashion arises. So it is with the duration of the styles: some are characterised by mere local peculiarities or special objects, others by abstract principles. Local peculiarities, and all specialities, when their causes cease, must die out, and cannot be revived except by a revival of the cause; and so, if their causes cannot be recalled, it will be impossible to revive several of the historic styles; but where the causes of styles still exist, the styles themselves are as much of this age as of the past.

The Classical and Renaissance styles are founded on abstract principles, and therefore may and must be revived as soon as their motives are thoroughly understood; and such a restoration is not a copy of an old idea, but a genuine revival of a taste,—a very different thing from merely copying designs.

Then to apply our test to the Exhibition itself: it is generally admitted that in spite of much that is bad and indifferent, it offers, on the whole, an unprecedented display of art-manufacture. Of course, in the general review I now propose to take of this wonderful collection of the world's industry, I must limit my remarks, if I am to be at all practical, to the most prominent specimens only, or even to the mere treatment of classes of manufacture; and at present my object goes scarcely beyond an attempt to show you that all the most remarkable works there displayed owe their effect to a skilful management of the results of the labours of generations that have gone before us; from the study and mastery of past efforts, and not from any sudden impulse of genius or any intuitive adaptation of nature. All that is good is the result of the study of ornament, more or less universal or singular, according to the method of that study.

The Exhibition contains nothing new,—not one new element, not one new combination; and yet it represents, vast as it is, only a small proportion of the great national expressions of ornament, of past ages of the world.

And in many cases we have very much more the simple reproduction of an old idea, than the veritable revival of the genuine artistic feeling of the past.

[The lecturer then proceeded to illustrate his remarks by reference to portions of the Exhibition. In Messrs. Wedgwood's stall he found a genuine revival of artistic feeling; and in

Mr. Battam's a reproduction of old ideas. He spoke of the Sèvres room as showing general magnificence and classical taste. The Glass stall of J. G. Green, of London, was another illustration of a legitimate application of an old taste to modern purposes. With reference to Bronzes, the display of these, considering the applicability of the material, he thought remarkably small in the Exhibition, and the general taste trifling. He specially pointed out those by Potts and Messenger, those in the Cinquecento style by Villemens, and for general good taste, those by Matifat. The genuine reproductions of the Renaissance by Barbédienne; and the damascened work by Falloise, of Liège, were much to be admired.

The silver-work displayed the three tastes—Classical, Renaissance, and Louis XV. A Vase, or centre-piece, by Wagner, he considered the finest thing there. A tea-service, by Durand, was noticed. The lecturer treated at some length on the specimens in oxidized silver, and showed the advantage of the method for the display of art. The works of Froment, Meurice, Rudolphi, and Gueyton were especially mentioned. The Rocco prevailed too generally in English work. The classical specimens, by George Angel, were very admirable. The fine Cinquecento centre-piece, by Brown (Hunt and Roskell), suffered, he thought, by frostings and burnishing.

In the carvings there were specimens of Renaissance, Cinquecento, and Louis XV. Fourdinois and Barbédienne stood pre-eminent. Rinquet-Leprince, Durand, Krieger, Leclerc, and Cordonnier were noticeable. Lechesse's frame, in the Cinquecento style, he considered a very fine work. After some remarks on the Austrian furniture, on the whole complimentary, the lecturer proceeded as follows:—

The objections to English carving imply every want but those of mere mechanical skill and means. There is a want of definite design, and a disregard of utility: there is an overloading of detail, and an inequality of execution, often fatal to the whole effect.

In some instances, where the human figure is mixed up with conventional ornament, the last is perfectly well executed, while the former is absolutely barbarous in conception and in execution. Other specimens found their pretensions solely on profusion of details: others, again, are conspicuous only for their bad style, or their Baroque mixture of styles.

Let us, then, briefly sum up the conclusions that we may draw from this cursory survey that we have just made; and let every designer treasure it in his mind, for in this result he will have presented to him more forcibly than in any other way, the paramount importance of a knowledge of ornament over and above an artistic or manual dexterity.

The exhibition has pretty well proved that the most dexterous of all artists are the French, yet what an inveterate sameness their works must present to the French eye from their so generally adopting the same style in almost every branch of manufacture. A French design not in the ordinary Renaissance is almost a curiosity: we certainly do find French examples of Greek, Gothic, and the now generally discarded Louis XV., but they are the rare exceptions. No skill of execution can ever atone for such excessive mannerism as this. The wide-spread influence of France, in spite of the most debased taste in design, the Rocco, is one curious picture presented to the mind by this assemblage of the world's industry.

Another great fact displayed, perhaps unavoidable where true education is absent, is the very general mistake that quantity of ornament implies quality. In the Oriental works, where quantity of detail is also the chief characteristic, it is of a kind so generally unassuming in its details, and harmonious in its effect and treatment, that the impression of quantity itself is the last that is conveyed, though the whole surface may be covered with ornament.

We find the best specimens of ornamental design, as a class, are of the Renaissance, but the great bulk are of the Louis XIV. varieties: classical art is scarcely represented, and the Gothic is only very partially so. We have,

indeed, only three decided expressions of taste, the classical, the Renaissance, and the Louis XV., for what we have of the Gothic we owe to sentiments distinct from ornament. These three tastes are very distinct: we have in the first, the classical or Greek, a thoroughly well understood detail, with a highly systematic and symmetrical disposition of these details: in the second, in the Renaissance we have also a well understood detail, but a prevalence of the bizarre, and a profusion of parts; great skill of execution, but a bewildering and fantastic effect, upon the whole: in the third, the Louis XV., we have a total disregard of detail, therefore a purely general effect.

And this I believe to be a fair picture of the present general state of ornamental art in Europe, a condition out of which it is the task of the schools of design to extricate it; and if we may judge of the fruits of the French schools, it would appear the especial province of the English schools to perform this service; for the uniform practice of the French seems to show that they are too much absorbed in the execution of details to give any great attention to distinct varieties of ornamental expression.

If a general inferiority in design must be admitted, on the part of England, it is much less in the application than in the taste and execution of the design itself, irrespective of all style. However, in the more magnificent foreign productions, especially those of France, there is a disregard to usefulness, or the general wants and means, which very much detracts from the high credit the execution of the work would otherwise ensure.

It would be no distinctive feature of the age to work well for princes: princely means have secured princely works in all ages; and the Exhibition will do nothing for this age, if it only induce a vast outlay of time and treasure for the extreme few who command vast means. While the efforts of England are devoted, for the most part, to the comfort of the many, France has expended its energies as positively over luxuries for the few: it is an amalgamation of the two that we require,—fitness and elegance combined.

When a costly work, however, is distinguished by exquisite taste, it is something more than a specimen of costliness, and a skillful work will be beautiful, not by virtue but in spite of its materials. Good taste is a positive quality, however acquired, and can impart such quality in perfection to even the rudest materials: it is taste, therefore, that must ever be the producer's most valuable capital, and it is a capital that the English designer and manufacturer may very materially accumulate by a careful inspection of some of the more important foreign contributions in the Exhibition.

I have only, then, to again caution you, that notwithstanding the unrivalled display of magnificence now assembled from all quarters of the world in Hyde-park, the great art of the ornamentist is still only partially represented, as compared with the aggregate of past efforts and achievements; that great styles, individually capable of as much display and variety as the whole of this unique collection together offers, are barely touched upon; that this vast store is at the student's feet, to be gathered into his granary, as the meadows spread their honey before the bees, if he will only extend his search beyond the reach of his hands.

The time has perhaps now gone by, at least in Europe, for the development of any particular or national style; and for this reason it is necessary to distinguish the various tastes that have prevailed throughout past ages, and preserve them as distinct expressions; or otherwise, by using indiscriminately all materials, we should lose all expression, and the very essence of ornament, the conveying of a distinct æsthetic impression on the mind, be wholly destroyed. For if all objects in a room were of the same shape and details, however beautiful these details might be, the want of individuality would be so positive, that the mind would soon be fatigued to utter disgust.

This is, however, exactly what must happen on a large scale, if all our decoration is to

degenerate into a uniform mixture of all elements, or if we allow any one class of elements to engross our exclusive attention: either in the one case or the other, nothing will be beautiful, for nothing will present a new or varied image to the mind.

R. N. WORNUM.

WHAT A FOREIGN ARCHITECT THOUGHT OF LONDON.*

HAVING promised my opinion upon what I have seen in London regarding our profession, I give it without flattery, with sincerity, and if it should appear here or there a little too severe, do not forget that we are still, always and everywhere, in search of perfection without finding it. It is for the first time, as you know, that I have visited London; and the impression produced upon me at entering this great city was stupefying: it was only after several days that I became master of myself, and began to distinguish objects in their veritable forms: now, I have gone through the city and the exposition for nearly two months, and can judge with a clearer head.

The English nation is full of energy: it has both strength of mind and strength of money, two qualities very necessary for the execution of great undertakings, and great buildings; and this is the reason why no other nation in the last century has been able to compete with it in either of them, and also the reason why an exposition for all nations could succeed in England and not elsewhere. But as the envelope of the Exhibition is of the latest construction, let us speak first of some other remarkable edifices, or rather of the architecture of London in general.

The most interesting monuments, as far as regards the history of architecture, are, without doubt, those built between 1050 and 1600. The Pix-office (1050), in the Anglo-Saxon style; the White Tower (1078), style *Anglo-Norman*; and the choir of St. Bartholomew's Church (1125), *Semi-Norman-Romane*, bear the same stamp as the monuments of that period on the continent. It is only in the St. Mary's Church, in the Inner Temple, which was built between 1185 and 1240, that we find the pointed arch and vaulting of the Gothic style; nevertheless, not in the purity of dimensions and forms with which they were produced from 1245 to 1325 in the cathedrals on the banks and in the neighbourhood of the Rhine, and in the Low Countries. The width of the arch is too small in proportion to its height, and the proportions of the columns, with their bands in the middle, as well as the form of the capitals, still show the style *Romane*.

After that epoch, the buildings erected in this capital, from Westminster Abbey (1245) to the Hall of the Middle Temple (1572), [which last may be considered to be rather in the style of the Renaissance (François premier) although the windows show the pointed style,] are built upon the Gothic principle of the different epochs which have arisen between its birth and its decline. The most remarkable monuments which I have found in this style are the Dutch Church in Austinfriars (1354), Westminster Hall (1395), Guildhall (1411), Crosby Place (1470), and Henry VIIIth's Chapel (1500). This chapel, one of the most magnificent of its time, is built behind, and attached to, the Abbey Church of Westminster; and has a great affinity with the *Gothique-moresque*, which reigned at that epoch on the continent. The ceiling is more interesting as an ornamental than a monumental work, as the pendants are attached by copper rods, their stonework having no relation to the construction of the vaulting.

The choir of the Abbey Church and this chapel contain a very remarkable series of Gothic tombs from 1276 to 1532. This collection is the most complete that I have ever seen, and leads to the conviction that Gothic architecture moved in the same path at this

* It is so seldom that foreign architects leave behind them any record of the impressions made upon them by our buildings, that our readers, we have no doubt, will thank us for the following paper. It was written by Herr S. de Jong, an architect of eminence in Holland, who has recently been in England. We give it exactly, leaving the responsibility with the writer.—Ed.

time in England as upon the continent. A book rather than a letter would be required to verify this assertion; but I can say that I have considered these tombs with the greatest attention and conscience, and find this verdict.

Now if you demand my opinion regarding the forms of these edifices in rivalry with those which were constructed at the same time in Germany, France, and the Low Countries, in this style, I must tell you that they appear to me to have in general the same poetic sentiment, the same merits, and the same faults; and in particular, that the parts of the cathedrals built between 1245 and 1325 at Cologne, Rheims, Strasburgh, Bois-le-Duc, Antwerp, Utrecht, &c. are to be preferred for their pure and harmonious principles to every other Gothic monument which I have visited. I have not thought it necessary to remind you of additions made to these buildings since 1350, more or less differing from the first type.

London does not appear to possess any remarkable edifices built in the style of the seventeenth century. Between 1570 and 1670 the great revolution occurred which convulsed the entire population, and was probably the cause why architecture slumbered among you for so many years. Building, it is true, went on, but at that time people built masses without any architectural character; and the only peculiar feature which I have observed in the castles of that time is, that they were always surmounted with little turrets, which have been adopted, but in a slightly different manner, in the large mansions; Northumberland House, for example, which has two small towers on the flanks, with a principal entrance, which approaches (though but slightly) to the style *diamant*, and this even was a great luxury in the days of Puritanism.

In walking through the town my attention was involuntarily first fixed upon the steeples. They almost all bear the stamp of what seems to be called here the Anglo-Italian school (I except those of St. Michael's in Cornhill and St. Dunstan's in the East, which are copied from the Gothic), and chiefly were designed by Sir Christopher Wren, architect of St. Paul's Cathedral, commenced in 1675 and finished in 1711. Wren was the man who gave a new impulse to architecture in England: the church of St. Peter, with its vast cupola, at Rome, designed by Bramante and continued by Michael Angelo, struck him, and he built for the Protestants in London that which existed for the Catholics at Rome. I give the preference for solidity in the dome and for the proportions of the portico in the principal façade to St. Paul's, admitting that the towers and lantern of St. Peter's are very superior to those of the London church. Certainly Wren was a very skilful copyist in every style of architecture, in Gothic as well as in Roman-Italian: for the first see St. Michael's and St. Dunstan's. All the other steeples, churches, or monuments erected from 1675 to 1750 in London, are more or less copies of Italy according to Scamozzi, Vignola, and other (con)founders of architecture; and there are some which are ridiculous enough,—for instance, the steeple of St. Bennet, at the corner of Fenchurch-street and Gracechurch-street, which enjoys Greek frontispieces on the four façades surmounted by an Italian cupola, carrying for lantern an Egyptian obelisk with a spiky top. It is saddening to contemplate such an example of the distressed state in which architecture found itself in the 18th century, because it was not in London only that people fabricated at that time similar specimens of bad taste; they were produced throughout Europe. Nevertheless, an honourable exception for this period is the residence called the Lord Mayor's Mansion-house, which is *très gentil* in its proportions, excepting the story in the roof, which ought never to have surmounted the frontispiece.

At a little distance from London, at Greenwich on the banks of the Thames, is situated a hospital for invalided sailors, the *largest and the finest* hospital in the world. To gain a general notion of the plan we must imagine four blocks

of building ornamented with two small domes 130 feet in height, and forming, with the courts, one large rectangular edifice. Seats for the inmates, when tired of walking about, are every where placed; and at three o'clock a magnificent band, formed of the pupils in the naval school, amuses these old walruses with music; but such music! so superb! It is infinitely superior to the orchestral efforts of the small theatres in London; and the drum-major or the music master must be a very clever man to have brought these young gamins to a harmony so perfect in its execution. In short, Greenwich Hospital is the Paradise of the Royal Navy. Wren and others designed the principal buildings, in their own style of architecture, so that to mention them renders it superfluous to speak thereon in detail. The whole edifice is very well distributed, and the colonnades give a pretty effect. The domestic arrangement of the interior seems irreplicable, and the arrangement of the chapel, the interior of which was renovated in 1789, by Stuart, in the Greek style, both pretty and clever: I say clever, because I remarked that the architrave of the windows is raised higher than the floor of the galleries, which has been contrived with a great deal of ability in the same way as at St. Martin-in-the-Fields. On leaving, I found that a new entrance is being constructed, without any regard to the general architecture of this grand edifice, in the same manner as private houses are built at this day in England, of red brick, by Mr. Hardwick, R.A., which gives us the conviction, and I say it with regret, that there is in your country no surveillance over the architecture of public buildings.

The great revolution in France at the end of the last century gave an altogether different impulse to letters and the arts. The Republic declared that everything *must* be what it termed classic, in the arts as well as in politics; and that only amongst the Greeks could a citizen learn what architecture, sculpture, and painting were. We cannot deny, if we would, that the age of Pericles produced, among the Greeks, *chefs-d'œuvre* of sculpture and architecture, and that the sentiment of beauty was carried to a high perfection at that time; but nevertheless it was a great error to revive and transplant their architecture in the middle of Europe at the beginning of the nineteenth century, amongst a people with religion, habits, and climate altogether different. Nevertheless the style was adopted in England as well as in all other civilized nations; and London is in possession of a tolerably large number of buildings in this style. It would be a great mistake indeed to suppose that England, or better still, that every country has had a style of its own. I have studied the art a little in Italy, Switzerland, France, Germany, Holland, Belgium, and lastly here in England, and I find in every age a change or movement in forms, which has vibrated through all countries in the slightest connection with each other.

The East-India House, designed in 1800 by R. Jupp, is a pretty remarkable instance of the desire to build *à la Grecque*, and of the simultaneous ignorance of the type of that style. Look at that façade, and you will see a Greek portico with Roman-Italian flanks.

After Jupp, Sir Robert Smirke, Sir John Soane, Wilkins, Barry, and Tite have competed for the glory of terrestrial immortality,—Smirke at the British Museum, Custom House, General Post Office, and the Mint; Soane at the Bank; Wilkins at the National Gallery and University College; Barry at the Treasury; and Tite, as inventor of the new Royal Exchange. And which of these great imitators of the Greeks is to have the wreath? Wilkins, who has planted Italian domes on Greek porticoes? Tite, whose chimneys, treated like triumphal arches and a little Roman steeple, are placed upon the roof behind the pediment of a portico, while at the same time the friezes are decorated with garlands *à la Louis XV.*? No. But the Custom House, the Treasury, and the British Museum remain to you. The Post Office is built in the same style, but is not so pure. The Custom House is not bad, but it absolutely wants harmony in the principal façade. The colonnades are

interrupted by the string courses of the two stories, and the cornice is overcharged with a balustrade or attic of bad proportions. I think the Treasury and the British Museum the finest monuments of the commencement of this century in London, as being the purest copies of the Greek taste; but as the cornice of the balustrade in the first is ornamented with *essencecoires* instead of statues, and as a fitting entrance is wanting, I give the preference to the last-named building, which, more than any other edifice has struck me by its extreme simplicity and harmony.

I must not weary you with a recital of all that I have seen of your great buildings, or of the churches,—not even St. Pancras, which has a very pretty exterior, erected between 1815 and 1825,—nor even with a dissertation upon your columns, which I respect very much as national monuments, but to which, as monuments of our art, I am indifferent. Generally, they are but feeble copies of those which I saw and admired for two years at Rome, except that invented by Wren in 1671, which is at once the tallest and the lowest. The others, those of the Duke of York by Wyatt, and of Nelson by Railton, are well situated, and give a very pretty aspect to the environs of their locality.

However, if I cannot admire the edifices cited, do not imagine that I should not render homage to their projectors: they have done their best. As the principle of transplanting this style of architecture to our soil is false, they had to surmount a thousand obstacles, and the skill with which these have been combated, has been, in some cases, wonderful. Above all, they have turned architecture out of a most dangerous path; and the acknowledgment of a beautiful type, which reigns in all pure Greek architecture, has contributed much to the correction of the depraved taste of the eighteenth century. But before passing to the monuments of our own day, let me speak of the bridges thrown over the Thames to unite the two wings of the metropolises.

Much has been said upon the question whether bridges belong to the department of the architect or of the engineer. Now, it seems to me that everything *to be built* belongs to the architect, whether above or below the earth, above or below the water. At Venice and Amsterdam, for instance, all the houses are built upon the water by architects: the questions arising from simple forces, the elements, or substances, form the territory of the architect; while the combination of forces in fire and water with their result, steam, machinery in all its varieties, the results of high mathematics and chemical investigations are the labours of the engineer. I might have used the words geometry, hydrostatics, diaphragms, crodynamics, &c., but I wish to be generally intelligible.

Of the seven bridges, two belong to the eighteenth and five to the nineteenth century. Westminster-bridge, constructed in 1750, and Blackfriars-bridge in 1770, are both weak in their form as well as in construction: erected upon caisson foundations (a false and most dangerous principle in rivers), they have been always sinking, and are now loudly crying "help." Waterloo-bridge and London-bridge, designed and executed by John Rennie and his sons, are beyond doubt the most beautiful works of their kind in Europe. The simplicity, strength, and elegance of their proportions, united to an exquisite choice of materials, render the architecture of these two bridges irreplicable. Vauxhall-bridge, erected in 1816, by James Walker, and Southwark-bridge, designed by the elder Rennie, have their curves in iron. The last, which has only three arches, is much superior to the first, which has nine, in all that regards stability of construction and beauty of form; but as Vauxhall-bridge cost 300,000*l.* and its rival 800,000*l.*, we must respect the economical, and at the same time satisfactory, construction of the cheaper one. The Hungerford suspension bridge, by I. K. Brunel, is a remarkable trial of a principle, and more remarkable for its appearance than for its utility. To pass this bridge in a carriage, or with heavily laden carts is impossible: there is an eternal serpentine movement; and if the wind whistles, the

passenger feels as if he were in a vessel floating upon the waves. Nevertheless the invention of this species of bridge required great genius and an iron will; and if the principle be not adoptable for bridges in general, we have learnt what can be done in case of need. You will remember the accidents which have arisen upon such constructions, from the uniform motion of the marked step of soldiers, or from even less noticeable causes of the fracture of these bridges. After mentioning the passages over the Thames, I must speak of that below it—the tunnel, invented by the elder Brunel, and executed by him between 1825 and 1843. Five times did the water interrupt the works, but the perseverance of Mr. Brunel was crowned with success, and a communication between the two banks of the river was established below its bed. In contemplating this surprising construction, I was astonished that the bold and ingenious mind of its creator had not preferred the cylindrical system with a single tube, to that of two circles united in a square, for the construction, and iron to brick, for the materials. If I am rightly informed that the diameter and depths were prescribed to the projector, and that the exorbitant price of iron at that time forced him to employ brickwork, still, I suppose that had the cylindrical system in ironwork been adopted, the works would have advanced with much greater rapidity, and the construction would have been much more solid; because the inconveniences arising from an inconstant temperature, which are very great in iron constructions, placed in the open air, could not have been much feared at this depth below the general level of the ground. It is remarkable that Brunel constructed a tunnel in brick below, and Stephenson a tunnel in iron above, the earth. Probably, these will remain unique specimens in their way. For myself, I very much fear that the wind and vibration of the air, from the passage of the trains, will break the rivets of this last work, without counting the moment of danger when the material strength of the iron shall have expired. But always, and in every case, the spectators after a battle believe themselves to be greater captains than Scipio or Hannibal, and there can be no doubt that Brunel was, and that Stephenson is, a man of genius.*

SERVAAS DE JONG.

MINERAL PRODUCTS RELATING TO THE BUILDING ARTS IN CLASS I. OF THE GREAT EXHIBITION.†

BUILDING STONES OF THE MILLSTONE GRIT.

The geological formation known under this name forms a part of the carboniferous series, and, like the mountain limestone, is developed in all our coal fields, although very variable both in its thickness and structure. Thus, in Derbyshire, the millstone grit consists of several hundred feet in thickness of very pebbly quartzose gritstones, interstratified with finer sandstones and shales, and occasionally with beds of thin bad coal.

In the more northern parts of the same coal field the millstone grit reaches to 1,000 feet in thickness, and consists of three principal divisions of coarse, quartzose gritstones, separated by shales and by flaggy, finer grained, and freestone grits; containing also beds of chert, thin limestones, ironstones, and a few coal seams. In the South Wales coal field the millstone grit about Pontypool does not exceed 200 feet in thickness, but increases towards Merthyr, where its thickness is 330 feet. In the Forest of Dean the sections of the Ordnance survey give a thickness of about 270 feet. In these coal fields it consists of red and grey gritstones, and conglomerates inclosing white quartz pebbles alternating with thin beds or partings of marl. In the Bristol coal field the thickness is about 1,200 feet, and consists, in the upper parts, chiefly of very hard beds approximating to quartz rock; in the lower part, of soft, laminated, and shaly sandstones, also of some beds which are ferruginous; and a seam of coal occurs about 400 feet from the base. Few of the beds of millstone grit in the Bristol coal field possess the valuable

properties of the millstone grit in the north of England. This has always been a favourite stone for large engineering works, and has been extensively employed both in Waterloo and London bridges, where the arches, span-drills, and parapet are of granite, but the piers up to springing height, or the level at which the arches commence, are built of millstone grit, probably Bramley Fell, or other Yorkshire stone.

The specimens of millstone grit in the Exhibition are from the neighbourhood of Berwick-upon-Tweed, Hartford Bridge Northumberland, several from the neighbourhood of Leeds, Elland Edge, Barnsley, Sheffield, and other parts of the great midland coal field, and one specimen from the Bristol coal field. The stone from Berwick-upon-Tweed is a whitish coloured very strong grit, belonging to the coal field of that district, and was employed in building the Royal Border Bridge at Berwick. This specimen may be taken as the representative of many excellent gritstones in the county of Northumberland, which are well adapted for building purposes, and may be used as millstones both for grinding corn and for crushing as in cider-presses. The price of these Northumberland gritstones, delivered in London, would not exceed 1s. 8d. to 2s. per cubic foot, according to the size of the blocks; and as the price for dressing them by the local masons very little exceeds that for Portland stone, it is probable they might be introduced with advantage into the London market.

No. 136 is also a specimen of the Northumberland gritstone, namely from Hartford Bridge, near Morpeth. This stone is said to be of remarkable density, and to be capable of resisting the weather to an extraordinary degree. The bridge at Hartford, which is built of this stone, is said to be 600 years old, and the marks of the chisel are still visible on the stone. It has been used of late years for building Miss Burdett Coutts' new church in Westminster, and for improvements at Windsor Bridge. The specimen exhibited represents a bold, deeply cut carving of the Earl of Carlisle's coat of arms, and shows the capability of the stone for carrying a fine edge, and being carved in the most intricate forms. It is a very strong quartzose grit, of a uniform light grey-brown colour.

The millstone grits from the neighbourhood of Leeds are well represented by several specimens from Meanwood quarries, included in Nos. 160, 171, and 183, and by a specimen from Fairhead included in No. 190. The Meanwood stone varies from a somewhat fine crystallisation to a rather coarse conglomerate, enclosing both angular and rounded pieces of quartz with argillio-silicious cement, slightly micaceous, and sometimes containing a few ferruginous specks. The colour a light yellowish brown. This stone has been extensively used in her Majesty's dockyards and in Dover pier, is in high estimation for marine engineering, and considered a very valuable stone where large blocks are required. It is admirable for heavy copings of retaining and parapet walls, for dock and lock gates, &c. It is extensively used as a millstone, and for the foundations of heavy machinery, being equal in strength and durability to the best Bramley Fell stone, from which it does not materially differ in composition. The Meanwood quarries attracted the attention of the commissioners appointed by her Majesty to enquire into the best stone for the new Houses of Parliament. They report the weight per cubic foot as 140 lbs. Beds from 2 to 10 feet thick,—blocks of great size may be procured; price at quarry 10d. per cubic foot for squared blocks of 1 ton to 13 ton weight; carriage by land to Leeds 2d. per foot; price of plain work to face 10 per cent. higher than for Portland stone. Now that we possess the benefit of railway competition between this part of Yorkshire and the metropolis it is probable that this stone can be brought to London, and sold at a profit for about 1s. 6d. per cubic foot. This, it must be understood, will prove a great advantage wherever a first-rate stone is required. Of late years, the original Bramley Fell quarry has been nearly exhausted; so that, in place of the celebrated

Bramley Fell stone, builders have either had recourse to granite, a much more expensive material, or have been driven to the use of a reddish-coloured ferruginous gritstone, very inferior to that from the original Bramley Fell quarries on the Leeds and Liverpool canal. For some reason or other (probably owing to the presence, in greater abundance, of the red oxide of iron), the red-coloured ferruginous stones never stand the weather so well as the grey and brown varieties of the millstone grit. The specimen from Fairhead (No. 190) is a light greyish brown stone, with quartz grains—moderately coarse, argillio-silicious cement, a few small plates of mica, and occasionally small ferruginous spots. It is procured from quarries in the parish of Grosmoor, in the Vale of Esk, North Riding of Yorkshire, and squared scabbled blocks of it can be supplied in London at 1s. 4d. per cubic foot, or in dressed blocks at 1s. 6d. to 1s. 9d. per foot, according to the description of work. There are two other stones from Leeds which may also be classed among the millstone grits, both exhibited by Messrs. Freeman under No. 160, namely, one from Horsforth Quarry, said to have been used in her Majesty's dockyards, Dover pier, &c.; this is a very coarse quartzose grit, containing large fragments of white angular quartz: the other specimen is from Gipton Wood, and is not very unlike the Horsforth stone.

The Elland Edge stone is a light, greyish brown variety, with moderately fine grains of quartz, an argillio-silicious cement, and small plates of mica in the planes of the beds—weight per cubic foot 153 lbs. 4 oz. No. 22 of objects outside the building at the west end contains an assortment of Sheffield grinding stones of various sizes from Ardsley Oak Quarry, near Barnsley. These stones, like others of the same series, consist of quartz grains united by an argillio-silicious cement, but the grains are of a more uniform structure, and offer a more uniform resistance than in those varieties which are unfit for grinding purposes. They are almost devoid of the very hard pebbles of white quartz which prevail in some beds, the grains being generally of a light greyish brown colour. The Barnsley and Sheffield grindstones are used not only throughout the neighbourhood, but all over England, and in many parts of the continent for grinding tools of various descriptions. No. 45 contains a collection of millstone grits and grindstones from the neighbourhood of Sheffield, namely, from Bull Head Quarry and Reeve's Edge Quarry. These both appear to be good stones, that from Reeve's Edge having the coarsest grains, and both may be described as light greyish brown-coloured stones.

The Darley Dale stone, exhibited as part of No. 160, is a well known variety from Stancliff Quarry. This is a coarse-grained strong quartzose stone, with grains of moderate size and decomposed felspar, with an argillio-silicious cement, ferruginous spots, and plates of mica. Colour, light ferruginous brown. This stone is capable of being turned in a lathe, and was used in the erection of Darley Dale Abbey, Stancliff Hall, St. George's Hall Liverpool, the Birmingham Grammar School, several of the neighbouring railway stations on the Midland and other lines, Lismore Castle in Ireland, a theatre in Manchester, the Waterworks at Salford, and Mr. Beaufoy's schools in Lambeth. It is described by the Building Stone Commissioners as occurring in blocks of very great size to a depth of 200 feet, weight 148 lbs. per cubic foot. Price in London, 3s. 3d. per foot; cost of face work 30 per cent. above that for Portland stone; but it is probable that these prices would be much lower now in consequence of railway communication which has been completed since the Commissioners made their report. The last specimens we shall notice from the Midland coal field are those from Wingerworth Quarry, near Chesterfield (No. 182). One of the specimens much resembles the Bramley Fell stone from Yorkshire. They are all of a light brown colour, and appear well adapted for building purposes.

The millstone grit of the Bristol coal field is

* To be continued.

† See p. 605, ante.

represented by a specimen from Brandon Hill, exhibited by Mr. Howard, in his collection, No. 29. This stone is a conglomerate of a very dark red rust colour, consisting of red jasper pebbles imbedded in a highly ferruginous cement, and weighing 178 lbs. per cube foot. It seems improbable that this stone would successfully withstand the weather, if exposed in outdoor work. It would form, however, a most valuable material for concrete as a chemical union of great strength would take place between the lime and the ferruginous part of the stone, while, as the concrete would be buried, no danger need be apprehended from atmospheric influences. The stone from its great weight would also form an excellent material in foundations. The composition of the Brandon-hill stone is not everywhere of this ferruginous character. Some parts of the mass are highly crystalline, presenting the appearance of liver rock, and suggesting the idea of fusion, while other parts of it appear more laminated, and have more of the structure of ordinary sandstone. It seems to be generally without those strongly marked characters arising, in the north of England, from the presence of included fragments of quartz pebbles. Its colour is also generally red or dun colour derived from the oxide of iron, instead of those grey varieties observed in the northern millstone grits.

BUILDING STONES OF THE COAL MEASURES.

We now come to a series of arenaceous building stones and flag-stones, interstratified with beds of coal, shale, and other argillaceous deposits, and occupying in all our coal fields a higher position than the millstone grit. These arenaceous stones are usually grits of a finer grain than the millstone, although they all contain the same disintegrated elements of granite, namely, the quartz, felspar, and mica, arranged, however, and aggregated in a different manner from that which prevails in granite. In the gritstones of the coal fields the quartz is usually unaltered, the felspar always decomposed, and the mica in small plates. Besides this, the grains do not adhere by chemical crystallization, as in granite, but the grains of quartz are cemented together by an argillaceous cement, derived chiefly from the felspar in combination with quartz, arising from the attrition of the quartz grains, and the small specks or plates of mica interposed in greater or less quantity are supposed chiefly to produce the lamination or splitting tendency of the stone. When there is little mica present, the stone becomes a compact and solid freestone, and when the mica is abundant the stone passes into flag-stone, and becomes more or less fissile. This description of structure applies also to the millstone grit, except that the latter is composed of larger and coarser fragments of quartz, and appears to have been aggregated under somewhat different conditions, which it is unnecessary to enter upon at present. It may be observed that though the millstone grit has been described separately from the coal grits, yet there are sometimes amongst these, beds which can scarcely be distinguished from the true millstone grit, and which answer the same purpose of millstones, rollers for apple-mills, grindstones, &c. The resemblance of the millstone grit to some beds of the coal measures is sometimes so striking that it is difficult to distinguish them, and in describing specimens which are not named by the exhibitor I may possibly have included some of the coal sandstones with the millstone grits, or *vice versa*; but no very great inconvenience can result from this, as the mineralogical character is so much alike.

The aggregate thickness of the sandstone beds in our coal fields is very considerable and very various, ranging from a few hundred to several thousand feet. Sometimes an immense mass of sandstones upwards of 2,000 feet in thickness occurs in the central part of the coal measures, separated only by a few thin beds of shale and coal as at Swansea, in the South Wales coal field. In the Bristol coal field, also, we have a mass of 1,800 feet, consisting of the upper sandstones and shales, succeeded by 1,700 feet of the central sandstones locally

termed the Pennant grit, uninterrupted except by a few thin coal and shaly beds, whose aggregate thickness does not exceed 10 feet. The freestones among the arenaceous beds of the coal fields are used for ordinary building purposes, and many of them are so free from decided lamination that they may be carved, sloped, or bevelled at any angle without reference to the planes of deposition, but of course they should always be placed on their natural bed in buildings, an observation which applies to all sedimentary rocks. Where much mica exists, the rock becomes a laminated flag-stone, and is then chiefly used for forming pavements, steps, landings, foundations of buildings, gravestones, and similar purposes. Some varieties of the thicker beds of freestone are used for sinks, troughs, cisterns, filters, &c.*

SAINT PANCRAS ALMSHOUSES—COMPETITION.

DESIGNS have been obtained by invitation from various architects for almshouses to accommodate 100 inmates, to be erected by a committee of this parish. The designs, about a dozen in number, are now hung in the Vestry-hall, Camden-town. We are not aware under what conditions they have been made, but there seems to be a considerable difference in the amount of accommodation given to each occupier by some of the designs beyond the others. In style they are nearly all Tudor, and all follow the received almshouse-type.

Mr. A. J. Baker has worked out his intentions fully, and gives two designs; one with fire-proof roof, flat; the second with wooden roof of high pitch. The entrances are at the back, the chimneys are thrown out in front, rising from the ground as at Wells.

Mr. W. J. Poulton's design has external stairs to the upper dwellings, and an arcade in front of the lower ones.

Mr. M. P. Manning's design (red brick and stone like the preceding and most of the others), has the committee-room with tower as an effective centre.

Mr. J. K. Colling has a similar arrangement in that part.

Mr. Legg has his houses in patches of six, connected by staircases. They are plain Tudor in style, and have a chapel in centre.

Mr. Webbe's plan is better than his elevation. Mr. Granville's elevation is not so tasteful as might have been anticipated from him. He suggests a common kitchen for eight inmates.

Mr. J. F. Wood's plan involves more waste of room in passages than some of the others. One creditable design is anonymous, and is marked *Industria*.

The decision will be made, we are informed, on Thursday 16th.

REALITY IN ARCHITECTURE—PRESENT POSITION.

THE ARCHITECTURAL ASSOCIATION.

THE opening conversazione of the Architectural Association for the coming session took place on the evening of the 3rd inst., at Lyon's Inn, on which occasion there was a numerous attendance of members and their friends. Among other visitors was M. Horeau, of Paris, an architect of reputation, and whose design for the Exhibition Building was greatly distinguished in the first competition.

The President (Mr. J. D. Wyatt) delivered an address on "Reality in Architecture," in the course of which he said, the principal characteristic of society in the present age was evidently an onward impulse, a determined spirit of inquiry, which, though it might occasionally be misdirected, was nevertheless to be hailed as a harbinger of a better time. Time-honoured theories and ancient systems, many of them resulting from prejudice and caprice, and tending to no other end than the perpetuation of imperfection, had become subject to scrutinizing inquiries, and received the impress of an approving seal only in that degree in which they were found to contain the truthful and the enduring. If we applied this test of reality to architecture, there was reason to fear that we should find it had

not kept pace with the otherwise universal progress; nor were the causes of this either contempt of architects, want of material, or public indifference, but a sort of incapability which caused architects, as individuals, to set up petty standards of their own, in defiance to the universal laws of art, and whence it resulted that our structures were often meretricious in design, or utterly insipid as to character. Architecture, to be worthy of the name, must be essentially truthful, true in design, true in expression, true in construction. As to the first requisite, there should be nothing merely supplementary, for correct features would naturally result from correct treatment. It was a great test of an architect's skill, to observe how he succeeded in converting trifles and difficulties into sources of instruction and delight; and, above all things, it was his especial province to fashion the work of necessity into one of beauty, and extending the dominion of his intellect over subject matter, to stamp it with the impress of a reasoning and reflective mind. As to truth in expression, while the superstructure of a building was necessarily much regulated by the block form, yet, in its development, with the *constructive science* should be blended the *decorative art*. The term *expression* included the two ideas of (1) *adaptation*, i. e. the so disposing the accessories of a building as to make it eloquent of its purpose, as at Newgate and the Exhibition building; and (2) *proportion*, in which the outline and minute details, as in works of Jones and Vanbrugh, exhibited throughout a strict relationship and unity of idea. There was also a kind of expression dictated by climate and locality. Serene Greece was admirably suited for the exquisite ornamentation of her temples; but an atmosphere less favourable than hers, demanded those coarse features, that careful and marked profile which were to be observed in mediæval art. Admirable as was the Parthenon on the summit of the Acropolis, the marked outline of Westminster Abbey was equally appropriate in the neighbourhood of the Thames.

With respect to truth in construction, it was useless to observe propriety of arrangement and form in design, if we did not act in the same spirit as to the practical embodiment of our ideas. Attention in this matter tended to encourage a healthy tone of art in the profession itself. Counterfeit materials were to be denounced as utterly unworthy of us. The reader then brought pointedly forward the question of polychromy in materials, and urged the great importance of colour as a valuable adjunct to the architect's resources. Very successfully had it been attended to in the great churches of Italy, and in the use of brickwork in Northern Germany. What was desirable was consistent effect, not violent contrast, nor a gaudiness that resulted from a sort of infinite patchwork of all dissimilar and discordant elements. The study was, indeed, difficult; but no man need ever expect to be great, either in art or in anything else, who would not rather glory in the occurrence of difficulties for the sake of overcoming them, than beat a cowardly retreat into insignificance, at the appearance of any obstacle whatever in his path. The chairman concluded by requesting the visitors present to honour the association with their observations.

On the conclusion of the chairman's address, Professor Donaldson rose and said, that, after the appeal and invitation made by the President to the seniors of the profession, he trusted he might be excused, if he trespassed upon the attention of the meeting for a few minutes. He thought that the members and visitors were much indebted for the address which they had just heard, for it contained many admirable abstract principles, much wholesome advice, and some valuable suggestions. But he hoped he might be pardoned, if he expressed the opinion, that the general tone of the address was too depreciatory of the present state of architecture. For his part he felt that the art was in a very hopeful condition, and he was the more impressed with this conviction from hearing the opinions of very many foreign architects, who had recently visited England, and were unreserved in their expressions of ad-

* To be continued.

miration of what they saw in this country. He felt that in this they were sincere, and he could account for their sensations. In their own countries generally, and more especially in France, their monuments were the productions of highly refined and well-educated minds. The government was generous in the funds appropriated to public buildings; and painting and sculpture, as handmaids of architecture, were properly employed to give every appropriate embellishment to their edifices. In fact they had their art intellectual and highly wrought. But we, with a niggardly government, as regards public buildings,—with ministers who rarely were able to appreciate art,—had to follow another path, that of public utility; and we had our art—an art of another direction and another quality, containing in itself elements of grandeur and simplicity, as witness our broad and well-paved streets and squares, our parks, our public institutions, which, with few pretensions to decorative art, had breadth of character and largeness of scale, and these impressed the foreigner. One, who at Paris had considered the English as barbarians in art, and unworthy regard for their imaginative qualities, came recently to London, and frankly acknowledged, "I should have visited England twenty-five years ago: a new world of thought is opened to me, and now in seeing what you have done in your country, I have other thoughts, and see architecture in a new point of view." Mr. Donaldson said, he felt convinced, that if all the difficulties of the English architect were considered, and people passed in review all the churches, colleges, lunatic asylums, workhouses, bridges, viaducts, country houses, prisons, and the various other public buildings which had been erected in the United Kingdom within the last thirty years, England need not be ashamed to be compared with any other country in Europe. He felt that the English architect had not full justice done him; that the present tone of criticism was to depreciate all modern works of architecture. He considered this very prejudicial to the progress of the art. The architect ought to be encouraged by seeking out his merits rather than by dwelling upon his defects; and instead of being depressed, he would be stimulated to higher efforts. The Great Exhibition was a great lesson for the architect, as it was for every other department of invention; and the noble and generous rivalry which it involved must be beneficial. All must have observed how brilliantly shine the foreigners in objects of taste; but there was that in the English character which would render such a comparison most useful; we had confidence in our own powers, a consciousness that a blind idea of excellence which did not exist is most hurtful; we feel that an effort is necessary to equal the ability we find in others; we seek progress, improvement, excellence; and with a determination to produce these, success cannot be doubtful. Architecture must advance with the general development of nobler qualities throughout all the productions of intelligence and beauty which must now take place for years to come. The Professor concluded by recommending the younger members of the profession to note as more instructive the beauties rather than the defects of all works of art that they saw, and they would thus lay up a valuable store of rich materials for future applications, and accustom their minds to beautiful thoughts alone, without encumbering their memories with deformities, with which a spirit of adverse criticism is too apt to overcharge the thoughts and feelings.

At another part of the evening Mr. Donaldson said, it would be well if young architects went through a course of chemistry and geology. He referred to the great advantages offered by University College and King's College, under the most experienced masters. As to composition of papers, though of course all gentlemen were not gifted alike, still, if members would write naturally and content themselves with simple relations of facts and observations, it would be very useful in results.

Mr. H. T. Braithwaite said, in reviewing the events of the association during the past session, he might be permitted to congratu-

tulate it on a marked advance; and it was the more allowable for him, although himself a member, to do so, because of a sort of amphibious quality, by which he had the privilege of existing both in the architectural element and out of it. For the amateur was, as it were, a double-natured or double-minded animal,—not in the hypocritical sense, but in that which rendered him a link between the profoundly professional and the superficially ignorant. He also (the amateur) was the interpreter to the many of the languages spoken in the scientific and artistic worlds. This he said, not as wrote excellent Martin Tupper, to glorify his office, but to show that he had a right of double sympathy, and was, therefore, justified in congratulating the association, although, as far as he might, he belonged to it. In the course of papers read during the last session, they had ranged through every elevation of subject, from the loftiest summits of speculation to the lowest depths of ordinary practice. There dreams and facts,—bright imaginations and solid realities,—had displayed themselves by turns in all their varied importance. That the Architectural Exhibition was settled on a securer basis must be a matter of satisfaction to all who had still any position or reputation to gain. Notwithstanding the discord between the muses at the Royal Academy,—although Painting was playing Coneril to their poor Cordelia,—still would Architecture assert her position, and re-arise in renewed security.

Mr. Robert Kerr and Mr. Creke also addressed the meeting, the latter urging that the society should incorporate itself.

ARRANGEMENT OF SMOKE FLUES.

ALLOW me the advantage of your very useful publication to offer a few suggestions to architects and builders on the subject of chimneys. Their appearance in half the streets is a disgrace to the town; and with respect to the purposes of their construction, they appear to me equally open to objection. But to render this apparent, and what I propose as improvements obvious, let us first inquire the purpose to be fulfilled in the construction of a chimney. This, it will be replied, is to convey away in the most convenient manner the smoke and gases of combustion from the fire-grate. True: we know, however, that it does more—that the chimney as it becomes heated, operates as a draught and encourages the ascent of the smoke. In addition to this, it is, however, equally well known to afford a channel for a downward current of cold air.

The arrangement of a stack of chimneys as at present constructed, is that of a series of perpendicular shafts running parallel with each other, from the fire-grate of every room, to the house-top. Instead of which, my plan would be, the adoption of one central shaft, rising from the kitchen grate in the basement floor, into which the smoke from all the other fires in the house should be conveyed by oblique tubes in connexion with it; these cylindrical tubes being made valvular, or not, as may be found necessary.

The advantages of this arrangement, I conclude, would be as follows: first,—that of cutting off the downward current of cold air from the chamber containing the fire, excepting the kitchen. Second—augmenting the draught, and preventing the smoke from returning into the room (as in cases of smoky chimneys), the increased temperature of the central shaft and greater elevation fulfilling the purpose. Third—the preservation of the furniture and cleanliness, the sweeping being effected from the central shaft, and this opening into the kitchen. Fourth—economy, both in space and expense of construction, there being but one chimney instead of a dozen. Fifth, and last—improved appearance:—see how sadly house-tops are now disfigured by the multitude of chimney-tops and other devices in use for the cure of smoky chimneys—all of which, I imagine, would be rendered unnecessary by elongating the central shaft.

And next, Sir, in relation both to the cure of smoky chimneys and the ventilation of our apartments, I would beg leave to make an-

other suggestion. It is an established fact, that each pound of coal requires for its combustion about five pounds of atmospheric air; and as, in the present arrangement of our fire-places, this quantity can only be obtained when the room-door is shut by currents of air drawn down the chimney, and through the apertures of the door and window-frames, subjecting every person in the apartment to great inconvenience, I propose to supply the amount of air required from a shaft or tube descending down or parallel with the smoke-shaft, by a pipe in connection with it, and terminating by an oblique opening downwards into the asphalt of the grate, or other suitable situation below the fire-bars. Or I would supply the fire of the chamber above with air from the chamber below, and thus ventilate the apartment, allowing it to pass between the petals of a flower, or other ornamental device in the centre of the ceiling, and thence conducted, between it and the floor, by a tube to the fire, admitting it, as in the former instance, below the grate by a suitably protected opening.

C. SEARLE, M.D.

THE BRITISH MUSEUM.

IT has always been my conviction that in order to render architecture popular, it should be associated as much as possible with public convenience and gratification; so that besides the mere impression arising from beauty and grandeur, there may be the more general and intelligible satisfaction derived from the actual use and benefit afforded, and consequently a disposition to acquiesce in the public expenditure for such purposes.

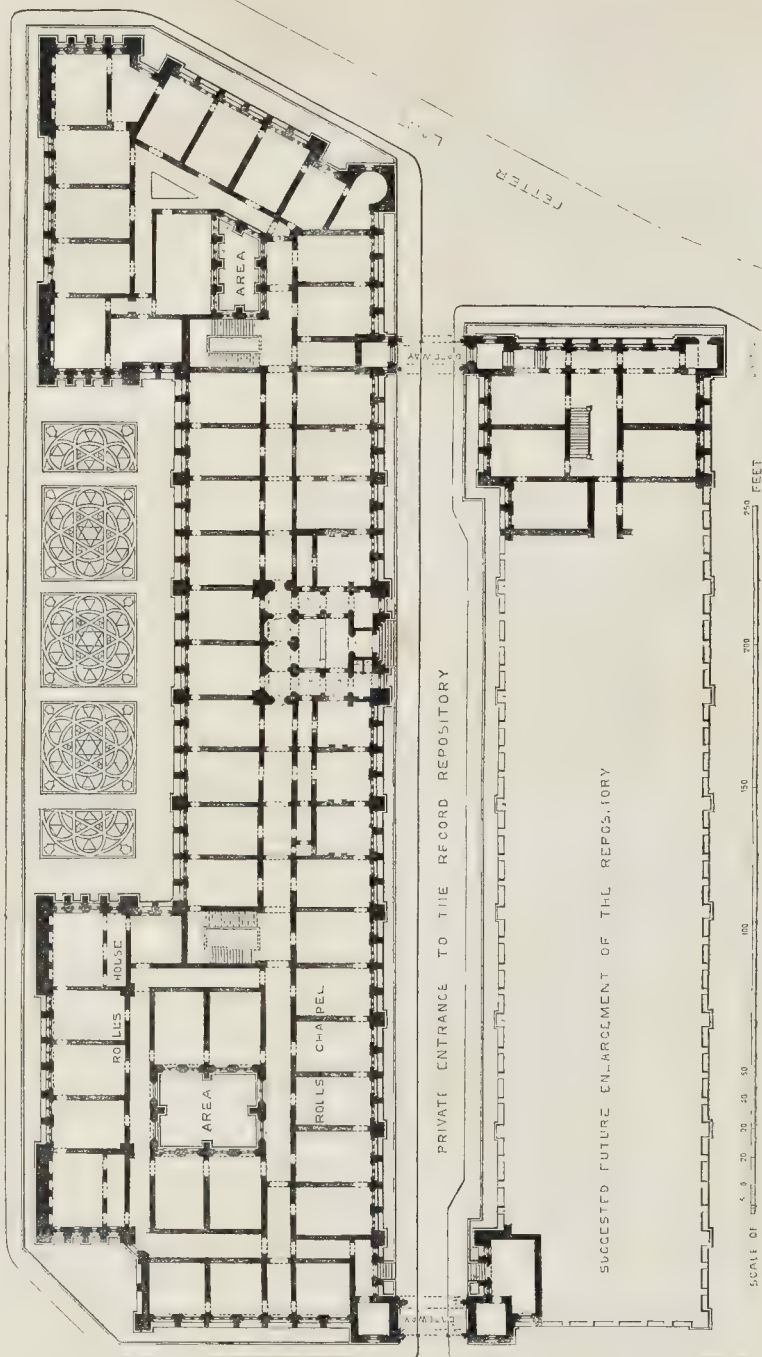
I was led into this reflection when, passing through Great Russell-street the other day, I observed a considerable crowd of persons waiting for the opening of the British Museum; and, as if to render the circumstance the more striking, the people were prevented by the police from occupying that side next the building, where there could be no persons to be accommodated, and were actually compelled to stand along in front of the opposite houses, inconveniencing the inhabitants and the public, and exposed to all the chances of the weather. These circumstances naturally make one exclaim with some indignation, what is the use of a spacious court and stately porticoes, if they are to be thus churlishly withheld from the public at the time and for the very occasion for which, if they have any use, they are obviously adapted? It might be curious to learn what official or formal objections might be alleged to justify this exclusion, after the test to which the good manners of the people have been of late so extensively and successfully subjected? In default of all reasons, I can only attribute this to the same unhappy feeling of official exclusiveness which used to pervade all public matters of this nature, and which has been put to shame, and its effects almost extinguished by exposure to a comparison with the more liberal and enlightened policy of our continental neighbours.

VIATOR.

MR. W. TYSON, F.S.A.—It is with the deepest regret we have to record the death of an old and valuable inhabitant of Bristol, Mr. W. Tyson, at his residence, Dove-street, Kingsdown, in his 67th year. He has passed nearly his whole life in that city: in the early part of his career he was with an eminent lawyer, Mr. Coates, after which, always having a leaning to antiquarian researches, he took a shop in Clare-street for the purpose of selling old and curious works. Ultimately he became connected with the *Bristol Mirror*, on which he has been occupied for the last twenty-five years of his life. From his pen we have read many able and interesting papers, more particularly on the antiquities of Bristol. As one of his contemporaries says, "One of the boundary stones of Bristol is gone." Mr. Tyson was a Fellow of the Society of Antiquaries, and he took a very active part, as may be remembered, in the Archaeological meeting this year: he was the local secretary, and read some very curious papers. We knew him personally, and esteemed him highly.

CAREY-STREET.

PROPOSED NEW STREET FROM THE WEST END TO THE CITY



GROUND PLAN OF THE NEW RECORD OFFICE.

[See page 635, in our present number.



THE NEW RECORD OFFICE, CHANCERY-LANE.—MR. PENNETHORNE, ARCHITECT.

[See page 635, in our present number.]

SIGHTS AND SCENERY.

The Lyceum Theatre.—In the "Game of Speculation" played here, the management have found a trump-card, and are clearing the board. It is a capital piece of writing (the pith by Balzac), shrewd and witty; and furnishes Mr. Charles Matthews with one of the best parts that he has ever had. *Mr. Affable Hawk*, who, having paid away all his gold, now pays in brass, is a speculator of no common mould, represented in no common way;—an accomplished scamp, cool, eloquent, and fertile, who could talk a bird off the bushes, and, Sheridan-like, transform by a touch the implacable dun into a sympathising friend. A more finished piece of acting has seldom been seen. One has a suspicion of evil in the gloss thrown over indifferent principles, but this is forgotten in enjoyment of the delineation. *Earthworm* (Mr. F. Matthews), *Grossmark*, and *Hardcore* (Suter), are three phases of the creditor, very cleverly portrayed.

The Adelphi Theatre—*"Bloomerism."*—The laughable farce under this title at the Adelphi will not injure the movement. Miss Woolgar and Miss Fitzwilliam look so well and act so well in the new costume, that some will think the whole has been arranged by those clever ladies who are now striving to emancipate their sex. We went the other night to a Bloomer demonstration at Miss Kelly's Theatre in Dean-street, and must admit that the real-earnest disciples were less striking in appearance than their merry imitators at the Adelphi. It is due, however, to the "American Lady" who lectured on that occasion, to say that she made an exceedingly good case for the sex, and by her earnestness, simplicity, and apparent goodness, triumphantly silenced the few that went to scoff. The lecturings and exhibitions of *Bloomerism* are bad, but we are disposed to think that the result will be an improvement in female costume. Whether or not, however, this be the case, we will venture to say that "*Bloomerism*" will hold its place for some time at the Adelphi. Another bloomer at this theatre, is "*The Forest Rose*," wherein Mr. Silsby, the best American low-comedy actor that has yet been on this side of the "big drink," plays with genuine humour.

NOTES IN THE PROVINCES.

Eton.—The College authorities have granted a site for a new chapel near the present one, and a committee has been appointed by the parishioners to promote the object in view. The probable cost of the chapel will be about 5,000*l.* Of this sum about 2,000*l.* have already been subscribed; and a sub-committee has been directed to confer with some architect of eminence as to the design, and to report.

Caversham.—The chief stone of the new church of Kidmore End, in this parish, was laid on Monday in last week. The church is from a design by Mr. Arthur Billing, architect. It is in the Early English style. The plan is that of a double parallelogram, consisting of a nave, chancel, north porch, and small vestry; the nave being 60 feet long by 22 feet wide; and the chancel 17 feet by 20 feet, the east end of which is of an apsidal form. The nave is lighted with simple lancet windows on the north and south sides and at the west end. Between each window a buttress of two stages is introduced, dividing each side of the church into four bays: in the second of these, on the north side, is the porch, which is of stone, with timber roof of open framework. The west front has a gable turret of a simple character. The chancel is lighted by seven trefoil-headed lancet windows. Beneath the eastern window, on the south side, is a recessed stone sedilia, for the officiating clergy. The chancel will have a groined stone roof, supported by columns. The chancel arch embraces the whole width of the nave. The roof of the nave is to be of open framework. The sittings are to be free, and will accommodate 220 persons; they consist of plain open benches. The wood-work is to be stained and varnished. The walls are built of flint, with Bath stone dressings and quoins to the windows and buttresses. The exterior walls, to the height of about 5 feet, have been erected.

Ospringe.—The new parish schools of Ospringe were opened by the Archbishop of Canterbury on 1st inst. The buildings are for the accommodation of a master and mistress and 100 children. The site has been given by the Fellows of St. John's, Cambridge, and the subscription headed by the vicar, Rev. William Nathaniel Griffin, with the munificent sum of 100*l.* The design is by Mr. Martin Bulmer, of Maidstone, and carried out by Messrs. Day and Whitby, of Ospringe. The whole cost is about 480*l.*

Holywell.—On 29th ult., the foundation-stone of a new church was laid at Brynford, parish of Holywell. This is one of the two churches to be erected in the parishes of Holywell and Whitford, in lieu of the one built by Lord Fielding at Pantasa, and transferred by him to the Romanists.

Wolverhampton.—A new Roman Catholic Church is about to be erected here, according to the local *Chronicle*. The building will be of the Early English style of twelfth and fourteenth centuries. It will, when completed, be a cruciform structure, having a tower at the intersection of the nave, the chancel, and the transepts. The length of the building from the west entrance to the temporary position of the altar, previously to the erection of the chancel, will be about 110 feet, the transepts measuring from one extremity to the other, about 96 feet; and its width, embracing the side aisles, 66 feet. The interior height of the nave will be about 50 feet—that of the side aisles being 20 feet each. The exterior of the west front will be about 70 feet high. The west window will have six lights, ornamented with flowered tracery; its height being 28 feet and its breadth about 16 feet. The clerestory will be lighted by ten depressed pointed windows on each side. Only the nave will at present be proceeded with. The church has been designed by Mr. Hansom, architect, and will be built by Mr. Wulson, of Wolverhampton. Its total cost has been estimated at upwards of 10,000*l.*

Wirksworth.—Tenders are being sent in for lighting the church with gas. Other improvements are talked of, one of which would be the removal of the colossal pillars supporting the loft, which are said to be more suitable for the basement of a large bridge than for the bearers of a light gallery.

Westhoughton.—The first stone of the new Sunday and day school, with master's house attached, was on Wednesday week laid at Wingates, in Westhoughton, by Mr. John Silvester, of Atherton, who, according to the *Bolton Chronicle*, has guaranteed the cost of the buildings, about 700*l.* The ground was given by Mr. Starkie, of Huntroyd, and the Earl of Ellesmere is one of the largest contributors. The schools are intended to hold 250 children.

Newark.—The Improvement Act Committee, says a local paper, "met on Friday last to consider the applications and testimonials of candidates for the office of Surveyor and Inspector of Nuisances. We learn that five persons applied. It seems, however, that the committee was not sufficiently satisfied with the abilities of any of the candidates: no appointment was therefore made; but Mr. Bailey, one of the candidates, was instructed to survey the town, and prepare plans of the work needful to be done. If such plans are approved, and Mr. Bailey is considered competent in other respects to fill the office, he will be recommended by the committee to the commissioners, and if not appointed, he is to be paid for his plans. An opinion is very prevalent in the town, that it would be best to employ an experienced engineer to make a survey, and suggest a plan for draining and otherwise improving the town, and so lay a good foundation for the commissioners and their agents to work upon."

Hessle.—The church of Hessle is to be restored and enlarged. The south wall is to be taken down and rebuilt, extending five or six feet into the churchyard, thereby forming a wide south aisle, with seats or pews holding seven persons each. The centre of the church is to be repewed on a similar plan, and the three aisles, north, south, and centre, conti-

nued nearly up to the west door. 200 additional sittings will be obtained. The estimate of the alterations is 800*l.*, to be raised by subscription and mortgage.

York.—The works of the new church in Holgate-road are completed, and the opening of the church was fixed for Tuesday last. It has been erected by private subscription, and is to be opened by licence, as it cannot be consecrated for want of an endowment. There is still wanting about 400*l.* of the expense of erecting the building. The North Riding of Yorkshire Lunatic Asylum, says the *Staffordshire Advertiser*, "which was estimated and guaranteed not to cost more than 30,000*l.*, has already had three times 30,000*l.* expended upon it, and the contractors are vigorously going on with the fourth 30,000*l.*"

Dalmellington.—The "free" church lately erected here, according to the *Ayrshire Advertiser*, was opened for public worship on Sunday week. It is situated at the western entrance to the village, on the road from Ayr. It is in the plain Gothic style, having buttresses at each front corner, pinnacles in the middle, 55 feet high, on each side of the doorway, large window above, and finished on the top with bell turret in the centre. The building is 50 feet in length, by 40 feet in breadth within the walls: the height of side walls is 18 feet, and to the ceiling 27 feet. It affords accommodation to 400 sitters. There is no gallery. The church and vestry are lighted with gas. The plan and specifications were prepared by Mr. David Millar, architect, formerly of Glasgow. The contractors were Messrs. W. and R. Anderson, Dalmellington, for mason work; Messrs. Steven and Cameron, Glasgow, for wood, wright, and plaster work; Messrs. W. Hight and Son, Ayr, for slater, plumber, and gas-fitting, &c. The cost of the whole will be somewhere about 700*l.*

ARCHITECTURAL AND OTHER NEWS IN IRELAND.

Additions are to be built to each end of the Tullamore Union Fever Hospital, and two stories to be raised on same, according to plans, &c., by the Poor Law Commissioners' architect.

Sundry contract works to the amount of 2,000*l.* are being executed at the barracks of Athlone, for her Majesty's Board of Ordnance, by Messrs. Cockburn and Son, of Dublin.

The contract for completion of the works on the Killarney Junction Railway has been taken by Mr. Dargan, but operations will not commence until February, 1852.

Sundry contract works to the amount of 2,000*l.* are being executed at Athlone Barracks for her Majesty's Board of Ordnance by Messrs. Cockburn and Son, builders, Dublin.

A new wing is to be erected at the Dungarvon Union-workhouse. Mr. Matthew Byrne is the builder at 1,085*l.*: the works have commenced.

The new Roman Catholic Church at Rush has been lately dedicated: its total length is 93 feet and its width 40 feet: it is calculated to accommodate about 2,000 persons.

The Pavilion in the city of Armagh has, we understand, been purchased by Dr. Cullen, Roman Catholic Primate, for the purpose of its conversion into a convent, &c.

The Midland Great Western Railway Company are about forming a branch line from Mullingar to Cavan. Mr. G. W. Hemans and Mr. Atkinson will be the engineers in chief in its construction. A sum of 71,000*l.* (out of 300,000*l.* granted by Government to the company) is at the disposal of the directors, and they purpose appropriating it to the construction of a branch line to Tuam.

The Commissioners of the Board of Public Works issued up to the 31st December, 1850, 1777,954*l.* Treasury loans in Ireland for drainage, subsoiling, and construction of farm roads, &c. The balance for further appropriation is 130,760*l.* The average cost of thorough drainage was 4*l.* 10*d.* per acre, and 30,000 acres were improved last year.

Extensive additions and improvements are being made to the docks at Limerick under the direction of Mr. Long, C.E.: they have

been minutely inspected by the American ambassador.

St. Paul's Church at Belfast was consecrated on the 30th September by the Bishop of Down.

The Fergus Drainage works are to be resumed, and the necessary capital has been placed at the disposal of the Board of Works by the Government.

COMPETITION SCULPTURE.

YOUR journal being open to all, I beg to present you with the following extract from a work published in 1687, and which may be applicable to the present times. It runs thus:—

"Hints to ye statuarys of ye present tymes, by which ye committee of taste may find pleasure in ye work; or, how to furnish out a statue to suit ye good taste of ye committee.

Primo.—Break ye ye spine of ye statue, it gains elegance of line, and aids in twisting ye body and ye hips to ye liking. Secundo.—Dislocate ye neck of ye statue and twist ye head violently round to ye right or left, so that much vigor may therefore be made to become apparent. Terzo.—Let ye pectorals be broad and ye deltoids massive, with ye knee pans well shewn and ye stomach of exceeding great dimensions.

Dress ye figure in ye costume of ye day, but be it so arranged that ye committee of taste (or contrarywise) may see it grow from ye statue. Rub it down well with ye mop or handwiper, and then print in ye *Times*, ye *Flying Mercury*, or ye *Magazine for Gentlemen*, that it be completed; but, above all, get ye the money first!"

BON.

THE DONCASTER WATER-WORKS COMPETITION.

THE plans and specifications lodged in response to the offer of a premium of 100*l.* for the selected scheme, having been examined by the borough engineer, Mr. Alexander, he reported on the same to the committee, who adopted his report and laid it before the council, who have confirmed the same, and awarded the premium to the successful competitors.

The engineer found that the correct number of designs was fifteen, not seventeen, as stated in the council, two of the parcels consisting of specifications and estimates to plans amongst the fifteen lodged. The reporter enters at length into the merits of each design, and presents the following "Analysis" of the whole:—

"It appears that the competitors have selected various sites, some offering designs for one site only, some for two sites, and one for three sites, and which may be classed as follows; namely, for the

Present works, there are designs Nos. 4, 5, and 8, the estimates with the additions varying from 9,247*l.*, 10,260*l.*, to 8,201*l.*

Dispensary site, there are designs Nos. 1, 5, and 13, the estimates with the additions varying from 13,386*l.*, 10,260*l.*, to 9,337*l.*

Marsh-gate site, there are designs Nos. 2, 6, 9, 10, 11, and 12, the estimates with the additions varying from 11,053*l.*, 10,782*l.*, 9,925*l.*, 8,740*l.*, 12,046*l.*, to 15,150*l.*

Crimpsall site, there is one design, No. 15, the estimate with the additions being 11,750*l.*

Beyond the boundary of the borough, Isabel Wath site, there are designs Nos. 2, 6, and 7, the estimates with the additions varying from 10,697*l.*, 9,580*l.*, to 9,180*l.*

Don Cottage site, there are designs Nos. 2, 3, 5, 11, and 14, the estimates with the additions varying from 10,708*l.*, 10,290*l.*, 11,783*l.*, 10,724*l.*, to 13,685*l.*

Several of the plans, he states, evince much scientific knowledge and experience, eleven of them being from professional engineers, seven of whom are employed at the present time in works of a like description.

As to the selected design, the reporter says:

"I have not the least hesitation in advising your approval of the plan and design No. 6, a site within the borough, as being the best and most applicable to the locality, in compliance with the advertisement and instructions, and calculated to secure an ample, continuous, and unrestricted supply of pure filtered water to the whole town. It is not the least expensive, but it is below the

average of the estimates generally. The arrangement of the system is compact, comprehensive, and scientific—full and practical in all its detail, exhibits great experience, and a thorough knowledge of the subject. The works are not of greater extent or magnitude than prudence or foresight dictate, regard being had to the increasing population of the town."

The successful competitors are Messrs. Nicholson and Tone, of Newcastle, engineers. They say in their report to the council that,

"With reference to that part of the advertisement requiring the party to be prepared to undertake to execute the works, if required, for the sum estimated, we beg to state that not being ourselves engaged in contracts, nor in executing public works as contractors, we have laid our plans and specifications before Mr. Richard Cail, of this town, a highly respectable and responsible contractor of public works, who has had great experience, and that he is prepared to execute the whole of the works comprised in the plans and specifications for the sum of 9,890*l.* 3*s.* exclusive of land, and to give satisfactory security for their completion. And further, if our plans be adopted, the engine, boilers, pumps, &c. together with the Edenfield malleable iron tank, will be supplied and erected by Messrs. Robert Stephenson and Co., the celebrated engineers, of this town, whose well-known character will, we hope, be a sufficient guarantee that they will be efficient and of first-rate workmanship."

To their report is appended an alternative scheme for taking the supply from the river at Isabel Wath; their chief design being applicable to Marsh-gate. There is also a rider relating to sites beyond the borough.

THE CONDITION OF OUR POOR—THE FEMALE POPULATION.

MUCH has been said in your valuable Journal about dwellings for the poor and lodgings for workmen by "Tabitha Quiet" and others, all desirous of bettering the condition of the class in whose behalf they write; and that it greatly needs amendment none will deny; but upon the question how this object is to be effected there exists great disparity of opinion. For my own part I feel obliged to answer in the first place negatively, not by merely building model lodging-houses, however cheap or numerous, or however well adapted the arrangements, nor yet simply by a good supply of water, light, or air: these, although quite indispensable, are not by themselves adequate to the removal of the evil, of which daily observation has convinced me. You will ask, then, where is the source of the evil, and in what corner doth it hide itself? I believe it is to be found in the *bad management of our youth*. The nature of my employment brings me constantly in contact with the working population of both sexes; and I am often grieved at what I see and hear, and almost shudder when I reflect that the children of this age will be the parents of the next. What can be expected from nine-tenths of these youths, and especially from the softer sex? And I feel confident that the greatest source of moral evil is to be found in the want of proper education for the female population. By education I do not mean simply reading, or writing, or anything which may be learned at school, but that home education which is so invaluable, and which cannot be learned or taught in any other than a domestic school. How fearfully deficient the present age is in this kind of education may be seen by the crowds of girls of different ages that are to be found about every low locality; and well would it be if wives and mothers were not seen lounging about the corners of the streets, or in the houses which are generally placed at the corners—the pawnshops and gin palaces.

What is the result? The husband coming in from his work, expecting a frugal but comfortable meal, finds, instead, a piece of tough steak, badly cooked, and worse served, at a cost greater than that of a good meal. And if he can spare time to look round him, what does he witness but his children half naked and half wild, and his apartment in a state of dirt and untidiness. What can we expect the children of such a home will be? It is quite evident that the daughters will neither be fit

for servants, wives, nor mothers: a step lower, and they become the pest of society.

Inseparable from the evils I have spoken of is another—I mean improvidence. The wages of the working classes are as high as I ever knew them to be; and I think that everything the working man has to buy is cheaper than ever I knew it to be before. But what is he the better? Nothing. Nor would he be if his pecuniary advantages were doubled: all would go—all would be spent, for few of them live within their means.

A short time since I mildly remonstrated with two men, who were earning at the rate of 2*l.* per week each. I suggested the propriety of laying by a little to meet any future emergency, either of accident or old age; but the melancholy reply was,—"There is a hospital for accidents and a workhouse for old age, and the parish must support me!" This, I am sure you will admit, is a deplorable state of things; but it is true in thousands of instances. This want of prudence and self-respect produces ten times more pauperism than any calamity brought on by causes over which they have no control. I know there are many admirable exceptions, but they are exceptions.

I should advise our friend "Tabitha" to visit some of the low districts I have hinted at. Let her perambulate the neighbourhood of the Seven-dials and Drury-lane, and the streets, lanes, and courts connected. She should enter as many of the dwellings as she could, examining them floor by floor, and room by room. What scenes of poverty, filth, and wretchedness, would she not witness, and this even in houses where there is no lack of water, light, or ventilation, or rather, I ought to say, the means of ventilation; for in many cases the inmates are either too idle to pull down a sash, or too ignorant to know what beneficial results would ensue if they did so. Let me then suggest to those who have in view the welfare of the working classes, not only to make dwellings fit for the poor, but, if possible, to make the poor fit for the dwellings.

C. M. E.

MEANS OF PROMOTING THE AUDIBILITY OF SOUND.

THERE is perhaps no science so abstruse and difficult to be understood as that of acoustics; nor one for the practical application of which so few opportunities present themselves. For these reasons it has fallen into much—may be, too much—disregard.

One occasion, at least, there is, in which it might be directed to a valuable purpose, I mean that of devising some mode by which the voice may be rendered more audible in large churches, the Houses of Parliament, and other places of public speaking, which demand uncommon power of the vocal organs.

Hitherto, all means of accomplishing this end have been confined exclusively to sounding-boards, which, to a certain extent, answered the purpose well, and if I do not greatly err, their abandonment will eventually be found one of the worst mistakes which has been committed in the modern practice of church-building. Whoever feels desirous of ascertaining the effect of sounding-boards, so far as their influence can reach, may satisfy himself by an easy experiment; and he had better feel content with nothing short of it, as theory, however valuable upon many occasions, avails little here. Let him on a weekday, when the church is empty, speak from any pulpit which has a sounding-board over it; then let him mount a ladder placed against the next column, and speak from the same level. Our ancestors understood this subject quite as well as ourselves. In an experiment of this kind, which I made some years ago, the proof was clear to myself and all present.

But other modes of promoting the reverberation of sound with yet greater efficiency I cannot doubt may be adopted; such as ornamental sounding-boards slightly concave, somewhat like a scollop-shell, and placed at the distant angles of the building, and perhaps also against the ceiling, according to the construction of the room.

It would require some experimental know-

ledge to enter into practical details on this point. I shall only venture therefore to offer these remarks as mere suggestions, in the hope that others possessed of more opportunity and skill to investigate this subject than myself, and whose business it more immediately concerns, might take it up in practical earnest, whereby the weighty matter involved in public orations might not be lost upon the audience, as happens but too often, under present circumstances.

JAMES BILLET.

Books.

The Traveller's Library, Nos. 6 and 7.—*Residence in Norway*. By SAMUEL LAING. No. 8.—*Rankke's History of the Popes, and Gladstone on Church and State*. By T. B. MACAULAY. Reprinted from "Critical and Historical Essays." Longman and Co., London.

THE steady continuance of these new issues is a proof of the sustenance of the railway and other demand for such classical selections, as we may call them, from our already approved literature. Laing's Norway contains throughout some interesting remarks on buildings; we may here quote his account of Dronthiem Cathedral.

"I went to see the far-famed cathedral. It does not impress the traveller who has seen others either with its magnitude or its beauty. It has nothing picturesque, whether viewed near or at a distance, and it has attracted little notice from the English or other foreign travellers. It is, however, a very remarkable and interesting structure. There are parts unquestionably as old as the year 1033. Few if any of the churches in England, which are considered to be of Saxon architecture, are known as belonging to that period, being about the time of Canute the Great; and any which, from the style of architecture, are considered to be older than the Norman Conquest, are objects of great interest; and the style of arches and ornaments has given rise to many curious speculations. This cathedral would, therefore, deserve the careful examination of those conversant with the subject. There are parts of the fabric which have evidently been rebuilt at various periods, as the structure has frequently suffered from fire, and the old finely cut stones have in many places been built into the present walls without any distinct reason; in some places forming arches, and in others pillars supporting nothing, but merely put in, because they were considered ornamental. The barbarous taste of those who at present have charge of this curious building is much less excusable. Workmen are actually employed in painting over the whole of the stone work, of a sort of light-blue colour, which they think more beautiful, and more like stone, than the beautiful stone itself of which the fabric is constructed. They are picking out, as our house-painters call it, in white paint, the traceries, grotesques, and ornamental pillars, so that the whole exterior resembles very much the stern of a Dutch galliot. It would require some time, and more knowledge of the subject than I am master of, to consider this structure properly, and to distinguish what is original from what is of a later age. * * * * *

I have paid a daily visit, since I arrived, to the cathedral, and, as I intend to move to-morrow, shall put down all that I have read or observed concerning this structure. King Olaf Haraldsen, who appears to have been the most blood-thirsty tyrant who was ever canonised, was killed by his subjects in a battle at a place called Sikklestad, north of Dronthiem, in the year 1033; and his body was interred in a church still standing, which he himself had built in that city and dedicated to Saint Clement. As Olaf reigned fifteen years, this building must have been erected between 1018 and 1033. As this monarch introduced Christianity by fire and sword into his dominions, and was killed by the peasants whom his cruelties had driven into revolt, he was canonised: his shrine became the most distinguished in the north of Europe, and one of the most frequented by pilgrims. The cath-

edral was founded in the year 1180 or 1183, close to this church, which forms a chapel at the east end of it. The west end, now in ruins, was not founded till the year 1248, and in the end of the thirteenth century the whole structure must have stood in its splendour. The extreme length has been 346, and its breadth 84, English feet; but the west end, which contained the grand entrance, had a chapel at each corner, making the breadth of that front 140 feet. The transept and east end are the only parts roofed in, and now used for Divine service. The western, once magnificently ornamented, is now used as a timber or store-yard, but the outer walls still rise to the height of the arches of the lower windows, which are pointed, and of the spring of those which have joined the outer walls to the pillars of the aisles; but these are all demolished. The grand entrance in this front was by three doors, now all built up, and in their place buttresses support this end of the wood-yard. This front was adorned with a row of twenty arched and delicately cut niches above the three entrance gates, and below these, on each side of the entrances, a row of ten pointed arches with ornamental ones within them. The ten have rested upon slight pillars, and those within have joined and ended in a carved flower. The niches have been exceedingly rich in finely carved fret-work and mouldings, and they still contain five full-length statues more or less mutilated. From the folds of the drapery, hands, and hair of the heads, they could not have been the work of the same age or country which produced the grotesque masks and figures which are strewn with profusion over the most ancient parts of the building. They are of a different taste and school from those figures in the cathedral of Amiens and other churches of the same period; and the celebrated figure of the goose-footed queen, on the portals of four French cathedrals, which has given occasion to so much learned conjecture, could not probably be ranked with these. They display considerable merit, and deserve the examination of a competent judge. The upper works of the transept and east end, being all now roofed in, have probably been rebuilt at various and comparatively recent periods. By these, I mean all above the first arches, or those springing from the ground. I conceive that all this higher part has originally been only of wood, for the cathedral is said to have frequently been burned. Now fire would consume the roof and wood-work, but not the stone walls. At all events, the stones, not being calcareous, would have remained though the walls had tumbled down. But there is on the spot no rubbish, no heaps of ruins, and in the adjacent houses no stones, which originally belonged to the cathedral: having all been squared, they would have been easily recognised. Hence I suspect that, when the wood-work has been consumed by fire at different periods, the stones of the aisles and arches within the shell now remaining of the west end have been employed to build up the present walls of the transept, and other parts which were originally of wood. Thus we may account for the paltry taste and execution of all the upper part of the structure, and for the insertion of cut stone mouldings of arches where an arch could never have been intended; but the stones have evidently been built in from other places, while all that is below, and could not possibly have been injured by any conflagration, is original, and, from its antiquity, style, and execution, very interesting. The round arch with the zigzag ornament, which we call Saxon, is employed in all this old part, and also in Saint Clement's Chapel. The present entrance in the north transept is a fine specimen of both. But this simple massive style is mixed with light pointed arches, adorned with grotesque heads, flowers, and all the variety of ornaments which are usually considered peculiar to a much later period of Gothic architecture; but here the two styles are evidently coeval. It shakes the theory of the Saxon and Norman, the round and pointed arch having been used exclusively in particular and different centuries, and affording ground to determine the comparative antiquity of Gothic edifices. The Norman

arch, in its most florid style, is here connected with the Saxon in its most simple and massive form, in a building where the known date of the portions containing this admixture is more ancient than the ascertained date of those English edifices from which the theory is derived.

There has been a good deal of ingenious writing about the origin of Gothic arches. The interlacing of the boughs of tall trees in an avenue, as it has something of the effect, has also been considered as the original model of the interior of the Gothic cathedral, and what the earliest architects may have proposed to imitate. The origin is probably much less picturesque. The people of the north of Europe, before their conversion to Christianity, buried their dead, like all barbarous nations, with their arms and implements, and even their horses, slaves, and sometimes their wives. On the sea-coast, the boat or ship in which the chieftain sailed was laid over the body, and the tumulus was raised over its hull. This circumstance repeatedly occurs in the Saga; and the ship-tumulus is distinguished by all Scandinavian antiquaries as distinct from the round heaps or mounds of earth raised over stone coffins or other receptacles. Its inside would be exactly a Gothic building in wood; and the main body, the nave (*navis*) is called the ship of the building in the ancient northern languages, probably in reference to this origin."

The curious will find a minute description of the cathedral of Saint Olaf, its 316 windows, its 3,361 pillars, its 32 altars, and all the rest of its magnificence, in a quarto volume, published at Dronthiem, in the year 1762, by Gerard Schöningh, rector of the high school there; an antiquary whose works are held in high esteem by the learned in Scandinavian antiquities.

Miscellaneous.

WHAT A HODMAN CAN DO.—Many people turn up their noses at what they call "dirty work," as though all honest labour was not cleaner than many kid glove ways of swindling one's way through the world. Rather than owe our living to the latter, we would infinitely prefer to shake carpets or sweep chimneys at fifty cents per day. A day or two since, we learned an instructive bit of history touching a doer of "dirty work,"—a hodman. No matter where he was born: he was none the worse for being a Turkman or an Irishman. He came to this city about ten years ago, young, healthy, and honest. He could get no employment but hod carrying, and he carried it so well as to earn at once his dollar a day. He procured cheap but good board and lodgings, spent none of his earnings in saloons or low places, attended church on the Sabbath, educated himself of evenings, laid up money, and, at the end of five years, bought a lot in the city, and built a pretty cottage. In one year more he found a good wife, and used a cottage before rented out. For these six years he had steadily carried the hod. He was a noble pattern of a man. On the opening of the eighth year, his talents and integrity were called to a more profitable account. He embarked as a partner in a business already well established. This day he is worth at least 100,000 dollars: he has a lovely wife and two beautiful children, a home that is the centre of a brilliant and intelligent circle, and he is one of the happiest and most honourable men as far as he is known. So much has come of a hodman.—*American Paper.*

CLAIM FOR WAGES.—At West Bromwich, a workman lately summoned his employer, an engineer, for 30s. alleged to be due to him. The defendant pleaded that, because he had paid complainant at the rate of 4s. a day while he demanded 5s.—there being no previous agreement as to wages—complainant had wilfully spoiled two dies, damage 30s., and he therefore refused to pay the man's claim. The magistrates dismissed the case, one of them remarking that complainant should have taken care to have had an agreement as to wages before he began work.

DESECRATION OF WINCHESTER CATHEDRAL.—The *Portsmouth Times* has the following:—"Every cathedral in England, as all know, is under the care of its dean and chapter, who alone receive praise or blame for whatever is done there for good and bad. As no one can misuse the building without their sanction and wish, so we find it our duty (although laymen) to point out the errors, whenever they occur, of those who ought to know how to preserve the sacred structures committed to their charge. We visited a day or two ago the old Cathedral of Winchester, a building that always pleases and instructs us: the fine proportion of Wykeham's nave, the simple and grand transepts, the great screen, stalls, and crypt, all seem to improve the more we see of them. The old monuments are there, but what could have possessed the clergy some years ago to put them together, "all of a heap" east of the transepts? A crusader now appears without his canopy: some monuments that were originally flat are now upright, and many more are from the nave; but we hope the bones of all were untouched; however, we leave the monuments, and turn sadly to the south transept, and there find that the Norman chapel at the south-east angle of this portion of the building—mind, a chapel where prayers were continually offered up, for the very steps to the altar still remain—here it is, we say, that upon the very spot where the altar once stood, are now two *urinals* for the use of the school-boys, also two wooden enclosures, which we took for "conveniences" of another kind (but being locked up we could not be certain about them). The *urinals*, there they are as plain as possible, and the walls of the chapel are scrawled over with names and sketches of anything but of a decent or religious kind. Really such desecration of a sacred building is too bad, and we sincerely hope that this notice will induce the dean and chapter, for the sake of their own consciences, to have a proper place erected outside the building, that in future not any of the altar steps of Winchester Cathedral may be defiled but respected."

RESPECTED FRIEND.—In adopting the style of language used by my sect, it appears that offence hath been taken by some soberly reflective brethren who erroneously suppose my peculiar phraseology was adopted in a spirit of levity. It would pain me to think that such opinion were general, for of all professing Christians, I believe them to be the most genuine and primitively thinking, as well as *practising* people. My mother was of the society, and all my maternal ancestors since the time of the Commonwealth. If I have fallen off, it is owing to the laxity of the times we live in, and to the general fusion of opinion on doctrinal subjects, which I trust will finally lead all true professors to the *one fold*. My object in obtruding the remarks of a friend in this print was solely to advance the cause of truth and of the *poor*, and if a few words in a plain guise can conduce to such an end, perhaps both thou and they will forgive this final explanation of *TABITHA QUIET*.

FOUL AIR IN WELLS.—With reference to the best mode of using lime for the purification of wells, a correspondent, "W. H. K.," says:—"Put some unslaked lime into a large bucket (not so much as to cause it to fall over when it becomes slaked), and before lowering the bucket into the well, pour a sufficient quantity of water on the lime to slake it; immediately that the water has been put to the lime, let the bucket and its contents be lowered to the water in the well, but not so as to go into it. In a few minutes the well will be cleared of the foul air, the slaking lime either taking up the noxious air or forcing it out of the well. Some persons recommend throwing unslaked lime into the well; but there are, I conceive, two objections to that mode,—one, that it can seldom, or ever, be efficacious; for the lime will, of course, immediately sink to the bottom of the well, and, if the water be deep, the slaking of the lime at the bottom of the well would have little, if any, effect beyond the surface of the water. The other objection is that if lime be thrown into the well, the water will not, at least for a considerable time afterwards, be fit to drink."

WHAT IS WANTED IN LONDON.—"The metropolis has been irreparably injured," says the *Times*, "by the want of a government during the last century. With one centre of supervision, of foresight and direction, it would probably have escaped many evils which seem now irremediable. It would have had better lines of communication: it would have preserved its quays: it would have saved the Thames from its present disgusting state: it would have had public gardens and promenades within easy distance of the populous districts: it would have had handsome public buildings, museums, and libraries for the people, colleges, and charitable institutions on a proper scale: it would have provided a few assemblages of architectural objects in different parts, instead of leaving the metropolis one dead level of ugliness and vulgarity, excepting only the heart of the city in the east, and the palatial quarter in the west: it would have preserved us from the jobbery of local Acts, and the two divided energies of the Woods and Forests. Every Englishman who has been abroad this year, and has conversed with the foreigners returned from the Exhibition, must have been painfully struck with their impressions of London. Indeed, in point of external appearance, engineering, and architecture, it will not bear comparison with any continental town of 50,000 inhabitants. Look at the great Holborn thoroughfare, with its Middle-row, its precipitous descent into Farringdon-street, and its sudden contraction at Newgate-street. Lausanne, a town of only 16,000 inhabitants, has lately carried a splendid viaduct over a similar hollow to that of Holborn-hill; and Dinan, a little country town in Brittany, has just accomplished a still greater work."

THE LONDON EXCHANGE BELLS.—Messrs. C. and G. Mears, of the old-established bell foundry in Whitechapel, have published "A plain Statement of Facts relative to the Royal Exchange Chimes," from which it appears that the "changes" have been very amusingly "rung" by the Gresham Committee, in a pretty plain endeavour—by reference to successive musical authorities, all of whom seem to have been used up, and to have failed them by turns in that endeavour—to obtain an authoritative opinion that would justify them in refusing to pay Messrs. Mears the 500*l.* to which they were entitled as the price of the bells made by them for the Royal Exchange. As it was, the founders were kept out of their money for four years, one cannot well see why, since each successive musical authority on the peal appealed to seems to have had his fastidiousness satisfied by more or less trifling alterations suggested by him, and good naturedly agreed to by the founders. It is alleged, however, that there is something defective in the working of the chimes, and the committee refuse to adapt a modified key in which their own musical *employé* recommended certain tunes to be played on the bells in order to bring out their finest tones.

PARISH COLLECTORS.—It is no uncommon occurrence to hear of the defalcation of a collector of rates or taxes, and to sympathise with the respective parishioners upon the hardships which result to them in consequence thereof. The case is rendered the more vexatious from the circumstance that the body of ratepayers are helpless in the matter, being compelled to entrust these important arrangements to their officers, who, either from a laxity of duty or want of moral courage, fail to obtain the necessary security for the protection of the parishioners. In most cases the collectors are men who have filled some parish office and obtained thereby sufficient influence to be returned for the collectorship, and find no difficulty in obtaining in their circle not only men who will execute a bond guaranteeing the parish against loss, but also men who will approve of the same. These men in all probability mean well, and their consternation at a defalcation is only to be equalled by their incompetency to meet their liabilities for the same. I would appeal to public experience as to the truth of these remarks, and the general inefficiency of this species of security. Most assuredly the time has arrived when ratepayers should be relieved from the repetition of

instances of "double taxation," and I earnestly hope that the insertion of these remarks will draw attention to the question. As a remedy for the evil, allow me to suggest (without having the slightest interest in, or connection with, such societies), that in the cases of collectors the same system should be adopted as at the present time is in force with the Bank of England, bankers, and other large firms, viz., requiring that all collectors should insure their probity in one of the guarantee societies, the policy of which would be deposited with the parish officers in lieu of the present private surety bond.—*PHILOSOPHUS.*

FOREIGN ARCHITECTS IN LONDON.—M. César Daly, the editor of the *Revue Générale de l'Architecture*, of Paris, is now in London, in worse health than his friends would wish to see him. Professor Strack, of Berlin, and several other foreign architects are also with us. Herr Zwirner, the architect engaged in the restoration of Cologne Cathedral, M. Girault de Prangey, of Dijon, and M. Hittorf, the architect of St. Vincent de Paul, Paris, best known in England by his fine works on Sicily, have recently departed from our shores, not ill-pleased with what they have seen amongst us.

ARCHITECTURE AT UNIVERSITY COLLEGE, LONDON.—We would draw the attention of our student-readers to the circumstance that Professor Donaldson will begin his course on Architecture and Construction on the 16th, knowing, as we do, the efforts Mr. Donaldson makes to render the courses as complete and instructive as possible, to awaken the intelligence of the pupils and induce a spirit of observation and thought in the young mind, so as to make them feel, if possible, that there is something ennobling in the pursuit, and worthy the highest intellectual application. We hope to find he will have a much enlarged class this session.

PLYMOUTH WORKHOUSE COMPETITION.—One of the three selected competitors, Mr. Walter Damant, has published a pamphlet, in which he complains that the design by Messrs. Arthur and Dwelley, who not only were competitors, but who drew up the plan and instructions for competition, has been selected by the guardians, although Mr. Haward, of Exeter, as arbitrator, awarded the first position to his design, and although the design so selected by the guardians, has been shown, by the report of the Poor-law Commissioners on it, to be defective in many particulars in which his (Mr. Damant's) design makes the provisions requisite, and called for by the commissioners, and that at a cost which he declares to be admitted by the arbitrator to be the lowest that could be "judiciously" stated for the specified number of inmates, and "likely to approximate to the actual cost of the works."

INDUSTRIAL EXHIBITION AT ST. JOHN'S, NEW BRUNSWICK.—An exhibition of the products of provincial skill and industry has been opened here with great success. The exhibition building occupies the whole width of the street before the hall. It is composed of a centre and two wings, the portico being Tetra-style—Grecoan, supporting the entablature, over which is placed the city arms of large dimensions, and the flags of many nations float gaily from various parts of the roof. The extent of the building is 120 feet in all. On either hand are ranged vases containing choice plants in pots, while about the centre of the aisle, and nearly in front of the entering visitor, stands a huge circular crown made of dahlias and other flowers.

"TRIHEDRAL VIEW" OF THE EXHIBITION BUILDING.—Amongst the many representations of the Industrial Palace before us is one recently executed by Mr. C. P. B. Shelley and Mr. Trepass, and published under the above designation. It is not so much a pretty picture as an accurate isometrical view of the building and the neighbourhood, laid down from actual survey. It gives a striking idea of the extent of the building, in comparison with surrounding objects. It had its name from the circumstance that it shows *three faces* of every object.

* Ackermann, Strand.

SINGULAR PROPERTIES OF THE FIGURE NINE.—Multiply 9 by itself, or by any other of the digits, and the figures of the product, added together will amount to 9. The component figures of the amount of the multipliers (viz. 45) when added together, make 9. The amount of the several products, or multiples of 9 (viz. 405), when divided by 9, gives a quotient of 45; and the component figures of either the dividend or quotient, added together, make 9. Multiply any row of figures either by 9 or by any other of the products of 9 multiplied by one of the digits, as by 18, 27, 36, 45, 54, 63, 72, or 81, and the sum of the figures of the product, added together, will be divisible by 9. Multiply the nine digits in the following order—1, 2, 3, 4, 5, 6, 7, 8, 9—by 9, or by any one of the products of 9 mentioned in the last paragraph, and the product will come out all in one figure, except the place of tens, which will be an 0, and that figure will be the one which, multiplied into 9, supplies the multiplier; that is, if you select 9 as the multiplier, the product will be (except the place of tens) all ones; if you select 18, all twos; if 27, all threes; and so on. Omit the 8 in the multiplicand, and the 0 will also vanish from the product, leaving it all ones, twos, threes, &c., as the case may be.—*American Paper.*

A SHIPBUILDING YARD ROOFED WITH GLASS.—The *Sunderland News* says, "the Messrs. Smith, of St. Peter's Quay, on the Tyne, have contracted with Messrs. Hartley and Co., of the West Glass Works, Bishopwearmouth, for the entire enclosure, with glass, of their extensive shipbuilding yard of St. Peter's, where vessels of the highest class of character, and of the largest register tonnage, are constructed. The glass for the roof is to be the Messrs. Hartley and Co.'s patent rough plate, of which a very large quantity will be required. Messrs. Hartley and Co. have engaged Mr. Isaac Cooke, of Sunderland, for the glazing. Vessels built under cover class a year higher at Lloyd's."

A PUMP A BUILDING.—At the Colchester Registration Court a voter was objected to lately on the ground of not having a house of adequate value. His wife appeared and maintained that although the value of "her" house was only 57, she paid 20l. of annual rent for a pump! Moreover, that the pump was a building within the terms of the Act. The judge said that a pump was certainly a very queer thing to vote upon, but it might do for aught he saw at present, and on the voter's "counsel" further explaining that it was a copper pump, cased in wood, or rather two pumps, with a large cistern covered in, his Honour appeared to think not only that "the grey mare was the better horse," but the "better lawyer" too, and that the pump would do; but he promised to pay it a visit.

BURN YOUR OWN SMOKE.—We understand that a notice has been served on the citizens of London, by order of the Commissioners of Sewers, to the effect that, in accordance with clause 48 of the Sewers Act (1851), "every furnace employed, or to be employed, in the working of engines by steam, &c. within the City," shall, after the 1st of January, 1852, be altered or so made as to consume or burn its own smoke, under a penalty of not more than 6s. nor less than 2s. per day in default.

ASTON HALL, BIRMINGHAM.—The editors of the local papers and their correspondents appear to be anxious to preserve this noted building, while its grounds are being cut up into building sites. One suggests its conversion into a collegiate institution, another into a gallery of arts. It is also pointed out that it might do for a palace for the proposed Bishop of Birmingham.

DOINGS IN LAMBETH.—The question of a new Vestry Hall in this parish has been warmly discussed of late, and at a poll of the parishioners on Tuesday, Wednesday, and Thursday, in last week, it was decided by a majority of fourteen that the hall should be erected,—1,057 voting for, and 1,043 against the proposal. On the question of baths and washhouses, a poll was also taken, and decided against their erection by a majority of 622,—1,610 voting for, and 1,232 against the proposal.

METROPOLITAN COMMISSION OF SEWERS.

—A special court was held on Friday, in week before last, at the Sessions House, Newington Causeway, as to complaints relating to the district. The chairman announced that measures were in progress, in consequence of the present state of the commission, and their inability to carry out works of main drainage, for the purpose of making a considerable reduction in the expenses of the establishment. A report was presented, to the effect that the workmen of the Chartered Gas Company had destroyed 70 feet of the crown of a sewer in Goswell-street, but that the company was willing to reconstruct it. The chairman announced Mr. George Pownall as an arbitrator in the claims of inhabitants of Scotland-yard, for injuries in formation of Victoria-street sewer. Some other business was transacted, and complaints and appeals heard.—Another special meeting at Newington Causeway, was held on Friday last. The Court had some time since agreed to erect an urinal at the end of the Borough-road, Southwark, as requested by the trustees for paving and lighting the southern district of St. George the Martyr, on condition that the trustees would pay the expense of lighting and watching. This the latter now refused to do, and accordingly the Court declined to erect the urinal. The engineer reported on the Essex-street sewer nuisance, that an iron pipe 300 feet in length and 3 feet in diameter, should be run out to low water mark, and a flap hung on the present outlet for storm water discharge. The cost would be 300l. The work was ordered to be executed at the expense of the general district rate. Some other works were then ordered, and summonses issued against defaulters.

LOVE OF LIGHT IN DENMARK.—I was exceedingly struck, as I walked through the streets, by the prodigious number of windows every house contained: the lower part in some instances actually seemed all glass. Even the "stud and mud" cottages in the outskirts had their rows of windows in some instances not 18 inches apart. Nothing in the appearance of this and the other towns I visited on my journey towards the capital struck me so much as this peculiar and pleasant feature, for surely the light of heaven is a priceless boon and a blessing, and I would rather anything in my own land were taxed than light. Many a little cot in Denmark has more glaziers' work about it than a substantial three or four stories in Great Britain.—*Hutton's Voyage from Leith to Lapland.*

STRIKE.—Some of the artisans engaged in the railway spring trade have struck work in consequence of a reduction in the old and high rates of wages fixed in the heyday of railway extension.

BATHS AND WASHHOUSES AT BRIGHTON.—A public meeting was held on Monday, in last week, and a committee appointed to promote the establishment of public baths and washhouses at Brighton. The High Constable was in the chair, and Sir G. B. Pechell and other influential gentlemen were present.

THE IRON TRADE.—Preliminary consultations have been held by the masters as to the nominal prices to be fixed at the quarterly meetings. It was resolved that no rise, even nominal, should be attempted. On the contrary, there would certainly be a reduction declared if wages could be lowered, but no one is willing to be the first to make the attempt.

TO CORRESPONDENTS.

"G. W." "L. S." "H. G." "C. R." "M." "T. C." "J. P." "H. F. P." "Fair Play" (suggests that advertisers of cements, &c., should give their prices), "J. C." (exact amount awarded should be given), "H. D." "H. R." "C. P." "E. L. G." (shall hear from us), "M. S." "Zeta" (thanks for the information, which shall be inquired into. As to the pamphlet, an opinion upon it has already been expressed in our journal, and the opinion of the magazine referred to does not concern us), "T. L." "R. G. S." "J. A." "R. L. S." "J. G. B." "A. B." "A Constant Reader," "C." "O. M." "C. N."

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editor, and not to the Publisher.

"Books and Addresses."—We have not time to point out books or find addresses.

ADVERTISEMENTS.

BENNETT'S THERMOMETERS, 6s.
Cheapside. Railways, barths, churches, gardens, and every place where a thermometer is required, at this manufactory, where you may be had for 6s. 6d. per pair. Select from 10 to 100, in which you may be had for 6s. 6d. per pair. Every place a thermometer and climate. Barometers at equally moderate prices. **DESSA T.T. Watch.** Clock an Instrument of merit to the Royal Observatory. The Board of Ordnance, the Admiralty, and the Queen's, Cheapside.

AN ARCHITECT AND SURVEYOR in the country is in want of an ASSISTANT; one who is well acquainted with Gothic and Italian styles of architecture. Address, stating terms, to L. M., Post-office, Worcester.

TO BRICKMAKERS.
WANTED, by a Builder, to completely finish the interior of some Carriages of Houses, for which Bricks will be taken in payment. Address, post-paid, to A. B., Office of "The Builder," York-street, Covent-garden.

WANTED, an experienced active MAN as OUT DOOR FOREMAN of CARPENTERS to a large Hall, Bath-street. Address, by letter, post-paid, to A. B., Mason's Hall, Bath-street.

TO SHOP FOREMEN OF CARPENTERS AND JOINERS.
WANTED, a Person who is fully competent to undertake the above situation. Address stating particulars, references, and where last employed, in specification, to G. B., Office of "The Builder," York-street, Covent-garden.

TO YARD FOREMEN, &c.
WANTED, immediately, a steady active Man as CONVERTER, and accustomed to the setting out of materials and general superintendence of a Builder's yard. Apply by letter, pre-paid, stating age, where last employed, and salary expected, to DELTA, Post-office, Wolverhampton.

WANTED, by an ARCHITECT, within 40 miles of London, an OFFICE LAD, who is a good hand and trace and good drawings; he would have to take charge of a house and make himself generally useful. Address by letter to Y. Z., at the Office of "The Builder," York-street, Covent-garden.

TO IRONMONGERS.
WANTED, by a Young Man, well acquainted with the wholesale and general trade, a SITUATION as ASSISTANT. Would have no objection to a desk, and to make himself generally useful. Apply by letter to F. S., Gabriel's Hall, Maidstone.

TO ARCHITECTS AND OTHERS.
WANTED, by a Young Man, a SITUATION as above, to act out working and other drawings. He is a good draughtsman, and has a good knowledge of perspective, tinting and surveying. Salary, 5l. per annum. Address to R. A. Johnson's Post-office, Blackfriars.

TO BUILDERS AND OTHERS.
WANTED, by a Young Man, who for some years held the situation of confidential clerk and cashier in a builder's office of some eminence, a SITUATION in the usual routine of the office, a SITUATION in a Builder's or other Office. The highest references can be given. Address to R. G. S., at the Office of "The Builder," York-street, Covent-garden.

TO BUILDERS, PLUMBERS, PAINTERS, &c.
WANTED, by a Person, aged 30 years, a permanent SITUATION in the above line as a three-branched hand; where it would be chiefly plumbing required would be preferred. No objection to the country. Address, E. F. G., 12, Royley-street, Old-street, St. Luke's.

TO ARCHITECTS AND BUILDERS.
WANTED, by an excellent Gothic (and general) STONE CARVER and MODELLER, with the best references, WORK, either day or piece, in town or country. Wages not an object, if constant employment is insured. Address, B. B., Office of "The Builder," York-street, Covent-garden.

WANTED, a Situation as BUILDER'S Clerk, by a person who has a practical knowledge of the business, and has had some years' experience in office duties; he can do up work, take out quantities, and make plain drawings. Good references given. Address B. B., No. 7, Francis-square, Bedford-square.

A STEADY, ACTIVE, USEFUL MAN wishes to ENGAGE with a Contractor or Builders as **CLERK OF WORKS, or FOREMAN.** References as to ability, &c., given by last employer. Address, H. P., 15, Arbutus-street, Old Kent-road.

TO ARCHITECTS AND SURVEYORS.
A YOUNG MAN, having completed his articles to the Profession, is desirous of an ENGAGEMENT, either in town or country. Address, H. H. H., Office of "The Builder," York-street, Covent-garden.

TO ARCHITECTS.
A YOUNG MAN is desirous of an ENGAGEMENT with an Architect of good Practice. Has been accustomed to prepare Plans, Proposals, and detailed Drawings; to surveying, taking quantities, &c. Lord n.w. will be preferred. Address A. B., 31, Bridge-street East, Canal-road, Mile-end-road.

TO ARCHITECTS, &c.
A GOOD AND EXPEDITIOUS DRAUGHTSMAN, who is capable of setting up working and finished drawings, and understands the general routine of the office, wishes to meet with an ENGAGEMENT either in London or the country. Salary, 7s. per week, or as may be required. Address X. Y. Z., 28, De Beauvoir-square, Kingsland.

TO BUILDERS.
THE Advertiser, whose evenings are disengaged, is desirous of occupying them in the preparation of Designs, Plans and Working Drawings, Specifications, or Estimates. Address H. S., care of Mr. Lee, 102, London-wall.

TO GENTLEMEN, BUILDERS, AND OTHERS.
THE Advertiser is desirous of meeting gentlemen requiring their SERVICES in Preparing Designs and Specifications, Measuring Plans and other works, or taking out quantities. Drawings traced and Specifications copied. Address X. Y. Z., No. 1, Wanchester-buildings, Great Wanchester-street, City.

TO SMALL BUILDERS AND JOBBING MASTERS.
THE Advertiser would be found very useful to any party requiring a CONFIDENTIAL MAN to attend to the business, either repairing or building, keeping accounts, &c. or otherwise to work at his own trade. No objection to the country. Satisfactory references given. Address, A. H. M., 25, New-street, Vincent-square, Wauxhall-road.

TO ARCHITECTS, &c.
THE Advertiser, who is well acquainted with Gothic and Italian architecture, the preparation of finished, detail, and working drawings, drawing up specifications, and taking out quantities, &c., is desirous of meeting with an ENGAGEMENT for two or three days a week, or as may be required. Address M. N., 13, Cannon-row, Parliament-street, Westminster.

VENTILATION—PURE AIR.



With single pulley, from 6s. each; with leading pulley, from 6s. 6d. These Ventilators are so arranged that the requisite quantity of air may be admitted for the due ventilation of an apartment without the slightest draught being felt by the occupants; and they are placed in the external wall, and are not exposed to view when the house is closed for the evening, at which time a constant supply of fresh air is most required. HAYWARD, BROTHERS, sole Manufacturers, 126, Blackfriars-road, and 17, Tavistock-street, Borough; and of all respectable Ironmongers, Builders, &c.

REGISTERED VENTILATOR



For admission of external air or carrying off impure air from rooms, from 6s. 6d. each. Class 22, Great Exhibition. J. H. B. & CO., Ironmongers, Brass Foundry, Nail and Tool Warehouse, 14, Mark Lane, London. Established nearly 50 years for the sale of goods from the best manufactories at the lowest prices.

NOIRAIN'S VENTILATING GRATES

AND STOVES.—A long sought for desideratum at last obtained. Great Economy in Fuel—entire Prevention of Smoking in Chimneys and Perfect Regulation of the Temperature of Rooms, effected by the new Ventilating Grates, which may be applied to any fire place. M. NOIRAIN solicits the attention of the public and scientific men to his patent apparatus—the utility and superior advantages of which will be satisfactorily demonstrated at his Depot, 101, RUE DE LA VILLE, 17, by any visitor. The highest testimonials given. Prices, from Two Guineas upwards.

CHOPS AND STEAKS BROILED BY GAS, with rapidity, for less than One Half-penny GAS APPARATUS for HEATING LATHING, PAINTING, BAKING, and TAILORS' IRONS, and PATENT CALORIFERE GAS STOVES for warming halls, shops, rooms, conservatories, and places without a chimney; and many other economical applications of gas heat may be seen at CHARLES HICKS'S Manufactures, Abchurch-lane, Strand, opposite Chancery House.

STOVES, RANGES, GAS FITTINGS,

BENEFITINK and COMPANY defy competition in the above articles, if durability, combined with elegance of design, is deemed to be the test of choice. B. and Co. especially call the attention of Architects and Builders to their house, on they are admitted to London of the best selected stock of STOVES, RANGES, and GAS FITTINGS in the Kingdom. Their stock contains Stevenson's Patent Register Stoves, patent temperamental stoves, patent air ditto, and patent prometric ditto; the unrivalled Derby Kitchen Range, and every description of cooking apparatus, as a proof of their ability to furnish the mansion or the cottage they submit the following scale of prices:

The cast-iron Register Stoves, 3 feet wide, from 15s. to 120s. Highly finished Drawings-Rovers, from 4s. to 20 guineas. Cottage Ranges, with 1. hot and self-acting oven, from 35s. Improved Kitchen Ranges, with boiler, self-acting oven, and bright fittings, from 40s. to 100 guineas. Very strong Kitchen Ranges, with self-acting oven, best wrought iron steam boiler, bright fittings, and bright spit racks, from 100 to 150 guineas. 2 light, water slide, gas Chandeliers, from 30s. 2 light ditto, from 15 to 15 guineas.

NOTE THE ADDRESS:—BENEFITINK and COMPANY, 69 and 90, CHEAPSIDE, LONDON. Wholesale entrance, 1, HORNMAN-GATE, LANE.

MANUFACTURERS TO THE TRADE OF

COOKING STOVES, BY GAS OR FUEL, either close or open. Register, Elliptic, and every description of Grates, of the best designs, including those with fire-brick backs. Bright Stoves, for drawing-rooms. Hot Air Stoves, for public buildings, shops, or halls, with ascending or descending flue. Ship and Yacht Stoves, for cooking and warming. Grates, &c. &c. Heating and Balcony Work. Fire and Garden Engines, and every variety of Force and Lift Pumps. Wrought-iron FIREPROOF DOOR SAFES and Dead Boxes; also in cast-iron. Iron Bedsteads and Cots of all kinds. Hot Water and Steam apparatus for heating buildings of any size and description. GRIGG and JACKINSON, in addition to the articles enumerated, manufacture all kinds of ironwork; and as everything is executed on their own premises, under their immediate superintendence, they can offer great facilities in price, &c. They respectfully solicit a trial. GRIGG and JACKINSON, Fishery Iron Works, 10, and 12, Bunhill-row, London.

TO BUILDERS, CARPENTERS, AND OTHERS.

BENJAMIN WALMSLEY, IRON-MONGER, BRASSFOUNDER, STOVE AND RANGE MANUFACTURER, 126 and 127, LONDON-ROAD, Southwark, for the supply of builders, carpenters, cabinet-makers, upholsters, blind-makers, smiths, wheelwrights, &c., at wholesale prices:—

Best Cast Sheet Flooring Brads, 11s. 6d. per cwt. Best Cast Sheet, 14s. 12s. 10s. 8s. 6s. 3s. 1s. and Rose, 14s. 6d. 12s. 10s. 8s. 6s. 3s. 1s. per cwt. Cast Lath, 9s. 6d. per cwt.; Sash Weights, 3s. 6d. per cwt. Sash Pulleys, 5s. per dozen. Cast Butte, per dozen pair—3in. 10d.; 3 1/2in. 1s. 3d.; 4in. 1s. 6d. 5in. 1s. 10d. 6in. 2s. 0d. 7in. 2s. 4d. 8in. 2s. 8d. 9in. 3s. 0d. 10in. 3s. 4d. 11in. 3s. 8d. 12in. 4s. 0d. 13in. 4s. 4d. 14in. 4s. 8d. 15in. 5s. 0d. 16in. 5s. 4d. 17in. 5s. 8d. 18in. 6s. 0d. 19in. 6s. 4d. 20in. 6s. 8d. 21in. 7s. 0d. 22in. 7s. 4d. 23in. 7s. 8d. 24in. 8s. 0d. 25in. 8s. 4d. 26in. 8s. 8d. 27in. 9s. 0d. 28in. 9s. 4d. 29in. 9s. 8d. 30in. 10s. 0d. 31in. 10s. 4d. 32in. 10s. 8d. 33in. 11s. 0d. 34in. 11s. 4d. 35in. 11s. 8d. 36in. 12s. 0d. 37in. 12s. 4d. 38in. 12s. 8d. 39in. 13s. 0d. 40in. 13s. 4d. 41in. 13s. 8d. 42in. 14s. 0d. 43in. 14s. 4d. 44in. 14s. 8d. 45in. 15s. 0d. 46in. 15s. 4d. 47in. 15s. 8d. 48in. 16s. 0d. 49in. 16s. 4d. 50in. 16s. 8d. 51in. 17s. 0d. 52in. 17s. 4d. 53in. 17s. 8d. 54in. 18s. 0d. 55in. 18s. 4d. 56in. 18s. 8d. 57in. 19s. 0d. 58in. 19s. 4d. 59in. 19s. 8d. 60in. 20s. 0d. 61in. 20s. 4d. 62in. 20s. 8d. 63in. 21s. 0d. 64in. 21s. 4d. 65in. 21s. 8d. 66in. 22s. 0d. 67in. 22s. 4d. 68in. 22s. 8d. 69in. 23s. 0d. 70in. 23s. 4d. 71in. 23s. 8d. 72in. 24s. 0d. 73in. 24s. 4d. 74in. 24s. 8d. 75in. 25s. 0d. 76in. 25s. 4d. 77in. 25s. 8d. 78in. 26s. 0d. 79in. 26s. 4d. 80in. 26s. 8d. 81in. 27s. 0d. 82in. 27s. 4d. 83in. 27s. 8d. 84in. 28s. 0d. 85in. 28s. 4d. 86in. 28s. 8d. 87in. 29s. 0d. 88in. 29s. 4d. 89in. 29s. 8d. 90in. 30s. 0d. 91in. 30s. 4d. 92in. 30s. 8d. 93in. 31s. 0d. 94in. 31s. 4d. 95in. 31s. 8d. 96in. 32s. 0d. 97in. 32s. 4d. 98in. 32s. 8d. 99in. 33s. 0d. 100in. 33s. 4d.

Air Bricks, 3d. per dozen. Hooping for Lard, 8s. 6d. per cwt. Dr. Arnott's Ventilators, 2s. 6d. per cwt. 2 1/2 Self-acting Cottage Ranges, with Oven and Boiler, 35s. each. 2 1/2 ditto, with Wrought Iron and Bright Fittings, 38s. each. Register Stoves, with Double Backs, 3d. per inch. Elliptic Stoves, with Double Backs, 3d. per inch. Bright Register Stoves, with Double Backs, 3d. per inch. An excellent variety of Black and Bright Register Stoves kept ready for use at all prices, to which the attention of architects and builders is respectfully invited.

A large assortment of Rim, Mortice, Drawback, Iron Gate, and other kinds of Locks and Latches. An extensive stock of Paint and elegant Door Furniture, in Brass, Farned Glass, and Fancy Woods. Finger Plates, Levers, and Roll pulls of all sizes. Bar, Hoop, Sheet and Roll Iron, and Spruce Steel.

The size of this establishment is extensive to be described in the limits of an advertisement, and the most correct idea that can be given of it is to see it every true connoisseur in every case select all the best of the best. WALMSLEY'S, 126 and 127, LONDON-ROAD, SOUTH-WARK, six doors from the Obelisk.

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KITCHEN FITTINGS, as supplied by them to several of the principal Club-houses, Railway Hotels, Public Establishments, and Private Families, combining neatness, efficiency, and the utmost economy of fuel with perfect simplicity of management, and the most substantial workmanship. Specimens of their new Improved Ranges, Dressing Stoves, Dish-washing Tables, Hot-Water Drying Closets, Steam Kettles, &c., may be seen at the EXHIBITION, CLASS 22, No. 4, LEXINGTON-STREET, N. W. 11, and a large collection, including Kitchen Ranges at every graduation of price, from 5s. to 100s. and upwards. SHOW-ROOMS, 19, WIGMORE-STREET, CAVENTISH-SQUARE, LONDON.

COOKING RANGES.—NICHOLSON'S

PRIZE COTTAGE COOKING, and other GRATES, which obtained the premiums offered by the Royal Agricultural Society at the York and North-Eastern Meeting, 1847. They are at the Model Houses in Hyde-park, in the Model Structure of the Society for Exhibiting the condition of the Living-Classes in the Great Exhibition Building, and at all allotment there (No. 57, Class 22). Where also are exhibited the recent improvements in large Cooking Ranges, including the newly-invented Compartment Cooking Stove, or complete set of Kitchen Apparatus in one piece, and his Anglo-terran Cooking Stove for Cottagers, Emigrants, &c., to which a silver medal was specially awarded at the Exeter show. They may be procured at MILES, 12, Jervis-street, London, and of most respectable Country Ironmongers. Price lists and full particulars will be sent on application to the Manufacturer (including four postage stamps). Newgate.—Treat. 3 B. Invaluable purchasers of kitchen grates are earnestly requested in default of receiving satisfactory information, to apply to the manufacturer directly.

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Impr. 6 1/2 Casing Ranges, with 30 3/4 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144 146 148 150 152 154 156 158 160 162 164 166 168 170 172 174 176 178 180 182 184 186 188 190 192 194 196 198 200 202 204 206 208 210 212 214 216 218 220 222 224 226 228 230 232 234 236 238 240 242 244 246 248 250 252 254 256 258 260 262 264 266 268 270 272 274 276 278 280 282 284 286 288 290 292 294 296 298 300 302 304 306 308 310 312 314 316 318 320 322 324 326 328 330 332 334 336 338 340 342 344 346 348 350 352 354 356 358 360 362 364 366 368 370 372 374 376 378 380 382 384 386 388 390 392 394 396 398 400 402 404 406 408 410 412 414 416 418 420 422 424 426 428 430 432 434 436 438 440 442 444 446 448 450 452 454 456 458 460 462 464 466 468 470 472 474 476 478 480 482 484 486 488 490 492 494 496 498 500 502 504 506 508 510 512 514 516 518 520 522 524 526 528 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The Builder.

No. CCCCLIV.

SATURDAY, OCTOBER 18, 1851.

THE "Amazon" has put on her bonnet and shawl, the crystal fountain and the organs have given over playing (things now looking serious), the visitors from north, south, east, and west have gone home, and the policemen have left off counting. There is no longer a difficulty in getting a place in an omnibus: the guests are fled, the garlands dead, and Knightsbridge is a deserted village, waiting for another Goldsmith to sing its beauties. Batty comes to a close, and Soyer is brought to it: eating-houses for the nonce must look out for some other occupation, and people who are compelled to stop in London must find some other means of spending their Friday and Saturday. Few who were present on the 11th, when the Great Exhibition was closed to the public, will forget it. Fifty thousand persons inside took off their hats and sang "God save the Queen," and those who were outside did so too, and then they gave three mighty cheers, and then three more, and then the bells rang horribly, and then the thing was o'er. Up to the last moment, as it has been from the beginning, the arrangements were good, and the multitude dispersed without even a mishap. On Monday and Tuesday in this week the building was opened to exhibitors, jurors, and their friends, and on Wednesday Prince Albert and the Royal Commissioners assembled on a platform in the centre of the transept, and received a report from Lord Canning on behalf of the juries: Prince Albert replied, the Bishop of London prayed, and the Hallelujah Chorus, finely sung, ended the proceedings. Lord Canning's report described the constitution of the thirty juries, and explained that the Council of Chairmen had advised that one of the three medals originally proposed should be withdrawn, because of the determination to avoid denoting different degrees of success amongst exhibitors in the same branch of production.

The report continued:—

"Of the remaining two, they suggested that one, the Prize Medal, should be conferred wherever a certain standard of excellence in production or workmanship had been attained—utility, beauty, cheapness, adaptation to particular markets, and other elements of merit being taken into consideration, according to the nature of the object; and they recommended that this medal should be awarded by the juries, subject to confirmation by the groups.

In regard to the other and larger medal, they suggested that the conditions of its award should be some important novelty of invention or application, either in material or process of manufacture, or originality combined with great beauty of design; but that it should not be conferred for excellence of production or workmanship alone, however eminent: and they further suggested that this medal should be awarded by the Council of Chairmen, upon the recommendation of a jury, supported by its group."

"It was to be expected that cases would arise in which the Council Medal, as the higher reward, would be asked for exhibitors whose claims were only somewhat stronger in degree, without differing in kind from those of others to whom the Prize Medal had been awarded. In such cases it became the duty of the Council of Chairmen to refuse their sanction to the award of the Council Medal; with-

out, however, necessarily impugning the alleged superiority of the article for which it was demanded. On the other hand, some instances have occurred in which they have felt themselves called upon to confirm the claim to a Council Medal where the object for which it was claimed shewed, in itself, less merit of execution and manufacture than others of its class. It follows, therefore, that the award of a Council Medal does not necessarily stamp its recipient as a better manufacturer or producer than others who have received the Prize Medal. It is rather a mark of such invention, ingenuity, or originality as may be expected to exercise an influence upon industry more extended, and more important, than could be produced by mere excellence of manufacture."

The number of Prize Medals awarded is 2,918. The number of Council Medals 170. The number of exhibitors, 17,000; so that two out of every eleven exhibitors have medals: of others honourable mention is made. The duties of the jurors involved an examination of at least a million of articles;—the labour and the responsibility were both enormous. For the most part, as we have reason to know, the duties have been performed with great care and ability: mistakes have been made, and some individuals will have great cause for complaint; but on this point we need not speak now.

Prince Albert, in his reply, shewed that the difficulty of the task discharged by the jurors was rightly appreciated.

"It would perhaps have been more interesting to the public," said the Prince, "had the Commissioners instructed the juries to follow the practice which has usually prevailed in the Exhibitions of individual nations, and to grant medals of different degrees, to mark the gradations of excellence among the exhibitors; but they feel that they have adopted the safer course, and that which was upon the whole most in accordance with the feelings of the majority of the exhibitors, in directing that no distinction should be made between their merits if their productions came up to the standard requisite to entitle them to a prize, but that all should without exception take the same rank and receive the same medal.

The Commissioners, however, considered it right to place at the disposal of the Council of Chairmen a peculiar or "council" medal in the case to which your lordship has referred. Important discoveries in many branches of science and of manufactures have in this Exhibition been brought under the notice of the public; and it seems just that those who have rendered services of this kind to the world should receive a special mark of acknowledgment on an occasion which has rendered so conspicuous the advantages which the many have derived from the discoveries of the few.

The grant of the Council Medal for beauty of design, and for excellence in the fine arts, as applied to manufactures, though made upon a somewhat different principle, is also compatible with the views of the Commissioners, since in the cases in which it has been given it does not mark any greater comparative excellence of manufacture, or assign to one producer a higher place than is accorded to others, but is to be regarded as a testimony to the genius which can clothe the articles required for the use of daily life with beauty that can please the eye, and instruct and elevate the mind. Valuable as this Exhibition has proved in many respects, it appears to the Commissioners that there is no direction in which its effects will be more sensibly and immediately perceived than in the improvement which it may be expected to produce in taste, and the impulse it has given to the arts of design; and a special acknowledgment is justly due to those who have afforded the best examples of art, whether pure or applied, and led the way in this interesting career of improvement."

The reports vary much in length and importance: together, however, they will probably occupy 3,000 printed pages, and will form the most authentic and valuable history of the collection.

The statistics of this undertaking will startle our children more than they have surprised us; we shall ourselves, too, by-and-by read with wonder of 110,000 persons having visited it on the 7th of October, and that 3,000,—4,000,—5,283, were taken in a day.

After payment of all expenses the surplus

will probably amount to a quarter of a million sterling. The appropriation of this is yet unsettled, and will probably require an Act of Parliament. It will be matter for regret if this be put away till wanted for a similar undertaking hereafter. It should be invested, and the interest applied forthwith to the advancement of the arts which elevate industry: a museum of industrial art should be obtained, and we should be glad to see a sum applied annually in the education of designers,—a reward for application and ability.* It is said that a committee has been appointed to select from the Exhibition, for purchase, works of design for study, but we are not aware under what arrangements.

That the building will be taken down seems now nearly certain, and, however much we may regret it in a practical point of view, it is impossible to avoid the conviction that so far as the reputation of the event is concerned, it is much better that it should end in its brilliancy than leave a ruin for a record. To mark the site in a manner appropriate to the place, we would suggest that *the whole outline should be planted with fitting trees and the swarded area within be ever kept clear*; there will be time enough, however, to discuss this, and so, too, there will be to point out measures for improvement, which the Exhibition has shown to be necessary. For ourselves we feel that it has too rapidly passed away. The oftener it was seen the more difficult it seemed to grasp it. Truly, as an eloquent writer says, an "Amazing spectacle! Touchstone of character! capacity! and knowledge! Spectacle now lost in the spectators; then spectators in the spectacle! Rich, poor, gentle, simple, wise, foolish, young, old, learned, ignorant, thoughtful, thoughtless, haughty, humble, frivolous, profound! Every grade of intellect: every shade of character! Here is a volume smatterer, suddenly discomfited by the chance question of a curious child, and rather than own ignorance, will tell him falsely. There is a bustling piece of earth: of the earth, earthy: testing everything by money value. Here comes one serenely unconscious he is a fool: and there is one suddenly startled by a suspicion that he knows scarcely anything." Wholesome impression; it may lead to good.

The quotation we have made is from Mr. Warren's apologue, "The Lily and the Bee," which contains much that is beautiful, excellent, and suggestive, though disguised by the form of communication which has been adopted.† "In the south transept," says the

* Amongst our correspondents on the appropriation of this fund, one writes as follows:—"A few more days and this westward springtide will have passed away. This huge ovation to man's knowledge and his power over material will have been performed. With a glorious wide-extending glare it has sent forth its light to many a distant shore. Shall it, like a funeral pile, so fade away and leave no trace, no sign, to tell of its grandeur to another age? Naught save the musty chronicles of old newspapers loading the catacombs of the museum libraries of a future race? Is there no hope that the appeal, the heart-wish of those who are the hidden mechanism of this pretty dialogue, will be heard—the woe of stalwart iron-smiths of Birmingham, the meagre embroiderers of London? Can we not help on their cry till it winds its way even to the penetralia of courts and commissions? The receipt of two days would be ample to build and endow forty homes—homes sacred to the rest of the honest workman whose life has been roughly passed in ill-rewarded labour. This tardy touch of ease would be the prize to hope for, and spare us many a bitter plaint of cruel injustice with which so many dying lips have to upbraid their fellow-men. Shall charity have no tithe of this immense boon? It will raise a cry against us among the nations if from so many thousands we set not aside a few to assuage the ills they labour under—they to whom we owe that pleasure and that pride which we rightly feel as men, in seeing what incalculable power there is in human will and human reason to subvert to its most delicate and complex service, nature's wildest agents."

† "The Lily and the Bee, an Apologue of the Crystal Palace." By Samuel Warren, F.R.S. Blackwood and Sons, Edinburgh and London.

writer in his preface, "may be seen, for a little while longer [then, but not now], twin figures of the youthful Alfred the Great and his mother, who is giving him the Book of Saxon Poetry, which she had promised to him among her sons who should soonest learn to read it." On this interesting volume much of what Mr. Warren has written has been fashioned, and thence has come an inflation and want of connection which will lead many to scoff. For our own parts we have found in its perusal great delight and much advantage, and advise our readers to examine it for themselves,—trusting. In his opening he takes the Queen into the various countries represented in the collection:—"Yonder comes the Queen! Not hideous shot, nor shell, tears open a crimson path; but one is melting before her,—melting with love and loyalty. All unguarded! No nodding plume, nor gleaming sabre, to startle or appal: she is moving amongst myriads—silent myriads—unheard by her, but not unfelt, their thoughts fondly flowing while she passes by:—"

O, all from foreign lands, uncovered be awhile;
Behold a solemn sight—

A nation's heart in prayer:

And hear their prayer,
God save the Queen!"

And he then recalls by a few words some of the principal events and persons connected with each country. The best part of the book is, where the writer is most like himself, and is alluding to some few (a limited list) of the great ones of the day. Let us take a sentence or two in proof of our assertion, that it contains much that suggests thought. "Yonder are the twin sons of science, LE VERRIER and ADAMS—a noble pair, in noble rivalry—England and France! Speaking modestly of their sublime discovery, though one which would have gladdened the heart of Newton—

Uranus, saith one,—discovered by the father of our living Herschel, at once doubled the boundaries of the solar system; and, at a distance of eighteen hundred and twenty-two millions of miles, is observed somewhat disturbed in performing its journey: the two astronomers separately bent on discovering the cause, by a rare application of transcendent science, succeed at length in detecting the attractive influence of a remote unseen orb, a new planet: Neptune,—as far beyond Uranus as he beyond Saturn! at thirty times our own distance from the sun: two thousand eight hundred and fifty millions of miles off: moreover, not only pointing out where a planet would ere long be found, but weighing the mass of the predicted mysterious visitor, numbering the years of his revolution, and telling the dimensions of his stupendous orbit."

And elsewhere, after a long array of ancient names, recalled by the genius *loci*, he welcomes Des Cartes, Galileo, and Newton, who,—

"Ye later Ones!

At length ye come, bringing the light
Through the dreary night
Long struggling, through the priestly fear
That light could light extinguish,
Truth contradict the Truth!
O, foolish fear!"

* The unthought loyalty of the heart, the cheap defence of nations.—Edmund Burke.

† Given, says a Scotch astronomer,—in recording this amazing stretch of science and intellect,—the position, mass, and periodic times of two planets, the astronomer is able, though it is no easy task, to calculate the perturbation which each will produce on the other. But the problem resolved by these two French and English astronomers, viz., given the perturbation to find the position, mass, and periodic time of an unknown disturbing body, is one of such infinite difficulty, that certainly few astronomers believed it possible.

The "Bee and the Lily" is an excellent title, and to our merely practical and common-sense mind suggested a view of the Exhibition under the two aspects which would include the whole: the bee representing industry, organization, and labour; the lily, beauty and art. To keep the lily and the bee more constantly together than they have been,—to wed art to labour,—this is one of the results we may hopefully look for:—

—"Go, then, thou grand One of the Present,
grandly into the Past;
And for the Future,
Leave no trace behind, but in the Mind,
Enriched, expanded, and sublimed."

Numerous other memorials of this great gathering of the results of industrial art have been, and will be, issued. One of the last published is a large and handsome volume, called "Recollections of the Exhibition," containing five-and-twenty views, by John Absolon, W. Telbin, H. C. Pidgeon, W. Goodall, C. F. Dolby, and T. H. Wilson.* These embrace a view of the nave and transept (the best in the book), the Indian Court, part of the Fine-Art Court, the Furniture Court, the west nave, the transept from the gallery, the French Court, and other prominent compartments. The main defect observable is a want of air and distance.

David Roberts, Haghe, and others, have made some beautiful drawings, to be published presently; and Nash's "Views" are already tolerably well known.

On the *per contra* side a "Stone" has been cast "at the Great Glass House,"† but it has not broken many squares. It is a smartly written tirade, denouncing the whole affair, and will please those who think no real good will follow the Exhibition. It comes, however, too late or too soon. It is too late to say, "It was a mistake of the whole character of the English nation to imagine that they could be assembled, as by a trumpet, to a general competition;" and too soon, to deny that the attempt will be attended with improvement to our taste and benefit to our commerce. We have ourselves a firm conviction that improvements in every branch of trade will be the result: we know full well it has given delight and pleasant memories to thousands, while it has removed many national prejudices.

Amongst its good effects may be noticed the impulse it has given to kindly feelings among ourselves. The free-schools, the ragged-schools, the poor-houses, and the work-shops, have at times been emptied into it, and their occupants have been led to feel that they were not wholly disregarded by their more fortunate fellow-men.‡ Amongst several spontaneous acknowledgments of kind consideration on the part of employers which have been forwarded to us is one signed "A Grateful Workman," pointing to this as one of the incidental good

* "Recollections of the Great Exhibition," 1851. Published by Lloyd, Brothers, and Co., Ludgate-hill.

† "Stone the First at the Great Glass House; to become laid in six Stones." W. E. Painter, Strand.

‡ From a return by Mr. W. Murray, with reference to the attendance of charity and other schools at the Exhibition, it appears that up to the 8th of July, when he took charge of that department, no record was kept of the schools that came, and Mr. Murray can only ascertain an authentic list of 21, giving a total of 4,093 children. By the return, 466 schools have visited the building, and of these Christ's Hospital sent the largest number, amounting to 900. On the 14th of July there were 15 schools present, and 1,300 children; on the 30th, 13, and on the 6th of August, 19. On the 21st, 15 schools and 1,022 children; on the 18th of September, 38 schools, and 2,730 children; on the 26th, 18 schools, and 1,374 children; on the 2nd of October, 26 schools, and 1,427 children; on the 8th of October, 23 schools, and 1,312 children. The return includes a list of 23 parties, chiefly agricultural labourers, and comprising 7,756 persons sent up from the country by private benevolence.

effects of the scheme. In the course of it the writer says:—

"Among the builders deserving praise in this respect I am anxious to mention Messrs. G. Baker and Son, whose workmen were privileged to view the Exhibition last Monday for the seventh time. On their first application to be allowed to go, and to make up the time lost by working overtime, it was at once granted, and the Messrs. Baker paid the admission 'shilling' to all that went on that occasion; and as often as their workmen wished an 'Exhibition holiday,' it was cheerfully granted. This was in keeping with their past conduct, which deserves notice, for they were among the first to concede that privilege, now general among respectable builders and in large factories in London, and which is so much prized by the men, namely, that of being allowed to leave work at four o'clock on Saturdays, without reduction of wages. If employers generally (happily their number appears to be increasing) were to act in the same spirit towards their men on 'Exhibition,' and other occasions, the best results might be expected to follow. Mutual accommodation and greater harmony of feeling would prevail; the wheels of business would work more smoothly, and the miseries of disputes be prevented, with many of those ruinous strikes, which, it is to be regretted, are still of frequent occurrence. The kindness and generosity of employers elicited by the Exhibition will, doubtless, tend to strengthen the bonds of society, and I think may be fairly set down among its incidental benefits."

And so we think, too, and so we did think and say before the idea became a reality. Long may the good feeling thus elicited exist, and far may it extend.

"God be thank'd that thus united
All the world for once has been,
Crowding welcome and delighted
Round the throne of EVERLASTING QUEEN;
God be thank'd, that we and others,
England with the World around,
Thus have sought to love as brothers,
And the good we sought, have found!"

MEDAL HOLDERS IN THE GREAT EXHIBITION.

The following is a list of those to whom medals have been awarded in three of the classes which interest the largest number of our readers:—

JURY VII.

CIVIL ENGINEERING, ARCHITECTURE, AND BUILDING CONTRIVANCES.

THE COUNCIL MEDAL.

H.R.H. Prince Albert, U.K.—Model Lodging-house. (Joint medal to that granted for the original conception and successful execution of the Exhibition of 1851.)
Fox and Henderson, U.K.—Great Building; for the execution.
Paxton, Joseph, U.K.—Great Building; for the design.
THE PRIZE MEDAL.
Brown, Sir S. (10), U.K.—Models of Ships and Railways.
Bunnell, J. and Co. (152), U.K.—Patent Shutters and Water-closet.
Carrington, F. A. (30), U.K.—Topographical Models of portions of England.
Dutch Railway Company (90), Netherlands—Model of Railway Drawbridges.
Finch and Wille (9), U.K.—Model of a wrought-iron Bridge over the Wyre.
Heinke, C. E. (53), U.K.—Diving apparatus.
Ibbetson, Captain (91), U.K.—Model of the Isle of Wight Iron Bridge Company, New York (611), U.S.—Model of Ryder's patent Iron Bridge.
James, Jabez (106), U.K.—Model of Britannia-bridge.
Laué, J. F. (66), Switzerland—Set of Boring Tools.
Leemann, J. (267), Switzerland—Model of Strasburg Cathedral.
Morton, S. and H. (24), U.K.—Model of Patent Slip Mould Press or Filis (658), France—Boring Tools.
Pruitt, Major (16), U.K.—Design for Tidal Steps.
Rose, J. P. (194), U.K.—Design for a Timber Viaduct of great span.
Salter, S. (230), U.K.—Models of Bridges.
Siebe, A. (1), U.K.—Diving Apparatus.
Smith, W. H. (165), U.K.—Model of Light Floating Breakwater.
Stuart, W. (28), U.K.—Model of Plymouth Breakwater.
Travers, L. Filis (1044), France—Model of Observatory, Dome and Roof at Paris.
Vignoles, C. (105), U.K.—Suspension-bridge, for Model.
Wilkins, W. C. (157), U.K.—Revolving Floating Light.
Wilson, T. H. (113), U.K.—Gate-bulbs and Slides for Doors.

JURY XVIII.

MINERAL MANUFACTURES, CEMENTS, BRICKS, &c.

THE COUNCIL MEDAL.

Barbier, The Cavaliers (15), Rome—A table in Roman Mode.
Dennidoff, Messrs. (323), Russia—Malachite Furniture and Decoration.

* United Kingdom.

Minton, H. and Co. (86), U.K.—Encaustic Tiles
Society for Improving the Condition of the Labouring
Classes (124), U.K.—Sundry improvements in the con-
struction of Bricks, and the improvement of Habitations
for Labouring Classes

THE PRIZE MEDAL.

Amuller, E. F. (405), France—Improved Tiles
Bianchini, C. (112), Tuscany—Table in Florentine Mosaic
Blackburn, B. (21), U.K.—Slate Slabs
Blanchard, H. M. (92), U.K.—Materials and Workman-
ship in Terra Cotta
Boris, Brothers (417), France—Tubular Bricks
Boschetti, Benedetto (17), Rome—Table in Roman Mosaic
Bossi, J. P. (773), France—Inlaid Marble Table
Bottinelli, G. (736), Austria—Mantelpiece
Boucher, T. (399), Belgium—Gas Retort
Bowers, Challidier, and Wooliscroft (104), U.K.—Imita-
tions of Oak Carvings in Porcelain
Brown, Robert, Surbiton-hill (117), U.K.—Italian and
other Tiles
Bucinagatti, Brothers (112), Tuscany—Table of Floren-
tine Mosaic
Castañe, C. (395), Prussia—Table and other objects in
Marble and Granite
Cheesewring Granite Company (54), U.K.—Granite
column
Clossier, A. (118), France—Metallic Pavement
Costes, E. J. (18, 19), U.K.—Combination of Iron and
Glass in the decorative part of the Manufacture of
other objects
Cotton, Joseph and Co. (112), U.K.—Gas Retorts and
other objects in Fire Clay
Cundy, S. (60), U.K.—Tomb of Queen Philippa, in
Alabaster
Dallwitz, J. (49), Rome—Tazza of Oriental Alabaster
Darmanin, J. and Sons (28), Malta—Inlaid Work in
Marble
Decasse, P. P. (27), Malta—Carved Malta stone
Delaig, A. (232), Portugal—Collection of Worked
and Polished Marbles of Portugal
Della Valle, Brothers (114), Tuscany—Table and Vase in
Scaiola
Desauger, A. (1134), France—Mantelpiece and Pavement,
in stone
Dolan, D. (46), U.K.—A new kind of Scaiola Work
Doulton and Watts, and Henry Doulton and Co. (23, 64),
U.K.—Articles in Stoneware and Porcelain
Ecksteinberg, Imperial Polishing Manufactory of (386),
Russia—Jasper Vases
Ferguson, Miller, and Co. (83, 129), U.K.—Vases in Terra
Cotta
Francis and Sons (47), U.K.—Parian Cement
Freeman, W. and J. (14), U.K.—Granite Obelisk
Goward, Imperial Polishing Manufactory of (327), Russia
Hayward, H. and B. (127), U.K.—Tiles, &c. in Metallic
Clay
Hoskins, R. (75), U.K.—Granite Obelisk
Hoskins, R. and Co. (29), U.K.—Pedestal, &c. of a new Ma-
terial resembling Marble
India Company, Hon. East India—Inlaid Chess Table
Kapeller, L. and Son (28), Bavaria—Granite Crucibles
Kewat, Imperial Polishing Manufactory of (327), Russia
—Jasper Vases
Kullgren, C. A. (118), Sweden—Granite Cross
Lane and Lewis (85), U.K.—Niche, and Statue in Caen
Stone
Lebrun, J. A. junior (572), France—Chimney-piece
Leclercq, Augustin (425), Belgium—Chimney-piece
Lomas, J. and Sons (81), U.K.—Chimney-piece
London Marble and Stone Working Company (17), U.K.—
Various Articles in Sculptured Marble
McDonald and Leslie (74), U.K.—Granite Vases, Pedestal,
&c.
Magau, G. E. (46), U.K.—Enamelled Slate
Margatta, T. C. and Ryles, H. (91), U.K.—Font in Caen
Stone
May and Co. (7), U.K.—Vases for Mineral Waters
Meredith, J. H. (141), U.K.—Slabs of Porphyry
Miesbach, A. (610), Austria—Bricks and Brick Clay
Moglia, Luigi (20), Rome—Works in Roman Mosaic
Mystic, J. (382), U.K.—Carvings in Caen Stone
Norsins, Jules and Co. (401), U.K.—Polished Marble
Chimney-piece
Osgan, J. (68), U.K.—Font, Obelisk, &c.
Orlandi and Rossi (36), U.K.—Various Articles in Cement
Peake, P. (123), U.K.—Tiles and other objects in Terra-
Metallic
Peece, W. (76), U.K.—Cornish Granite and Serpentine
Goods
Peterhoff, Imperial Polishing Manufactory of (289),
Russia—Jewel Casket, with Baso-relievo Mosaic, in
Terra-dura
Poulet Brothers (963), France—Cenotaph of Greenstone
Basalt
Polham, J. (105, 216), U.K.—Terra Cotta
Reasome and Parsons (97), U.K.—Artificial Silica Stone
Redfern, G. (78), U.K.—Inlaid Marble Table
Robins, Aspin, and Co. (103, 6), U.K.—Illustrations of
Portland Cement
Roel, W. H. (435), U.K.—Crucibles
Sealey, J. (11), U.K.—Artificial Stone
Seguin, A. (602), France—Marble Mantelpiece
Seyssel Asphaltic Company, U.K.—Pavement at the East
Entrance
Singer and Co. (83), U.K.—Mosaic Pavement
Skinner and Whalley (121), U.K.—Novel and useful Inven-
tion of Marble
Sterens and Son (34), U.K.—Martin's Cement
Stirling, T. jun. (209), U.K.—A Collection of Manufactures
in Slate
Teate, P. (33), Malta—Carved Stone
Theret, J. (1469), France—Inlaid and other Works in
Marble and Pietra-dura
Tuscany, Royal Technological Institute of (1 and 98),
Tuscany—Specimens of worked and polished Marble
Vallance, J. (40), U.K.—Inlaid Marble Tables, and other
articles in Marble and Spar
Virebent, Brothers (732), France—Manufactures in
Artificial Stone
White, J. and Sons (10 and 130), U.K.—Illustrations of
Portland and other Cements
Wilcock, E. P. and Co. (8), U.K.—Ladies' Stone Terra Cotta
Woolley, J. (80), U.K.—Inlaid Marble Tables
Woodruff, T. (360), U.K.—Inlaid Marble Tables
Workman, J. (116), U.K.—Waterproof Bricks

JURY XXX.

SCULPTURE, MODELS, PLASTIC ART.
THE COUNCIL MEDAL.

Kies, A. (279), Prussia—The Amazon
Marchetti, Baron, U.K.—Richard Cour de Lion, in
Plaster
Pradier, J. (1,407), France—Phryne, in Marble

Wyatt, the late Richard J. (103), U.K.—Glyceria, in
Marble

THE PRIZE MEDAL.

Appel, R. (374), U.K.—Asiatic Printing
Baly, E. H. (7), U.K.—A Youth resting after the Chase,
and a Nymph preparing for the Bath, in Plaster
Bell, John (28 and 53), U.K.—Statue of Lord Falkland;
Eagle Slayer, in Bronze
Benzoni, Gio. Maria (16), Rome—Statue, in Marble, of
Gratitude
Beranger, Antoine (1,369 and 97), France—Head, on
Porcelain, and Portrait of Prince Albert, on China
Berns, Brothers (565), France—Designs for Shawls
Bertini, G. (737), Austria—Painted Window
Bosche, A. (735), Prussia—Fountains; Model of Mag-
deburg Cathedral
Bouuet (1,369), France—St. John, in Enamel
Buckler H. (126), Saxony—Painting on Porcelain
Castellani, Raffaele (25), Rome—Copy, in Mosaic, of
Medallion of Boniface II
Cheboux, J. (1,146), France—Designs for Cotton Print
and Calico
Cheverton, B. (194), U.K.—The Theues, as exemplifying
the reduction by machinery of statues
Clerget, C. E. (709), France—Designs, and works in orna-
ment
Collas, A. (1,709), France—Works exemplifying reduction
of sculpture
Coudier, A. (1,569), France—Shawl Designs
Day and Son (80), U.K.—Chromolithography and litho-
graphy united
Debay, Auguste (45), France—The "Premier Borneau,"
in Marble
Debay, J. and, France—Death of the Stag, in Bronze
Design, Government Head School (10), U.K.—Designs
Devers, J. (818), France—Holy Family, on Lava
Dierker, J. (1,369), France—Painting on China
Drake, Professor F. (373), Prussia—Cast, in plaster, of
part of Pedestal to Monument of Frederick William III.
of Prussia
Duclesne, A. Madams (1,369 and 96), France—Painting
on China
Essex, W. (241), U.K.—Enamel Paintings
Etter, A. (1,215), France—Works of Sculpture
Fischer, K. (181), Prussia—Medals
Foley, J. H. (47), U.K.—Youth at a Stream and Ino and
Bacchus, in Plaster
Francoulli, Innocenzo (710), Austria—Statue in Marble
Franklin, C. A. (465), Belgium—Psyche carrying off Cupid,
in Plaster
Fratin, J. (235), France—Group of Eagles, in Bronze
Fuchs, J. N. von (91), Bavaria—Fresco
Galli, Antonio (711), Austria—Statue in Marble, Su-
sanna
Geels, G. (466), Belgium—A Lion in Love, in Plaster
Geerts, C. (459), Belgium—Carving in Oak
Gérente, A. (221), U.K.—Statue—Stained Glass
Hamon (1,369), France—Enamelled Casket
Hanbart, M. and N. (64), U.K.—Chromolithography
Hardman, J. and Co. (532), U.K.—Painted Glass Window
Hogan, J. (44), U.K.—Drunk Faun, in Plaster
Hullmandel and Walton (71), U.K.—Chromolithography
Jacobson (271), France—Paintings of Flowers, on China
Jacotot, Madame (1,869), France—Head of Raphael
Jennings, E. (91), U.K.—Statue of Cupid, in Marble
Jerichau, J. A. (39), Denmark—A Group in Plaster
Jones, Owen (54), U.K.—Chromolithography
Keller, E. (36), Bavaria—Glass Painting
Kornaloff, N. (315), Russia—Painting on Porcelain
Laroche, E. (181), France—Designs for Shawls, Barges,
Muslins, &c.
Laurent, Madame Pauline (1,869), France—Three Enamels
on Copper
Leary, J. (22), U.K.—Marble Statue of a Bathing
Lectheas, Auguste (573), France—Two Casts in Plaster
Lemoult, R. J. (387), France—Lithography and Chromo-
lithography
Lequese, E. L. France—The Dancing Faun, in Bronze
Linner, Luke (24), U.K.—Various Designs
Liverpool Local Committee (36), U.K.—Model of Liver-
pool
Macdonald, Lawrence (16), Rome—Ionic Statue, in
Marble
Macdonell, P. (22, 23, and 24), U.K.—Cupid, in Marble,
and Eve in Plaster
Marcheal and Guyon (329), France—Painting on Glass
Marshall, W. (41), U.K.—Statue of Eve
Monti, Raffaele (746), Austria—Marble Statue of Eve
Perez and Co. (371), Spain—Inlaid Wood Table
Powers, Hiram (522), U.S.—Statue of the Greek Slave, in
Marble
Ramus, J. M. (1,419), France—Group in Marble
Rietchel, Ernst (185), Saxony—Plaster Group
Rogers, W. F. (353), U.K.—Cradle, carved in Turkey
Boxwood
Rouco, J. (1,699), France—Inlaid Work
Saller, S. (221), U.K.—Model of St. Nicholas Church,
Hamburg
Schult, J. (369), France—Painting on a Vase
Sharp, T. (20), U.K.—Statue, in Marble
Silbermann, G. (374), France—Chromo-typography
Simons, Eugene (464), Belgium—Plaster Statue of Godfrey
de Bouillon and other works
Straetz, Giovanni (713), Austria—Marble Statue of Iphigene
Thrupp, E. (58 and 58), U.K.—Boy and Butterfly, and
Archibute, both in Marble
Tuerlinckx, Joseph (456), Belgium—Marble Statue of
Giotti
Vienna, Imperial Printing-office of (369), Austria—"Pa-
radise of the World" in Chromolithography
Wallis, T. W. (89), U.K.—Carvings in Wood
Watson, the late M. L. (60 and 81), U.K.—Statue of J.
Flaxman, in Marble; and Eldon and Stowell Group,
also in Marble
Winkelmann and Sons (360), Prussia—Colours and Litho-
graphic Prints
Wolff, Albert (307), Prussia—Marble Group, Innocence
Wurdich, O. (36), Bavaria—Portrait of Charles IX. on
China
Wyatt, M. Digby (30), U.K.—Good taste in designs
generally
Wyson, J. C. (266), U.K.—Medals and Medallion Portraits
of the Royal Children.

ASSYRIAN DISCOVERIES.—We are glad to
hear that the Lords of the Treasury have at
length consented to advance to Colonel Rawlin-
son the sum of 1,500*l.*, to enable him to
continue his explorations and exhumations in
Assyria.

WHAT A FOREIGN ARCHITECT
THOUGHT OF LONDON.*

As to the palaces in London, it is impossible
to point out all the buildings which I have
found to be more or less remarkable, built
during the last few years. I must confine my-
self to a few, and if I have not noted some
which deserve it, the artists and the buildings
will be sufficiently known already.

The Army and Navy Club, finished in 1850
by Parnell and Smith, is, as to the façade, the
most pompous of its family. The style is
neither Greek, Roman, nor Italian, but some-
thing of all three; nevertheless the proportions
are harmonious, and the profiles well detailed.
The principal entrance is clearly marked, and
the decorations are very rich. The other club-
houses are built much in the same style; but,
excepting the Travellers' and Arthur's, are not
so harmonious in their proportions.

The Museum of Practical Geology, con-
structed in 1850 by Pennethorne, is not large,
but devised with much skill. Nevertheless it
is to be regretted that the windows on the side
of Piccadilly were not a little higher. Besides
I cannot pardon an architect who has shown
so much skill and knowledge in the distribu-
tion of the interior, and in the introduction of
light to the theatre, for having corbelled out a
species of capital, to serve as a console, in the
wall opposite the great staircase, and for having
placed over Greek columns friezes à la François
I., and, to complete this strange combina-
tion, Etruscan consoles. Also, I cannot fancy
pilasters with contours of columns as they
are applied in this Museum.

The hotel of the Earl of Ellesmere, from the
designs of Barry, and as yet unfinished, is one
of the most beautiful private houses in the
pure Italian style. The proportions of the
stories, or rather of the façade in general, are
irreproachable; and it is only the chimneys,
in continuation of the piers, which are not in
harmony with the general composition. The
vestibule with its galleries is ravishing, and
the dimensions of the rooms are suitable; but
if one asks if the construction of this house is
fit for so precious a gallery of pictures, the
answer always will be that the pictures are
badly lighted.

The Coal Exchange, built in 1849 by Bun-
ning, presents in its exterior nothing remark-
able but some bizarreries; nevertheless the
interior is very interesting. Constructed of
iron, we see a rotunda with three galleries,
lighted by a single lantern. The appearance
of the whole is very pretty, and the hall is well
arranged; but architecture in cordage is an
idea too eccentric, and little suited to con-
structions in iron. If I were to cite such
works as specimens of architecture, I should
give the preference rather to the façade of the
house, No. 76, Oxford-street, in the Mauresque
style, and copied, with much conscience, from
the beautiful remains of the Alhambra. But
a hundred paces from this house, at the corner
of Berners street, you find a structure whose
ground-floor recalls the Transition (style
Diamant) of the 17th century in all its rich-
ness and caprice; and it is a great pity that the
proprietor has not arranged the upper part in
a suitable manner, for at present the combina-
tion is very ridiculous.

The Houses of Parliament, by Barry, are
more remarkable than any other edifice con-
structed in London within a few years. The
principal façade which faces the river is 930
feet long. The great towers, called the
Victoria and the clock towers, and of which
the first named is to be 340 feet high, are yet
unfinished; and unhappily the architect has
taken the fancy of giving to them, in his
design, dimensions totally varying; this, in
my opinion, will be very destructive to the
general effect of grandeur and strength in the
building, when they are finished as pro-
posed. They will then appear planted on the
two flanks like two giants; the Victoria tower
to guard the mass containing the House of
Lords, and the clock tower to take care of the
House of Commons. I do not comprehend
why Mr. Barry has not designed a tower of
similar dimensions, and ranking with the
Victoria tower: the solidity of the building, the

* See p. 637, ante.

symmetry of the plan, and the harmony of the general appearance would all have gained by it.

There has been a great dispute as to whether there was a style proper to represent the character and taste of the English nation at the present time, and I ask why not? Is not the style of this colossal monument as serious as the people itself? The dimensions of the façade in general, and the details in particular, are surely in harmony with each other. Would you have preferred the peristyles of a temple to Diana or to Jupiter or to Venus, to the halls of your ancestors, for a national monument in your atmosphere of clogs and great coats? Is not the kind of architecture in harmony with that of the neighbouring Westminster Abbey? Yes, without doubt, but (perhaps somebody may reply) why always copy or imitate our predecessors? But this is altogether natural, because our age has no architecture of its own. And who shall give it? We are very anxious to see him. But only one person? I do not think so. I believe that time will give us this, for time destroys and returns every thing. But when? Who shall say? We move quickly in these times. We go by steam; but a new style of architecture will not be invented by steam; be sure of that, unless by hazard you imagine that the envelope of the Exposition will furnish one.

Except in some streets and squares at the west end, the private houses are in general built without elegance, of bad bricks of a very unequal yellowish red colour: the colour does not matter much, since the smoke from the coals furnishes an imperceptible but gray rain to the town, which covers everything with one tint, that is, a dirty black, which attaches itself to everything inside as well as outside, and renders wretched every person who scrupulously looks for cleanliness. You are establishing many bath-houses for the public good: this is all very well for the body; but washhouses for your buildings, how are they to be managed? The distribution of the houses in London is very mournful: lit by a small number of little windows, winter, of course, gives long nights and short days to the capital of the world; but as gas is introduced everywhere, light of some sort is not wanting. The Squares are arranged with much taste, but as the plants in the gardens want freshness, they cannot be what they should. The Parks are large, capitally arranged for public amusement in a very judicious manner, but in general want shade, and are at too great a distance from the city, so that the very people who most want fresh air cannot get to it. The Inner Temple Gardens are the only ones, and are not sufficient. The streets of the west end, and in general all the newly constructed ones, are perfect in their proportions, pavements, and roadways. Those of the city are much too narrow for the traffic of these days, but what can be done? These streets were made for a population of 600,000, and not for one of 2,600,000 souls. If Fleet-street could be joined by a straight line through Paternoster-row with Cheapside, and if Cornhill, Leadenhall-street, Fenchurch-street, and Gracechurch-street could be enlarged, I guess that the traffic would be considerably improved; the wood pavement, as deadening the sound, pleases me very much, but I should have thought that the form of the blocks might have been more judiciously contrived to give a firmer hold to the horses' feet: I have just been told that the Government has announced its intention of macadamizing the whole town; so that the wood and stone paving will both disappear: this, if an advantage to the ears, will be a great detriment to the feet.

All that regards domestic offices is so perfect in London, that I am astonished that the architectural police has not thought of establishing every where *lieux d'aisance en forme circulaire*. Here and there something may be found, but the distribution is not good, and the number far too small.

The supply of water is a subject too important and too vast for this letter. Hereafter I may trouble you upon it. Eight or nine companies supply the greater part of the town with river water, at heights convenient for

domestic purposes, but it is generally too soft for drinking, and wants the vigour of spring water. We find in London several fountains, or rather public pumps, but still not in a sufficient number for so large a city: still, they are public in the largest sense of the word, as we find an iron ladle attached to each for the use of the thirsty. I saw some chained up!

The railways, which about upon the four sides of the city, could not be adapted to the roads, on account of the immense circulation; and therefore pass above them by means of bridges, so that—after a sort—you have begun to build one town upon another: the construction of these bridges, part in brick, part in iron, is very remarkable, and some are really very pretty, others as bad, while some are positively curiosities. As to the principal buildings of the stations, those which I have seen are far from pretty, and as I have not yet had time to see the others, I must leave this subject.

I have visited, and must speak of them, the workshops of Messrs. Thomas and William Cubitt, the builders. The establishments of these brothers are the most extensive of the sort that I have ever seen, and I imagine that they have no rivals but each other. It is clear that these gentlemen are very enterprising; the one in railway works, and the other in building a new town in Picnic: but as your city is the Nineveh of this age, it is here only that these gigantic works can be executed.

It is impossible to consider in detail the hospitals, asylums, prisons, docks, and many other large buildings in London. The domestic arrangements of these institutions are doubtless meritorious, but in the history of architecture they would tell as shapeless masses, excepting the prison of Newgate, which has its character so decidedly pronounced as to give a gooseskin to the passenger: but we will pass it hurriedly for a spectacle more agreeable—more delightful—let us go to the Exposition.

The Exposition! So much has been said and written in its praise, that I am afraid of saying nothing but what has been repeated ten times already, if I were to speak of it in general, but I only wish to call your attention to it as far as regards architecture. Is this great parallelogram of 1,851 feet long, 408 feet wide, and 108 feet high in the transept, a building? I think not. I call a building a construction made to resist the seasons and the weather. Can the Exposition do this? To paralyse the sun's effects, and not to be roasted in summer, it has been necessary to cover the roof with canvas; and when winter comes with its snow, hail, and storms, we shall see the effect and perhaps the ravages which it will make in the Crystal Palace. As to weather, the inventor talks of its capability of standing fifty years. That is possible, but the repairs must be frequent and expensive. Experience seems to teach us that for the moment there is no danger, but as the columns of the great nave, although they support three stories, are only of the same diameter as all the others, I fear for the future. Without doubt construction in iron is different from that in brick or in stone; but there exists a maxim which knows no change,—viz., that the bottom should be heaviest and the top lightest. But it is currently reported that the building is to be removed. Although I have mentioned it last, the first visit after my arrival was to the Exposition. The exterior did not strike me. If you ask why? I cannot explain. Either the height is too small for the other dimensions, or the trees spoil the general effect, or the total want of profiles to give what we call relief or *chiaroscuro*, or the blue and white colouring for the columns, with brown panelling, hardly appropriate to the exterior of any building, may be the cause. I cannot tell. Perhaps I am wrong, but I think that a plain grey or yellow stone colour would have told better against the blue of the sky, and the green of the trees and turf. The commission must have fancied that a large mass of blue was not good, and therefore used the deep brown colour with which the wooden panels are decorated. Why should not this great quantity of wood (in a construction

generally stated to be of glass and iron) have been masked. In the exterior nothing struck me but the nave, on account of the boldness of its construction, and the grandeur of the idea. On entering the first glance is dazzling. The endless perspective, the sea of light above and of people below, the thousands upon thousands of beautiful and precious objects, arranged with admirable taste, all combine in one magnificence, which subdues the mind in a moment. I do not propose to myself to speak of everything which I considered remarkable in this giant exposition, nor even of the things relative to our own profession. I have seen models of bridges, of triumphal arches, of churches, houses, and other very interesting monuments; I have seen beds, sideboards, chairs, bookcases, vases, and consoles admirably carved; I have seen a thousand details perfect in taste and execution, but I have sought in vain for a principle or form in architecture which was not known before.

In the interior, the blue and white painting is more *à propos*, and the mass of red drapery used as coverings for the tables and pedestals is perfectly in harmony with the colour of the architecture. The light thrown upon the objects is not advantageous. In order to get a good light for objects of industry as well as of art, we want a light of about sixty-five degrees, as this is the best for seeing and being seen. We have a proverb "Too much is as bad as nothing," and this applies to the light at the Exhibition: there is no shadow for objects in relief, and they consequently want effect. The eye can find no place of repose, and the visitor leaves the building dazzled rather than satisfied.

Nevertheless we must give due honour to all those who have contributed to this great and unique enterprise; and if the Crystal Palace may not be considered as a model of architecture in what regards beauty and solidity, still as envelope of the Exposition it has great merit. Without doubt, a more elegant and prettier architecture (for example, Moresque or Etruscan, which are the most suitable) might have been chosen for construction in iron, but the expense and time—where were they to be found? This was the question at the moment that the commission had to decide. To do justice, it must be confessed that Mr. Paxton, as inventor, and Fox and Co. as constructors, have shown great spirit, talent, and invention, in planting this temporary but *grandiose* building upon the turf of Hyde-park.

As we have seen that our time has no architecture, and that the envelope of the Exposition has not given us a new one, I have asked myself whether the receipts, which surpass all the expenses of the work, might not be made really useful to our arts as well as to the sciences and industry, by forming a capital of the surplus whose interest should furnish annual premiums from 100l. to 2,000l., either in competition or as single works, for all nations. Why should not this be adopted? The Exposition, and through it, the surplus, is the fruit of the daily and nightly study and labours of men of all classes in every country. Thus we have a treasure which all the world might justly claim for those who have created the capital. I think that every artist and artisan, every man of liberal education as well as the ignorant, would applaud such a resolution as that I have proposed, and that thus there would be a confirmation of the saying, *Vox populi vox Dei*.

SERVAAS DE JONG.

CLASSIFICATION OF MEDIEVAL ARCHITECTURE.

I HAVE been travelling in France for more than two months endeavouring to complete an undertaking I have now had in hand for some years, and which may be briefly described as "An Architectural Tour in the English Provinces of France." I find that during my absence Mr. Sharpe, of Lancaster, has thought proper to publish in THE BUILDER a bitter and libellous attack upon me by name, and upon my publications in general.* I have a

* P. 463, ante.

great aversion to anything like personal controversy in the columns of a newspaper, and do not think that Mr. Sharpe was justified in introducing my name. But as this has been done I am bound to defend my publications by showing the very slight grounds he has for his attack. I believe the reputation of the "Glossary of Architecture" is too well established to be injured by Mr. Sharpe's interested attacks. It is evident that he judges of others by himself in at once attributing mercenary motives to the letters of "F. S. A." but he was not justified in his attack upon the "Glossary," even if his conjecture were correct. By his own showing he has referred only to an old edition of the work, published ten years ago. The interval has been one of rapid progress in the study of Mediæval Architecture, and if Mr. Sharpe has succeeded in detecting a few errors amongst a multitude of dates, he might have had the candour to acknowledge that some allowance should be made for those ten years. But further, the particular part of the work to which he has confined his quotation, the "Chronological Table," has not been republished in the last edition, and has been suffered to remain out of print for the last six or seven years, because I saw that it required more careful revision than I have had time or opportunity to give to it. Every one who has used the "Glossary," and the number is probably larger than Mr. Sharpe imagines, must be aware that it contains two classes of dates, one for which there is historical evidence, the other conjectural, distinguished by having A.D. annexed to the first class, and *circa* or *c.* to the second: no pretension was ever made to exact accuracy with regard to the latter class, and a variation of ten years in a conjectural date may very well be allowed:—it is probable that a large building would be more than ten years in progress. I believe that in the generality of cases there is as good authority for my conjectural dates, as for Mr. Sharpe's conjectural restorations in his *Parallels*; and there is this distinction between them, that whereas mine are avowedly conjectural, Mr. Sharpe makes no distinction between his own conjectures, some of which are very bold, and the actual remains; so that a good deal of care, and the comparison of several plates, is required to distinguish between what is genuine and what is conjectural. Mr. Sharpe is a professional architect, and no doubt feels very confident that his conjectures are all perfectly true. I do not pretend to have any such implicit confidence in mine. I am neither an architect nor a professor of architecture, but have merely endeavoured to collect the best information I could upon the subject, either from books or from the highest living authorities, those who are known to have paid the most attention to the subject, and whose judgment is most to be relied on. The information so collected I have endeavoured to lay before the public in a popular form, and I have reason to believe that I have been tolerably successful. I regret extremely that he has compelled me to enter into these particulars. I agree with my friends Mr. Scott and Mr. Freeman in having a high esteem for Mr. Sharpe's labours, and am not conscious of having given him any just cause of offence. I believe that the "Chronological Table," which he has attacked, was, at the time it was published, a fair reflex of the opinion of the best informed persons on those subjects, although after the lapse of ten years considerable changes may now be necessary in the conjectural parts of it. Ten years ago it was the general belief that the deeply-recessed Norman doorways, such as those of Iffley Church, were generally built before the middle of the 12th century; but subsequent researches have changed that opinion, and it is now believed that they were generally built after that period. I endeavoured to point out this change of opinion in a paper in the *Archæological Journal*, in 1847, which Mr. Sharpe appears not to have seen. I believe that the authority for the date of Iffley Church as there given will be found to be better than he imagines. I am informed that the original register of Kenilworth is preserved in the British Museum, and also a survey of the manor (Iffley) at the beginning of the reign of Henry II., in

which no church is mentioned, as would have been the case if there had been one. The next blot in my table which Mr. Sharpe has hit is that I had called the Pointed arch a sign of Transition, without sufficiently qualifying the general rule. But even then I mentioned the use of late mouldings at the same time, and it might be inferred that the Pointed arch *alone*, without late mouldings, is no proof of Transition. Mr. Rickman had observed long before that "round and pointed arches were, for nearly a century, used indiscriminately, as was most consonant to the necessities of the work or the builder's ideas." This observation has not been sufficiently attended to. My own experience fully confirms it; and further, I have found in the south and west of France a large class of important buildings of the *eleventh* century, in which the pointed arch is commonly used. S. Front, at Perigueux, may be considered as the type. This was founded in 984, and consecrated in 1047; and the series of cupolas by which it is vaulted are all carried upon pointed arches, which must, therefore, be part of the original construction. There are at least forty other churches in the same district (Perigord) copied from this. The church and cloister of Moissac have original inscriptions, giving the date of 1100 for the completion of the work, and have pointed arches in the original structure. In both these cases, and in several others, there is additional work of later Norman character built against the original fabric, and this addition is of the character of the middle of the twelfth century. There is not a better authenticated date to be found than that of the Crusaders' Church at Jerusalem, because they only held possession of the city for a very few years, and the building of the church is a matter of history too notorious to be disputed. I am surprised at the coolness with which Mr. Sharpe asserts that the arches of this church are round, and appeals to his friend Professor Willis to confirm his assertion. I believe I have an equal right to appeal to the personal friendship of the learned Professor; but I do not consider such an appeal as a fair way of deciding such a question. I prefer to appeal to his published work on the subject "The Architectural History of the Church of the Holy Sepulchre at Jerusalem," 1849, p. 86. "The present choir, furnished with its circumscripting aisle and radiating chapels, was erected to the east of it, in the form then employed in many parts of western Europe, and with pointed arches."

He mentions these pointed arches again repeatedly, as at pp. 88, 89, 93, &c., and in the engravings accompanying the work, they are distinctly represented as pointed. These arches must have been built about the year 1100; they are not of Saracenic character, but in the usual style of that part of Europe from which the expedition sailed, at that period. Bordeaux was the port of embarkation; and the examples I have mentioned are all in the province of Aquitaine, and must have been seen by the crusaders on their way; indeed, many of them came from that very district. There is, therefore, no great improbability in the account given by the local historians, that the Church of the Holy Sepulchre at Northampton, with its pointed arches, was built by Simon de St. Liz, the second Earl of Northampton, on his return from this crusade, especially as these arches are perfectly plain, and have no mouldings or other details of late character. It is probable, also, that many other buildings in England, which have been assumed to belong to the period of Transition on account of the use of pointed arches *only*, are really of a much older date. It is necessary to examine the mouldings and details in this as in all other cases. The pointed arch *alone* is no proof of late date.

Perhaps I may be allowed now to turn the tables upon Mr. Sharpe, and give another reason for not upsetting our well-established and true system to adopt his new one. He avows that his own system is totally inapplicable to France or other foreign countries, and says that no other system can be applied to both English and foreign examples. This I altogether deny. There are, of course, provincialisms, or nationalisms, to be taken into ac-

count and allowed for, but the eye soon becomes accustomed to these, just as, in our own country, we must make allowance for the difference between Yorkshire and Devonshire. But the leading features of the established system—the division into four great periods or styles—is just as well marked on the continent as in England. This system is not only applicable, but is actually applied, and in daily use, all over Europe. Its great recommendation is its simplicity, and the ease with which it is remembered; while the seven divisions of Mr. Sharpe's system are perfectly arbitrary, and applicable (so far as they can be applied at all) to England only: the four divisions of the established system are natural and obvious, and have this great advantage, of agreeing with the four centuries during which these styles prevailed, the last quarter of each century being the period of transition from one style to the other, and during these periods there was not only a mixture of styles, but also what Professor Willis has aptly called, an "overlapping of styles;" that is to say, during these periods, while new-fashioned people built in the new style, old-fashioned people continued to build in the old style. Some districts were in advance of others. But with these qualifications the same general style prevailed all over Europe. The style of the thirteenth century, for instance, which in England is the "Early English Gothic," and in France is the "Early French Gothic," has a marked and decided character of its own, which no one who has studied architecture at all can possibly mistake, but which is not always distinguished by lancet windows either in England or in France. The question is not when the first germ of a new style began to make its appearance, but when it became established, and the usual style of the period. It is here that Mr. Sharpe's system entirely fails. Cross the Channel, and his "Periods" must be left behind.

On this subject I will venture to set my own experience against Mr. Sharpe's. I have been in the habit of travelling on the continent every summer for the last twenty years,—in Germany, Holland, Belgium, and France (latterly I have confined my tours to particular districts of France), and, with the help of the established English system, I have been able to tell the age of foreign buildings with nearly the same facility as English ones. In the best foreign works upon the subject, it will be found that their system is the same as our own. I have also had the pleasure of being personally acquainted for many years with M. De Clamont, the author of the best French works on the subject, and find his system the same as our own. Through him I have become acquainted with many of the leading antiquaries of France, and, at his request, have been for some years a member of the society of which he is the able president—have attended several of their meetings, and joined in their excursions. I find no difficulty in conversing with them, and discussing with them the dates, or the merits, or the uses of the various buildings we have met with, or which happened to be mentioned. My opinion is as frequently asked as that of any other member. In one instance, at least, it was my good fortune to be able to explain, from my English experience, the use of an important building which had previously been mistaken by all the French antiquaries—the remarkable kitchen of the Abbey of Fontevault. This sort of friendly intercourse between those engaged in kindred pursuits in different countries I hold to be very desirable and useful to both parties; but if compelled to adopt Mr. Sharpe's system, it would be impossible for me to continue it, and necessary to abandon the acquaintance and correspondence of my friends in France. No one who has studied Gothic architecture by Mr. Sharpe's system only, can ever hope to establish a similar correspondence, or even to understand anything of foreign Gothic. Suppose a tyro to have just learned Mr. Sharpe's system, and to make an excursion to Paris; he naturally goes to the cathedral of Notre Dame, and finding all the windows agree with Mr. Sharpe's vague definition of the "Geometrical Period," he assigns the

building at once to that date, which is about a century after that at which it was really built, the whole of the windows being inserted at a subsequent period—not an uncommon event—and though probably obvious enough to Mr. Sharpe's eyes, by no means easy for a tyro to detect.

I cannot conclude without thanking Mr. Scott for the handsome manner in which he has come forward in my defence during my absence, and must add I cordially agree with him that it is time the established system ceased to be called by the name of Mr. Rickman, who was only one of many zealous workers who contributed to bring it to perfection. His nomenclature is not at all essential to the system, and the less use we make of technical language the better. The French antiquarians usually describe a building by its date only—as early thirteenth, or late fourteenth, &c., as the case may be. Why should we not do the same? J. H. PARKER.

* * The personal feeling that has been elicited during the very interesting discussion of this subject which has appeared in our pages, is much to be regretted. It was quite contrary to our views, and we have been forced to decline several communications on this ground, including a reply by Mr. Sharpe to Mr. Scott's letter. We are not disposed to give any more space to merely personal questions.—ED.

NOTES IN THE PROVINCES.

Colchester.—The new People's Hall is now finished and taken possession of by the Mechanics' Institute. It is situate near the Corn Exchange, and contains a hall, adapted for large public assemblies, lectures, concerts, &c., with retiring rooms for lecturers; reading-room, 24 feet by 22½ feet, and library adjoining; two class rooms, and apartments for sundry purposes. The building was begun and finished by Mr. Pettit, of Ipswich, on a contract of 900*l.*, from the designs of Mr. F. Barnes. The inauguration of the public hall took place on 14th instant.

Chelmsford.—A temporary structure was recently placed on the site proposed for the re-erection of the town conduit, to enable the public to judge of the eligibility of the situation. The design, according to the *Chelmsford Chronicle*, is to take away the centre of the old conduit, which will give it a lighter appearance; and as there is a fall of several feet from Conduit or Tindal-square—as it is to be henceforth designated—it is proposed that the water shall rise as a fountain between the columns, and flow into an ornamental vase or basin, the supply to the public being provided for beneath. It has been also suggested that a dome of plain or coloured glass should be substituted for the heavy dome in the original, and a lamp placed in the interior over the fountain. The pedestal for the Tindal statue, weighing four tons, was lately placed, and the statue was immediately to follow. As an apology for the certainly otherwise not very congruous or fine idea of connecting a statue with a conduit, it is alleged that this square was the spot where Judge Tindal spent much of his early life.

Grimstone.—The south-east window of the chancel of the church has just been filled with stained glass by Messrs. M. and A. O'Connor. The subject is St. Paul before Agrippa, presented to the church by Mrs. Barnes, of Gayton Hall, as a memorial of her late husband, the Rev. George Barnes, B.D., who was for thirty years rector of Grimstone.

South Molton.—In a recent thunderstorm the tower of the church here was seriously damaged by lightning. The ceiling of the church near the eastern end is also much damaged, and the flooring of one of the pews was ripped up.

Cuckfield.—The foundation-stone of Mr. Charles Lennox Peel's mansion at Woodcroft was laid on 6th instant by his son (great nephew of the late Sir Robert Peel, Bart.). The building is to be Elizabethan, as designed by Mr. Watson. It will be surrounded by its own grounds, approached by a lodge. In the evening the workmen partook of an excellent supper.

Bridgenorth.—The south approach to the bridge on the west side of the river in this town has been widened and improved by the removal of old buildings. It is also in contemplation to alter some other parts of the town at present narrow and inconvenient.

Langcliffe (near Settle).—A new church has been recently built and endowed here chiefly by Mr. J. G. Paiey, of Harrogate. The architects were Messrs. Healy and Mallison, of Bradford. The seats are all free, excepting those in the chancel. The building was consecrated on Monday week.

Newton Abbott.—It is proposed by the *Exeter and Plymouth Gazette* to remove the old tower of Wollborough Church, which is now felt to be a great obstruction to the thoroughfare, and to erect on the vacant site an equestrian statue of William III., as the great Protestant deliverer. The editor has also drawn attention to the stone on which the memorable declaration of the Prince of Orange was read after his arrival at Newton Abbot from Torbay. The prince, before making his progress to Exeter, was entertained at the mansion-house of Forde here, where also King Charles had slept.

Worcester.—It is now proposed to convert the Corn Exchange, lately sold by auction, into a music-hall.—The materials of the old market-house have been sold by auction in fifty-seven lots, producing 139*l.* 10*s.*, exclusive of lead, which will probably make the whole proceeds about 170*l.* The whole of the old erection is being cleared away, leaving an open space for the new building, which is to be put up and ready for use in seven weeks' time.—The project for erecting public baths in this city is now again on foot, and is being actively prosecuted, according to the local *Journal*.

Warwick.—The vestry of St. Mary's Church, Warwick, has recently undergone considerable reparation, and whilst the workmen were cleaning the interior walls, which are of stone, they were found to be covered with several coats of whitewash. On the removal of these the existence of an ancient screen was ascertained, but found to be filled up with brickwork. The top part of the screen appears to have been finished by an embattlement.

Nottingham.—An extensive range of warehouses and work-rooms, five stories high, has been erected opposite the railway station here, for Messrs. Hine and Co. hosiers. The warehouses have a frontage next Station-street of 192 feet, and the work-rooms, a frontage next Trent-street of 120 feet. The rooms are 40 feet wide. The principal entrance to the building is through a recessed portico in the circular corner at the intersection of the two streets, and which, with the staircase and offices on the same, connect the warehouses and factory together. The main points are executed in faced bricks and stone dressings. The circular part immediately in connection with the principal entrance, with its columns, mullioned windows, pinnacles, and waved gable, is said to form a rather striking feature in that part of the town. Every portion of the building was executed under the superintendence of Mr. T. C. Hine, architect, who, with the builders and the proprietors, was entertained at a *soirée* got up by the establishment of Messrs. Hine, to celebrate the completion of the building.

Preston.—The *Preston Chronicle* intimates that the clergy of that town intend building a new church in or near Ribblesdon-lane, another on the Maudlands, and a third on the Oxheys or Greenbank estate.

Blackburn.—The architect of the new town-hall, Mr. Patterson, is making rapid progress with the plans and duplicates, says the local *Standard*, and the foundation stone will probably be laid before Christmas. The large room will be about 126 feet long, 50 feet broad, and 34 feet in height; thus affording accommodation, under ordinary circumstances, for about 2,000 persons.

Leeds.—A standard eight-day clock has been made by Dent for St. George's Church tower, at Leeds. It is provided with compensation pendulum, dead beat escapement with

pin-wheel, going ratchet, &c., and is said to keep time to a second in twenty-four hours.

Newcastle.—The building to be used by the College of Practical Science in this town, says a local paper, is not yet finished, but its occupation by the medical students and lecturers is not impeded. On the south side of the edifice is a dissecting room, 21 feet by 13 feet; next, the library, 30 feet by 20 feet, and students' waiting room adjoining, 21 feet by 14 feet; and above these a museum, 60 feet by 28 feet. This apartment is lighted by five windows on the south side, and also from the roof. The rear of the hall is divided by a passage, to the west side of which is a lecture room, arranged as an amphitheatre, 30 feet long, by 25 wide, and capable of seating 130 students. Adjoining it is the laboratory, 25 feet by 11. There are also, in this part of the building, dissecting and other rooms. The exterior elevation of the building is of the Italian style of architecture. It is divided into three bays, which rise from a basement. The exteriors are margined with rusticated quoins. The windows in the upper division have plain architraves, and the interior, or centre bay, has three windows in each stage, the lower ones being plain, and separated from the upper bay by a string course. The windows in the upper stage are more ornamental, having an arcade with impostes and archibolts. The arms of the Barber Surgeons' Company fill the spandrels, and the keystones are decorated with the *Æsculapian Serpents*. Immediately above these windows is a dental cornice, with a dwarf attic, and the whole is surmounted by chimneys, similar to those designed by Vanburgh, and illustrations of which may be seen at the Townhall, Morpeth, and at Seaton Delaval Hall.

Kelso.—Mrs. Robertson, of Ednam House, has presented to the inhabitants of Kelso ten acres of ground, to be turned into a public park, and promised 500*l.* towards completing the approaches, laying out walks, and otherwise adorning the ground.

Edinburgh.—Mr. Steel, the sculptor, has been engaged to form the proposed statue of the late Lord Melville, and the county justices, &c., have selected the open space between the County Hall and St. Giles's Church, at the Parliament Houses, as the site, to which the magistrates have assented. The sum subscribed at present is 1,747*l.*—The North Bridge appears to be getting into a bad state of repair. The superintendent of works was lately ordered to examine and report upon the state of the bridge, and his estimation is, that it will require 1,000*l.* to repair it creditably. The Lord Provost, however, procured a postponement of the question, as he had a plan to produce by which it might be cheaply and effectually widened.—In the city council, lately, a report was read by the Plans and Works Committee, on a remit made to them to consider a letter from the office of the Woods and Forests, proposing to erect a lighting conductor on the Assembly Hall, and asking the council to contribute a moiety of the expense. The report was to the effect, that the committee were of opinion that the proposed expense was unnecessary! The resolution came to after some discussion was, that a sum of money having been paid by the city as their contribution towards the expense of building the hall, whatever expense is required in the matter ought to be defrayed wholly by Government.

St. Andrew's.—The spirit of improvement and progress seems to have entered into this ancient abode of "still life." Building works of various kinds, including a new hotel, a landing slip for vessels at low tides, church improvements, street improvements, house buildings, &c., &c., have of late been in simultaneous progress. A local paper regrets that the old town-hall is not knocked out of the way of the new hotel—a libel by inference on the former building. The gable of the Free Church, it says, was more like a granary than a modern place of worship, but it is being remodelled: both gables have been taken down, the roof removed, and the street front, in course of erection, of polished ashlar. The college steeple is about to be thoroughly re-

paired, and some of the old college buildings pulled down.

GOthic ORNAMENTATION.

ENRICHED MOULDINGS.

THE two examples which your correspondent "W. H. B." has adduced of enriched Gothic mouldings do not, in my opinion, invalidate the theory which I suggested in a former paper,* that the architects of the Middle Ages discarded as a principle the use of carving on mouldings, as practised in Classic architecture. I might observe that the variations found in such subordinate works of art as sedilia and tombstones would be insufficient to overturn a principle traceable in the architecture of the age. We know from Vitruvius that the use of the triglyph was limited as a principle to the Doric order; and if no such writer had existed, it might have been derived from a careful study of the classic remains, notwithstanding some examples have been found where the triglyph has been used with the Ionic order. But, independently of this consideration, I think "W. H. B." is mistaken in regarding the carving on the foot of the finial in the sedilia of Exeter Cathedral as a portion of the necking mould. It appears to me to be the first swelling of the foliage of the finial:—the necking moulding is below it, and is, as usual, quite plain. With regard to the other example of "the flat ogee moulding surrounding a monument in the Lady Chapel of the same cathedral, and closely resembling the Roman water-leaf," the character of the carving is evidently Norman, and at once betrays its origin. I think the monument alluded to is the coffin slab of Bishop Simon de Apulia, who died A.D. 1223; and it is not surprising that the artist who designed it, living so near the flourishing period of Norman architecture, should have adopted forms, the use of which were probably formerly familiar to him. It occurs as an edging to the slab.

I cannot understand why "W. H. B." should be unwilling to believe that the system before indicated was a principle rigidly adopted by the middle-age architects. If it is a fact, and the evidence of "W. H. B." who evidently is a careful investigator of the subject, and who states that the above two specimens are the only examples which he recollects to have met with, strongly corroborates it, it is one which tends to raise still higher the science and artistic powers of the old architects, and proves that they had systematically discarded the shackles of the "more Romano," and had adopted a new and original view of their art. It gives us also a further insight into their mode of design, and in some measure accounts for what has always appeared, to all students of Gothic architecture, a very difficult problem to solve, viz. the great and total difference which appears between the late Norman and the Early English style—separated as they are by a comparatively small distance in date:—for if the Early English architects, dissatisfied with the exuberant decorations of the late Norman, resolved to discard such decoration and to seek their effect in richly clustered but plain mouldings, we can, at least under one aspect, discern how the peculiarities which mark their architecture have arisen.

Again, if the theory is correct, it at once disproves the idea which has been several times suggested by able writers, that the Early English architecture was founded on the Saracenic or Arabian, and imported to us at the time of the Crusades, or in consequence thereof. Now, the Saracenic architecture abounds in carved mouldings, and these of a very peculiar character:—if it can be shown, as I believe it can, that carved mouldings were never used in Early Gothic, the connection between the two styles is at once dissolved.

"W. H. B." states, that the opinion respecting the avoidance of sculpture on Gothic mouldings has occurred to many architects, but, on a more extended observation, has been discarded as not of universal application. Such, probably, may be the case, though I have never heard the opinion expressed before, and certainly have never met with it in any written or

published work. I only hope that other experienced persons will have their attention called to the subject, reminding them, however, that my suggestion is, not that carving or sculptured decoration was discarded, but that in all instances, it was applied on the mouldings, giving them a different contour, but preserving *in situ* their original forms.

THOMAS LITTLE.

GAS AND WATER SUPPLY.

Carshalton.—Gas works are to be forthwith erected in this village, according to the *Surrey Standard*. Mr. W. M. Stears, of Hull, is the contractor. The main will probably be extended to Sutton.

Norwich.—On Tuesday week the new water-works were formally opened, and the event was celebrated by a *déjeuner* at the Assembly Rooms, at which the mayor and other civic authorities, the chairman and members of the water company, and various members of Parliament and other gentlemen were present. In the evening also there was a display of fireworks in further illustration of the pleasure of the citizens on so auspicious an occasion. The day, in fact, was set apart as a public holiday. A large party formally inspected the new works on Heigham-common and Lakenham, where Mr. J. G. Linde, the engineer-in-chief, explained the works and the process of filtration. The water is taken from the river Wen-um by means of a small reservoir, into which it flows through an artificial bank of gravel and a conduit pipe 18 inches in diameter, leading into the well of the three engines of 75-horse power each, provided with six pumps, three of which are used for forcing the filtered water into the elevated service reservoir at Lakenham. The pumps together are capable of delivering 2,333 gallons per minute to the filter beds, and 1,560 gallons per minute to the service reservoir at Lakenham. The depositing reservoir at Heigham has an area of about 30,000 square feet, and will contain 1,660,000 gallons. The filtering beds, two in number, are each 190 feet long, 163 feet wide, and are together capable of filtering 2,450 gallons per minute. The main pipe from the engines to the service reservoir at Lakenham is 4,000 yards in length and 15 inches in diameter. The height to which the water is raised is 165 feet. The service reservoir at Lakenham is 170 feet square and 15 feet deep, and contains 1,484,400 gallons. No building in the city or its environs, says the *Norfolk Chronicle*, need now be without an ample supply of water at their highest stories. The main leading from the service reservoir is 15 inches in diameter. The pressure of the water on the lower part of the mains in its passage to Lakenham, varies from 75 to 80 inches on the square inch. Messrs. Lucas, the contractors for the construction of the works, employed several hundred men. There have been 20,000 yards of excavation required. The quantities of material used were 2,500,000 bricks, 15,000 yards of clay, 5,000 yards of filtering sand, 7,000 yards of filtering stone, 3,000 yards of concrete, and 40 tons of lead.

Cambridge.—At Messrs. Towgood's paper manufactory, Cambridge, says a provincial contemporary, a patent apparatus has been erected for making their own gas, which they thus obtain at about 1s. 6d. per 1,000 feet.

Exeter.—A new company has just been established at Exeter to supply the city with gas made from cannel coal at 4s. 6d. per 1,000 feet. It has had the effect of reducing the price of the previously existing company from 6s. 6d. to 5s. per 1,000.

Sheffield.—A new gas company has been started here for supplying pure gas at a maximum price of 3s. per 1,000 feet, and founded upon the mutual principle of an identity of interests between producers and customers, in which the profits shall be returned to those who create them, in a reduction of price, the rate of interest being restricted to ten per cent. It is intended to dispense with an Act of Parliament by incorporating the company under the Joint-Stock Companies Act, and to obtain the consent of the boards of highways to open the streets. It is estimated that the dwellings

of the working classes at Sheffield might be lighted with gas at 2d. a week, with sufficient profit to the company.

Crews.—Every working man's cottage here is said to be lighted with gas, at the cost of 1½d. per week.

Dumfries.—The opening of the new water-works here is about to be celebrated as at Norwich. The laying of the main pipes in Lochrutton Loch has been completed, and the water sent down to the town through the pipes for the purpose of cleansing them. "An amusing example of hydraulic power," says a local paper, "was given in Queensbury-street. Some men were putting a fire-plug to rights, and an amateur in the shape of a woman came forward to assist them, armed with a stick. She succeeded in doing exactly the opposite of what was intended: the water rushed out with full force, and actually lifted her fairly off the ground, giving her a good ducking besides, and teaching all meddlers to beware of the water-pipes."

Edinburgh.—The extensive operations long in progress on the Castle-hill, in connection with the new reservoir of the water company, are now complete, and the conclusion of the undertaking was on Friday week celebrated by a dinner in the Café Royal to the builder, Mr. John Alexander. The cistern has been constructed to contain about sixteen millions and a half of gallons, the area being 100 feet by 90, with a depth of 30. The city is now to be provided at an average rate of 570 cubic feet per minute, with a constant supply of water.

Montrose.—The gas-works in Lower Hall-street have been considerably enlarged and improved, under the superintendence of the manager, Mr. J. Reid. The alterations are said to embrace all that is most approved in construction and arrangement, so as to enable the company to greatly increase the quantity and improve the quality of their gas.

Progress of Gas-light in South America.—Mr. John Yates, of Liverpool, having lately visited Peru, with the object of calling that government's attention to some claims contracted during the struggle for independence, has returned with a contract to supply the city of Lima with gas; and what is more remarkable, the churches. Hitherto the wax candles have almost been considered part and parcel of the worship: the Bishop of Lima, however, has now consented to the introduction of the "new light." Hitherto Rio is the only town in South America, it is said, where gas-light has been introduced.

ROYAL PANOPTICON OF SCIENCE AND ART.

—This undertaking was chartered in February, 1850, and we were somewhat surprised that we heard nothing more about it. The first public meeting, however, was held a fortnight ago, and it was then stated that all the preliminary arrangements had been made, and that the building will be ready by May next. In the first instance, a plot of ground between Tavistock-street, Covent-garden, and Exeter-street, was obtained from the Duke of Bedford and others, in furtherance of the plan. It was, however, found to be attended with so much expense, in getting rid of some of the tenants already on the property, and holding leases, that it was considered expedient to relinquish the idea of placing the Panopticon in that situation, and the ground on the east side of Leicester-square was then fixed upon as a position calculated to give an opportunity of advancing the interests of the corporation. This being under the paternal care of the Court of Chancery, the negotiation for the lease was necessarily much prolonged, and accompanied with great delay and difficulty, which however has at last been overcome, and the corporation has been in possession of this ground since the 5th of August last. The plans for the building have been definitively arranged, and the builder, Mr. Wilson, has already made considerable progress with the building. The expenses up to this time have been about 6,000l. The cash in hand 8,600l. Liabilities, 1,600l. The capital of the corporation is 80,000l.

* See p. 511, ante.



THE HOSPITAL OF ST. CROSS, WINCHESTER.

THE HOSPITAL OF ST. CROSS,
WINCHESTER.

WE have given views at different times of the fine solemn old church belonging to this institution, and now lay before our readers a careful sketch taken from the south-west corner of the principal court, showing the tower, built by Cardinal Beaufort; the "refectory," with its porch, &c.; the porter's apartments, right of the tower; the "ambulatory," about 135 feet long; also the commencement of the church; and we may at some future time give other views of these interesting buildings.

The late Dr. Milner, in writing about St. Cross, said: "With all its beauty, there is a wonderful repose and calmness in the place; but it is the repose of the living and not the oblivion of the dead. There is no ruin about St. Cross, no memorial of glory departed, to bring a melancholy contrast to the mind." Yes, there is life in the old place, at least in part of it: the first court looks cold and dismal; but on entering the second all is bright and cheerful. The old buildings, though ancient, are not decayed: they are kept up and preserved with care and pride. The flowers, so numerous and sweet, look as if they loved the building, and cling tightly to it, determined to protect as long as they can the grey old walls that have stood so long. Actually *Time* appears to stand still to admire this quiet spot, not liking to lend his hand to destroy any more the buildings of St. Cross.

THE CASA ZAPORTA, ZARAGOZA

THIS exceedingly rich specimen of Spanish architecture shows the general style of the Court yards to the palaces of Arragon; for although similar elaborately ornamented examples (called "Plateresque") are found in various parts of Spain, they principally abound in that province. By no means to be recommended as a style, still for its picturesqueness, extraordinary fertility of design, and the spirit and character of execution, it is very remarkable. As is too frequently the case in Spain (where one sees the finest buildings applied to

the basest uses, and treated with the utmost neglect), this palace has been shamefully mutilated, and, when the writer saw it, was serving the double duty of an iron factory and coach office. It was built by a rich merchant of the town of Zaragoza, whose name it bears. At the side of the view we give some examples of Spanish ornament.

T. R. MACQUOID.

BRITISH AND AMERICAN STEAMERS.

IN your number of the 4th inst. you quoted an extract from an American paper, in which it is stated that improvements made in the steam-engine by Americans have been adopted in building the "last fast" boats of the Cunard line, and that in the "extra fast boats" of the same line now in course of construction, "they are to go the whole figure, and fashion the engines entirely after the most approved American models." By giving currency, as you have done on this and other recent occasions, without comment, to the overweening estimate which the Americans form of their own superiority, you appear to me, Mr. Editor, to do much towards weakening the well-founded confidence which has hitherto been entertained in the perfection of British machinery, thereby injuring British interests, particularly with reference to the demands for engines from foreigners.

It is time, therefore, that the real facts of the case respecting the manufacture of the engines on board Collins's American line of steamers (the vessels more immediately alluded to in the American newspaper) should be made known, which I now do from undoubted authority, and, as regards some of the particulars, from my own knowledge,—and which are as follow:—

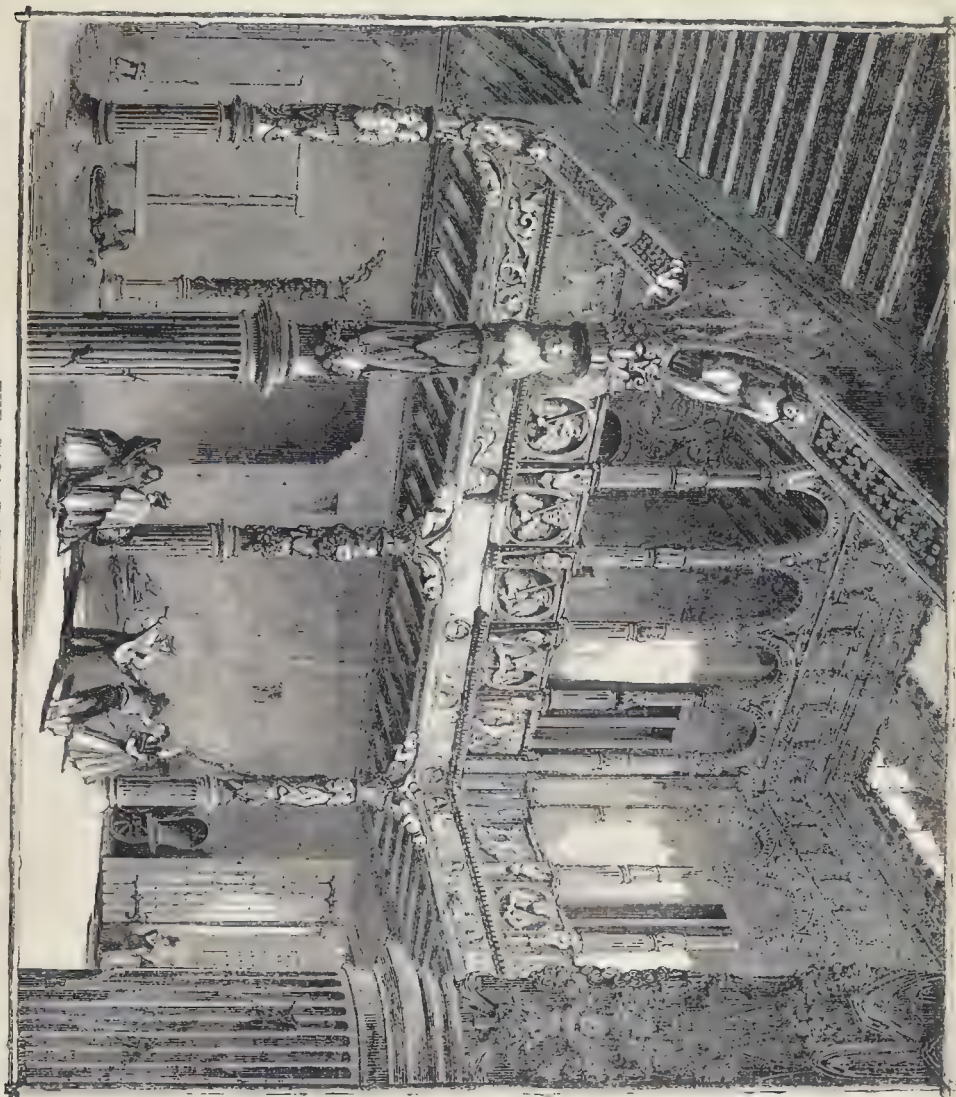
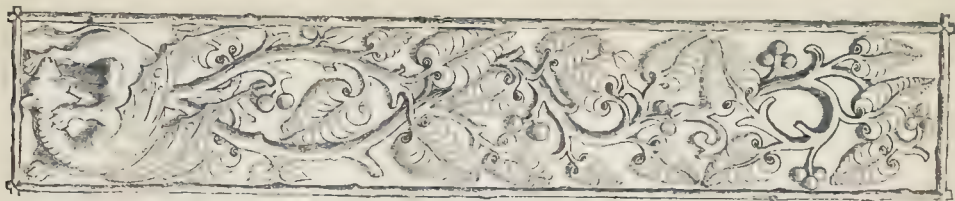
The United States Government, perceiving the failure of all the attempts that had been made to establish an American line of Atlantic steamers which should compete in point of speed and efficiency with the Cunard line, and deeming it of the greatest national importance that this inferiority should no longer continue,

subsidised, with a large annual subvention, Collins's line (besides, it is believed giving pecuniary aid in some shape or other towards the construction of the vessels), on condition that no expense should be spared in obtaining the most perfect and efficient engines that could be constructed; and as there was at that time (although it is only two years ago) no manufacturer in the United States who could make engines fulfilling these conditions, the contractors for the American line turned their views towards the Clyde, and obtained permission from the proprietors of the Cunard line to take mouldings or castings of every part, even to the minutest particular, of the engines constructed by Napier, of Glasgow, on board the largest of their vessels; and in order that nothing might be wanting to make the engines equal to those in the Cunard steamers, the contractors imported men from the manufactories on the Clyde for the purpose of making the engines in New York, so that they might be of national or American fabric.

As, therefore, the last constructed and fastest of the American ocean-going steamers are made entirely after the British model and by "Britishers," you will perceive, Mr. Editor, how little likely it is that the Cunard vessels now in course of construction are to be fitted with engines made after the American model. Where, indeed, have the Americans anything better to show than the engines on board the Collins line, which are made after the British model?

BRITANNICUS.

YORKSHIRE ARCHITECTURAL SOCIETY.—On Thursday in last week the annual meeting of this society was held in the rooms, Minster-yard, York, when the chair was taken by the Ven. Archdeacon Churton. Presents were received of drawings, &c.: the annual report was read by the secretary and adopted, and the committee and officers were elected for the ensuing year. A paper was then read by Mr. W. H. Dykes, architect, of York, on the arrangement of abbeys.



THE CASA ZAPORTA, ZARAGOZA.



IMPRESSIONS IN THE MEDÆVAL COURT AT THE GREAT EXHIBITION.

THE late exhibition of the productions of various nations will be rendered most beneficial to the progress of the arts of design in this country, if artists unreservedly communicate the impressions they have received, and their opinions formed on them; and as this unprecedented assemblage of objects of all styles should be regarded as the means of judging their comparative merits, and of testing the truth of existing theories, it is of the utmost importance to the future improvement of the arts that the opinions should be stated freely. To form a true and unbiassed judgment, I believe it to be essential that our first impressions should receive more attention and careful examination than we usually bestow on them, being often stronger, more correct, and freer from prejudice than our after-thoughts.

In accordance with the above views, I venture to state that my first impression of the Mediæval Court was one of disappointment, and that the forms therein displayed appeared poor and monotonous, compared with the forms of the renaissance and cinquecento styles in the other part of the building. Having previously been sensible of the beauties of mediæval architecture, I first imagined that these impressions were caused by the inferiority of design in the various objects in that style, but subsequent examinations having enabled me to render more justice to their beauty and the ability shown in their design, have also confirmed an opinion that the style, as hitherto developed, does not possess the beauty, richness, and variety of form to be found in other styles, though capable of that possession. This comparative poverty and monotony I believe to arise from the limited use of the principal and most beautiful forms in nature, or those forms that the eye naturally singles out, dwells on, and returns to.

The sphere is used in the mighty works of creation, and convex surfaces of regular and irregular spherical or elliptoidal character are found in most beautiful objects: convex surfaces of the above nature receive more variety and richness from the effect of light, shade, and reflection than any other form, and may often be left plain and unadorned: indeed, their beauty is often lessened and marred by injudicious attempts at embellishment. In natural objects we often find these plain surfaces forming centres of composition surrounded, enriched, and contrasted by stronger marked forms, as the forehead, cheeks, and other portions of the human figure, the imitation of which are the chief beauties available to the sculptor, and are often heightened by the additional strongly marked folds of drapery. We also find these surfaces occasionally enriched by deep cuttings or projections; and the partial imitation of the above beauties gave a richness to the sculptured figures, capitals, bases, and other details of the architecture of the latter part of the thirteenth century and the principal portion of the fourteenth, not to be found at other periods of mediæval architecture in this country. Had the above forms been more freely developed, and connected by the cylindrical forms existing in the columns, mouldings, &c., with the beautiful enriched flat surfaces of the period, a style equal in beauty and richness to any other would have arisen; but unfortunately a change came, in which surfaces of all kinds, spherical, cylindrical, and plane, were gradually sacrificed to lines, even the sculptured figures being rendered angular, ineagre, and unnatural to agree. This ended in the stiff, cramped, and comparatively poor Perpendicular style, to which the freedom of the renaissance was a welcome relief.

Mr. Wornum states in his lecture on the articles of art in the Exhibition,—"There was the Greek style developed to some extent, the Oriental or Byzantine, a tolerable sprinkling of Cinquecento, a little Elzabethan, an immense quantity of Louis Quatorze, and some Rococo." How can we account for the predominance of that unmeaning and incongruous style of Louis Quatorze, except that it allows

the introduction of all forms, and thereby possesses a richness supposed unattainable in other styles.

Not believing, in the present intercourse of nations, the possibility of any new, strongly-marked, individual, national style arising, I yet hope that as our architects have latterly generally selected the style of the best period of our mediæval art for imitation in their designs; by their greater freedom in the judicious introduction and adaptation of forms seeking the types in nature, and not sacrificing the beauties of sculpture and painting to imaginary trammels, we may see the style most peculiar to our country arrive at a perfection it has not hitherto reached.

G. B. MOORE.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Cemetery Laws in France.—In the year 1850, 22,306 persons were buried in the three cemeteries,—de l'Est, du Nord, and du Sud, at Paris. Of these, 15,792 were thrown into the common pit (*fosse commune*), holes, measuring 80 metres by about 4. Here human bodies are sunk (!) without any separation but that of the deal boards between them, and these sinks are not filled with earth until quite full of the bodies of the dead! But all this is done in violation not only of human sentiment, but even of positive law, because Napoleon (whose mind reached everywhere) enacted an especial *Decret*, 23 *Prarial*, an xii., where the principle is laid down, that every person shall be enabled to weep (*pleurer*) on the ashes of his relatives or friends, and to place thereon memorials, however frail and trivial. Art. 6 states, "that for avoiding a too close succession of burials, the opening of the graves shall not take place but every fifth year." For effecting this, the sites allotted for inhumation have to be five times as large, as the annual number of burials will render necessary. Hence, therefore, the poorest person has not only the right to a separate place of repose, but to one that will remain intact for several years. Arts. 10 and 11 of the same law speak of the further concessions of space or time, which can be obtained by those who will purchase them by making donations or provisions to hospitals or the poor, besides a sum to be given to the commune. Art. 4 states positively that every inhumation shall take place in a separate grave (*fosse séparée*), whose dimensions are thus ordered:—"The grave to have a depth of 1 met. 5 cent. to 2 metres, and a width of 8 centim.; and shall be filled up with well-sifted earth as soon as the body has been deposited therein." Art. 5 states, that the graves shall be not nearer to each other than from 3 to 4 centim. at the sides, and at top and bottom from 3 to 5 centim. This law of Napoleon may be considered as the *Magna Charta* of the dead in France,—a real *habeas corpus*!

Painting on Slabs of Lava.—There have been executed at Berlin three pictures by Professor Küber, for the Russian church near Potsdam. They are painted on lava (?) for resisting even the influence of the most severe weather.

Annuity Society for the Working Classes.—The "Caisse Générale de Retraite," in Brussels, founded by the law of May 8, 1850, has come into activity on the 1st of May last. The plan for the espectral building, to be erected for the officers of the establishment, &c., has been sanctioned by the jury of fine arts, and an architect, M. Cluysinaer, entrusted therewith. Every person subsisting by labour (*work !*), is enabled to procure an annuity after life, whose minimum is fixed at 27, the maximum at 720 fr. Every workman, after he has attained the age of 18, can enter the society, and stipulate whether his annuity has to commence at having attained the age of 55, 60, or 65, according to which the scale of payment varies. Accidents entitle to immediate relief, if the subscriber becomes thereby disabled to work, and has paid five years' subscription. Very indigent families receive also a burial allowance of 20 fr.

Improvements in Paris.—According to the *Times*, the jury of expropriation, which is to

fix the indemnities to be allotted to the owners of houses and land required for the prolongation of the Rue de Rivoli, were to meet on the 14th inst. The part of the new street which is to be formed by means of expropriation is comprised between the Rue des Poulies (Place de l'Oratoire du Louvre) and the Place de l'Hôtel de Ville. The jury will also decide on the indemnities to be paid to tenants who hold leases. The number of houses to be expropriated is 80, and the offers will amount to 7,215,000fr. Notices to quit in January next have already been given to 676 tenants. It is expected that the demolitions will commence in the early part of February. The enlargement of the Rues St. Avoise and des Mathurins St. Jacques is going on rapidly. More than 200 tenants have received notice to quit in January. The above operations will cost the city of Paris 9,000,000fr., the payment of which will be made in December next.

NEW STREETS.

EXTENSION OF FARRINGDON-STREET.

WE manage these things very badly, or this matter would not have remained in abeyance some thirteen years, and the surrounding property desolate. I think the fact is significant enough, and demonstrates most forcibly the want of some Central Board for Metropolitan Improvements. It is currently reported that matters as regards the new street will remain in *statu quo* until the expiration of two years from this time, when Smithfield market shall have been finally disposed of. The inhabitants of Smithfield think their existence guaranteed for two years, in consequence of the silly Government time afforded them for consideration, the serving of notices and their expiration, and are now making their calculations accordingly.

One word as regards the Holborn ravine. A great improvement would be effected by taking down the houses on the south side of Holborn-hill, and building the viaduct on their site; this would get rid of the awkward angle formed by the present line of street and leave it intact, and also bring Newgate-street into a direct line with Holborn. How much longer is this gigantic nuisance to disgrace the metropolis of the greatest city in the world. A tenth-rate railway company would have solved the question twenty times over.

ARCHITECTUS.

RAILWAY JOTTINGS.

THE metropolitan stations have been literally choked up with passengers of late, and it would appear that immense as was the influx during the last week of the International Exhibition, it would have been much greater had not the limits of the railway carrying powers been actually surpassed. At Bath, for instance, tickets were bought up, and the Great Western ceased issuing more from sheer want of the means of conveyance, and many of those sold were re-sold at a high premium. Trains of 2,000 and 3,000 passengers on the different lines became quite common,—and, indeed, it would take a good few trains even of such dimensions to make up the daily batch of 100,000 and 110,000 for the Exhibition—for even the foreign visitors mostly came of course by rail, and must have very greatly contributed to make up the magnificent sum total. With reference to the duty alleged to be chargeable on excursion trains, Herapath denies the Government right to any such duty, and states, that even though a duty were exigible, it would not be a poll-tax, but only 2 per cent. on the receipts of the first and second-class passengers, or, as the Inland Revenue officers proposed, 5 per cent. on first-class receipts. The parish of St. Pancras, which lately shut up her Majesty's highway, against even her Majesty herself, on her way to the north, has lately "seized the North-Western Railway" for poor-rates. The company dispute the amount due, which the vestry rate at 1,000*l.*, and upwards. One of the parochial brokers took formal possession of the Euston station. How he managed the business in such stirring times on the leviathan line does not appear;

but the sum was lodged in Court under protest, and legal proceedings are in progress to try the validity of the seizure, and the whole question at issue.—Dinmore-hill has now been excavated for the Shrewsbury and Hereford Railway a distance of 200 yards on the Hereford side. Of course the tunneling progresses at both ends, and it is expected that in less than three months there will be a drift-way through the hill.—Amongst designs of late provisionally registered is one by Mr. S. Hall, of Northampton, for forming the ends of rails of such shapes that they shall fit into each other, and cannot be dislocated either at the top, the bottom, or the sides.—A protest has been entered against the payment of the Austrian prize of 10,000 ducats for the best constructed locomotive capable of crossing the Semmering. The prize was awarded by the Minister of Trade to Maffei, the engineer, of Munich. An engineer of the name of Bodmer, whose residence is not mentioned, has protested against the reward, on the ground that the engine made by Maffei, and, indeed, all the others which competed, are an infringement of an invention of his own, for which he holds a patent. The payment of the 10,000 ducats has been delayed, and investigations are in progress on the subject.

ARCHITECTS' CHARGES.

TAYLOR v. STEVENSON.

In this affair plaintiff, who retained Mr. Powell, is an architect and surveyor in Birmingham, and defendant is landlord of the Roebuck Inn, Soho-hill, Handsworth. The action was brought to recover an alleged balance due of 11*l*. 7*s*. 8*d*., for services performed by Mr. Taylor in his capacity of architect for Mr. Stevenson, who had erected some buildings on his own account on land leased by him in Soho-park. It was shown in evidence that plaintiff had made out the plans and specifications for these houses, three in number, including also the superintendence of the work, at the usual commission of 2½ per cent., and that the costs of these dwellings would be about 500*l*. The original demand made by Mr. Taylor for his services so far, came to 12*l*. 10*s*., of which he had received 8*l*. 10*s*., and after the issue of the summons, a further sum of 4*l*. had been paid into court by Mr. Stevenson. At this juncture the defendant decided to have the work performed by contract, and accordingly, by his direction, plaintiff proceeded to take out the quantities, i.e., the actual extent and nature of the works, and the description of the materials to be used. Tenders were sent in, and the lowest one came to 287*l*. for bricklayers' and for carpenters' work. Finally, however, defendant determined to find materials and employ workmen himself. The usual remuneration for getting out the quantities and furnishing copies of the same, for the assistance of those disposed to tender for the work, was 1½ per cent., and in accordance with this Mr. Taylor had charged Mr. Stevenson for such item. It was said that the usual course was that if contracted for, the person having the contract paid for this labour in getting out the quantities; but if, as in this case, the owner had the work done on his own account, he was responsible for such items. To support this view plaintiff called a witness, who seemed to know little of the matter: all he said was, that if the quantities were got out, somebody ought to pay for this work.

Mr. Hawkes then contended that it was clear the sum originally charged of 2½ per cent. was to cover the whole expense of the plaintiff's labour, for he had, in fact, neglected the supervision of the works greatly, and the learned gentleman then called the bricklayer and carpenter who had done the work, and they said they gave Mr. Taylor a certain sum for his services in getting out the quantities.

After hearing Mr. Powell, in remarking upon the charge of negligence against his client, said that in addition to having the misfortune to break his leg at that time, he was also then under pecuniary difficulties.

His HONOUR, in giving judgment, said he thought (irrespective of the balance of 4*l*. under the first agreement) plaintiff was entitled as follows:—for the labour in respect to the quantities, 2*l*. 3*s*.; for extra superintendence, 1*s*.; and for a sum paid to a law stationer for eleven copies of specification and quantities, 1*l*. 13*s*. 6*d*. Total, 4*l*. 11*s*. 6*d*. extra for this extra work; and the judge also on application allowed costs.—*Birmingham Journal*.

* We are quoting a local journal. If this be the usual commission, the architects of Birmingham must be getting rich.—Ed.

COMPENSATION TO BUILDERS FOR FALSE QUANTITIES.

A CASE of considerable interest to architects and surveyors was the subject of arbitration lately in Manchester. The following appear to have been the circumstances:—

In February, 1850, the guardians of Ashton-under-Lyne Union, after some competition, accepted the plans of Mr. Nicholson, an architect, for the erection of a new workhouse, stipulated not to exceed in cost the sum of 6,000*l*. The same architect was employed to take out the quantities, and these were sold by the guardians to all competing builders who applied for them; and the tender of Messrs. Farrell and Griffiths, of Manchester (amount 5,555*l*.), was accepted. During the progress of the works, it would appear (as came out in evidence) that the contractors entertained doubts of the correctness of the quantities with which they had been furnished, and ultimately the matter became so conspicuous, that after making an unsuccessful application for a proper arrangement, the whole affair was (by a clause in the contract) left to arbitration.

The arbitrators appointed were, Mr. Dickson, of Manchester, architect, and Mr. Bellhouse, of Manchester, builder; and these gentlemen appointed Mr. Pictou, of Liverpool, architect, as umpire. Legal gentlemen on both sides were heard as advocates, who produced witnesses to prove the manner in which the contract had been entered upon and executed, together with much other matter connected with the due and proper performance of the works. Claims were made upon both sides; on that of the guardians for works not performed according to specification, and on that of the builders for works extra from plans, specifications, and furnished quantities.

The decision of the arbitrators was,—1*st*. That under the circumstances, the guardians were responsible for the correctness of the quantities furnished and sold by them; and, 2*ndly*, That deviations from the plans and specification should be regulated by measure and value.

The first decision involved the necessity of taking out the quantities from the original plans, as they should have been originally produced to the builders; thereby to prove the correctness or incorrectness of the quantities acted upon; and the second, a give-and-take measurement of the work as executed.

Both of these processes involved much labour and expense, but elicited some curious facts.

The original quantities were found deficient more than 25 per cent. and the additional extra works, together with the corrected quantities, raised the cost of the building about 35 per cent.

Some strange deviations in substituting one material for another were found to have been made during the progress of the works, notwithstanding that the architect and clerk of the works were invested with the strongest powers of control: these the arbitrators took fairly into account, and balanced the result accordingly.

Now, Sir, you have frequently exposed and commented upon the evils of competition; but in this case I think you will see a new feature, not only for complaint, but for alarm. In this case the arbitrators, having full power accorded to them, may have performed their duty as men of honour and honesty; but in the absence of an arbitration clause, as well as the accompanying circumstances, what might have been the result to the builders? And again, if architects, who in the provinces pursue also the practice of surveying, should be declared not responsible for the quantities they produce, where is the purity of competition? where the safety of the public? and where the honour of the profession?

Some proper understanding upon these points is required for the security and credit of all parties concerned.

Alluding in this case to arbitrators being engaged, there is one subject that may be named as peculiar in arbitration cases, that of awarding the costs. In this case, although the contractors could obtain no redress until bringing the case to arbitration, when their

complaints were verified, and where the costs amounted to about 400*l*., the arbitrators pursued the old-fashioned style of dividing the expenses! However superior, in such cases, an arbitration court may be to a court of law, such a glaring inconsistency never would have been made in the latter.

In many cases such a cure would be worse than the disease: this is too evident to require comment.

MANCUNIENSIS.

THE GOVERNMENT ADVANCES ON ACCOUNT OF THE POOR IN IRELAND.

THE WORKHOUSE LOANS.

We find, by the calculations contained in the Report of the Poor Law Commissioners for the year 1845, that the average poundage on the net annual value of Ireland for the repayment of the loans granted for building the union workhouses in Ireland, was 1*s*. 8*d*. in the pound, assuming it had been raised off the rates in one year.

It appears, however, that the loans were granted subject to the repayment of the principal and interest, by instalments, to be extended over twenty years, the first ten years being free of interest. By this favourable arrangement, the yearly instalments for the repayment of principal and interest amounted, on the average, to only one penny in the pound per annum.

Since, however, the debts due on account of the workhouse loans have been included in the amounts advanced by Government for the relief works, and made a consolidated debt, the principal and interest of which is to be repaid by annuities, extending in most Unions over forty years, the repayment for the workhouse buildings included therein amounts, on the average, to only one half-penny in the pound per annum.

The rate of payment per annum, however, being determined by the valuation of the union, it follows that the poor unions of the extreme north and west have a higher rate to pay than the others. For instance, in the City of Dublin unions the amount of annual rate required to pay the debt due for the above purpose would be only about one-eighth of a penny in the pound if extended over forty years, while in the union of Dunfanaghy, in the county of Donegal, it would amount to 2½*d*. per annum for forty years. In the rural union of Celbridge, in the county of Dublin, it would be little more than one farthing, and in the unions of Drogheda, Rathdrum, Cork, and Limerick, less than one half-penny.

Thus, the repayment of the sums originally borrowed for building the poorhouses forms a very small portion of the consolidated annuities now required to be paid to the Government; the sums claimed, however, on account of the consolidated annuities must necessarily be found a heavy addition to the current rates in some of the unions, since they increase in the inverse ratio of the poverty of the union and its ability to pay; the greatest expenditure having been made on the relief works where the greatest amount of poverty and destitution prevailed.

The repayment of these loans is now engrossing serious attention, and we make these statements to remove an existing misconception.

SEWAGE OF TOWNS: WESTON-SUPER-MARE.—A meeting of the Commissioners of Weston-super-Mare was held on Wednesday last, to consider the various plans sent in for disposing of the sewage of the town by disinfected or otherwise, and for the best of which a premium had been offered by advertisement. Ten competitors appeared, and after an examination of their respective plans, that presented by Mr. T. A. Yarrow, C.E. of London, was accepted, and the premium awarded to him. We understand this plan was based upon one laid before the Agricultural Society of England about a year since, by his Royal Highness Prince Albert. It was estimated that 200*l*. would cover the first outlay, and that the annual cost of the filtering medium, would be more than repaid by the value of the manure retained.

TRIUMPHAL ARCHES AT MANCHESTER.

THE appearance of Manchester during the late visit of her Majesty and Prince Albert is described as being very satisfactory. The following description of some of the triumphal arches that were erected has been sent to us. The arch in front of the Exchange was designed by Mr. Shorland. It stood at a distance of 12 feet from the door at which her Majesty entered the building; and in her approach thereto she necessarily passed under its central portion. It consisted of three principal parts, as is usual with such edifices. Four square pillars formed its upright portions. On the two outside ones stood vases of natural flowers; flat ornamental beams connected the two outside pillars with the two interior ones: from the tops of the two interior pillars ascended an arch of ironwork; and adorning and covering this were various devices in evergreens and flowers. On the summits of the interior pillars stood shields and banners; and crowning the central arch appeared a wreath of flowers, with the royal crown in its interior. Floral festoons depended from the arch in the centre; and under these, from Market-street, were visible the Queen's arms, surmounting the door of the Exchange.

The Albert-bridge had a triumphal arch, which presented the appearance of a massive stone structure, in the most florid Italian style. It consisted of a centre circular-headed arch, and two square side entrances. Over the key-stone of the arch in each façade was an architectural shield, inclosing an oval medallion, upon which were blazoned on one façade the arms of Manchester, and on the other those of Salford. In the centre of the pediment, in one façade was the word "Victoria," and in the other "Albert." The pediment itself was surmounted by the royal arms. Over all was a flagstaff, from which floated the royal standard. The whole structure was richly ornamented with garlands and festoons of flowers, crowns, lions' heads, vases of flowers, enriched scrolls, and brackets.

Her Majesty entered Salford through an erection of the same description at the end of Cross-lane. This was in the Italian style. It was 90 feet wide and 65 feet high, exclusive of the staff bearing the royal standard. The basement consisted of a centre arch, on each side of which there was a rustic arch, intended for the use of equestrians. Beyond, over the footpaths, were rustic arches. On the top was a large crown, and above this floated the royal standard. There was an upper arch, in the centre of which was placed a colossal figure of Britannia. Upon the cornice, over the extreme side arches, were the lion and unicorn, of large size; and there were several large ornamental vases and groupings of flags. The finishing of the arch was in imitation of marble, with gilt bases and capitals to the columns.

METROPOLITAN COMMISSION OF SEWERS.

A NEW commission has just issued under the Act passed at the close of last session for reforming the body to whom was entrusted the administration of the Sewers Acts. The new body consists of a chairman, a deputy chairman, and nine commissioners; but the powers possessed by the whole body can be exercised by any two commissioners, it being necessary, however, that all acts relating to the disposal of funds, concluding contracts, and striking rates, are to receive the sanction of the chairman himself. The following gentlemen are named in the commission:—Edward Lawes, Esq., chairman; S. M. Peto, Esq., M.P. deputy chairman; Sir John Burgoyne, K.C.B., Thomas Allason, Esq., William Cubitt; Esq., C.E., Captain Dawson, R.E., Captain Harness, R.E., Thomas Hawes, Esq., J. M. Rendell, Esq., C.E., R. Stephenson, Esq., M.P., and Captain Vetch, R.E. Lord Ebrington, Sir Henry de la Beche, and Mr. Philip Hardwick have retired from the commission. The new commissioners are Mr. William Cubitt, the engineer, and Mr. Thomas Allason, the architect.—On Tuesday last a special court was held under the new commission at Greek-street, the new commissioners

being amongst those present. The Commission was read, the commissioners all standing; and it was afterwards resolved unanimously to refer the consideration of the establishment and its expenses to a committee, and in the mean time to appoint Messrs. Woolrych, Foster, Hatton, Coggin, Lavers, J. Pollard, and P. Pollard, during the pleasure of the Court, and the remaining officers for one month.

THUNDERSTORMS AND THUNDER.

ON perusing "Cosmos," that beautiful work of the great Humboldt, I find myself fortified in the theories of thunderstorms, water-spouts, the aurora borealis, as well as sound, recently explained in *THE BUILDER*. Respecting the existence of positive electricity in the higher regions, of negative electricity in the earth and in the water, the accumulation of the former in the clouds, and the conducting upwards of the latter by elevated objects on land or at sea for the production of thunderstorms, the following extracts will perhaps be interesting to your readers:—

"When, upon the whole, where the ocean of the air rests upon a fluid bottom, the electric balance is more rarely disturbed than in the air on land, it is the more striking to see how, in extensive seas, small groups of islands influence the state of the atmosphere, and cause the formation of thunderstorms."

In this instance, the islands not only send up their own electricity in greater abundance than the sea, but serve also as conductors to the electricity of the surrounding waters.

On volcanic thunderstorms Von Humboldt says:—

"The hot steam (from the waters that may have found their way into the interior) that rises during the eruption from the crater, and emerges into the atmosphere, will, when cooling, form a cloud, by which the column of ashes and fire, many thousand feet high, is surrounded. Lightning, in winding motion, flashes from the column, and then the rolling thunder of the volcanic thunderstorm may be clearly distinguished from the cracking within the volcano. The lightning striking down from the volcanic steam-cloud killed eleven horses and two men in Iceland on the 17th October, 1755."

Wherever there is a development of heat on land or on the sea, there is also a proportionate liberation of negative electricity, but it ceases when the atmosphere is too cold to allow it to escape. Some places, however, seem to possess less electricity than others.

"In the geographical distribution of thunderstorms (in the words of Humboldt), the Peruvian coast-land, in which it never lightens or thunders, offers the most striking contrast to the whole of the other parts of the tropics, in which, at certain times of the year, thunderstorms are formed every day, from four to five hours after the culmination of the sun."

The coastland of Peru, though it possesses many valleys, is mostly arid and covered with sands and deserts, and these are, no doubt, unfavourable for harbouring and emitting the electricity of the earth, whilst that of the valleys may not be sufficient for the production of thunderstorms. It may be also, though it seems to me less likely, that the chain of mountains, the Andes, running parallel with the coast, and at no very great distance from it, down to Chili, is so powerful a conductor as to attract the electricity of the coastland as soon as it has been liberated from the earth.

In either case, however, there are no two electricities to meet there in the atmosphere, and consequently no lightning or thunder can take place.

Lightning may take place without thunder, where the amalgamation of the two electric fluids happens in the upper, highly rarefied, regions of the atmosphere, as in the case of sheet-lightning and the aurora borealis, though it is said by a few, that the latter is sometimes accompanied by a crackling noise, which may be accounted for by the electric sparks coming on these occasions more or less in contact with the denser, and to us nearer, part of the atmosphere.

Thunder itself can only take place where an

electric cloud, or clouds, have been forming; the electric flashes are, as it were, extraordinary vibrations, quick and sharp, long or short, sometimes near, sometimes far away; and as substances give quality to sound (*vide THE BUILDER* of 23rd August), so the cloud or clouds give quality to the vibration communicated to the air: they are the sounding-boards, undulating and elastic, dense or light, high or low, that reverberate to us the thunder of the Almighty, accompanied perhaps by a succession of echoes of the clouds. To those who may happen to be near one of the exploding flashes, the vibrating peal will, of course, be more perceptible than to others at a greater distance.

With the subterranean thunder of volcanoes or of earthquakes it is the same. Sound travels farthest and loudest at the surface of the air, particularly where it rests on smooth or polished substances; and thus, the quality of subterranean shocks, according to the materials in labour, being imparted to the air, either by direct or indirect contact, the sound is propagated to enormous distances, according to the face of the ground of the country. The earth is the sounding-board of the vibrations caused at certain places and there first communicated to the air, like the vibrations caused by the rolling of a waggon.

"I have minutely ascertained (says Humboldt), that the great shock at the earthquake of Riobamba (4th February, 1797)—one of the most terrible phenomena of the physical history of our earth—was unaccompanied by any noise."

This shows, in my humble opinion, that, in the first instance, the vibrations of the heaving materials below came not in contact with the air at that place, though it must have been so, direct or indirect, at a great distance, where 13 to 20 minutes after the actual catastrophe a great subterranean noise was heard; and how, in the second instance, shocks of earthquakes may take place without subterranean noise, and how subterranean noise may be heard unaccompanied by any shock.

W. ADOLPH.

THE ORDNANCE SURVEYS.

I BEG leave once more to trouble you—I hope for the last time—on the subject of Ordnance surveying. I find a communication signed "W. M.," in your publication of the 20th Sept. referring to an article which appeared on the 30th Aug. signed by me. I would wish "W. M.," and every other person who may read that article, to understand that what I stated was not a mere philippic to bring the Ordnance survey of Ireland into disrepute; but a statement of facts, to which I still adhere, and am prepared to prove, which show that a survey such as the Ordnance survey of Ireland would not be beneficial to the people of Scotland or any other country.

Does your correspondent disprove my facts? He refers to them, but I deny that he refutes them; neither does he bring forward any counter statements. The evil being consummated in Ireland, as a matter of course the Ordnance still continue to issue their maps; but what has that to do with my letter of the 30th? Did I state anything to the contrary? I first attempted to draw the attention of the public and the profession to the fact that the survey was not correct enough for civil purposes, and this I adhere to; and next, to the fact that there were a class of men in Dublin who were making large sums of money by furnishing the public with maps of estates, enlarged or copied from the Ordnance survey, the areas of which they compute from the paper. "W. M." says, no honest surveyor would profess to compute areas from it, and I agree with him. I know not what they profess, but he, as a surveyor, must be aware of who commenced it.

"W. M." further states, that at the commencement of the survey in the north it was designed to be of a nature to admit of the hills being shaded, &c. Now I do not know what they may have designed, but this I do know, that, with the exception of one parish, such a thing was never published.

Is "W. M." aware that the survey of the first counties was found useless and had to be made over again?

I will not trespass farther than to answer "W. M.'s" statements, as follows:—The date of final correction on the sheet 18 of Dublin (the city sheet) is 1843; the date on the city sheets on the 60 inch scale is 1847. The survey of Ireland, consequently, could not be complete in 1842, as "W. M." states. Nor is it completed yet, nor can it be till the northern counties are revised. In an office in Dublin, which is styled the "General Survey and Valuation Office of Ireland," the areas of all holdings not under five acres are computed from the paper; and as from the contraction of the paper the areas are found to be deficient about three acres in every hundred, the deficiency is divided or assimilated, as it is called, proportionally over the contents of the different townlands; that is, the areas are made to agree with the *Ordnance*. What will "W. M.," as an honest surveyor, think of this? If for railway purposes a mere enlargement of the houses would suffice, would it not have been cheaper to enlarge them from the 6 inch maps? Would it not have saved great labour and expense? I am sorry to find a surveyor (to whom "W. M." states he is) attempting to advocate the *Ordnance* survey: it is a system which has driven many of our local surveyors from the country, and reduced those who remain to comparative penury.

It was this that first led me to call on the surveyors of Scotland, through the medium of your journal, and to the noblemen and gentlemen of Ireland whose estates were in the Encumbered Estates Court. I am well aware that I have succeeded beyond my expectation, and that more than one London journal has extracted my letter from *THE BUILDER*.

JOHN S. SLOANE.

Books.

Dynamics, Construction of Machinery, Equilibrium of Structures, and Strength of Materials. By G. FINDEN WARR. Baldwin, Paternoster-row. 1851.

THE object of the author of these treatises is to form a continuation to those on mechanics in the Library of Useful Knowledge, and to supply what is wanting in these treatises. We have here, as it were, the practical fruit of the tree planted by Brougham, and the fruit seems worthy of the tree. A more practically useful work to most of our readers they will not readily meet with, especially as regards the latter half of the volume. The treatise on the Equilibrium of Structures is devoted to buildings in wood and stone. The former embraces structures made up of framework, and commencing with the stability of the simple frame often used at the well's mouth to draw up a bucket, proceeds to roofs, domes, and centres for bridge-buildings. In the latter part, those structures built up of small pieces, as stone and brick, are considered, from the equilibrium of two irregular stones, one resting on the other, to walls and arches. The latter part of the treatise is mostly practical, in which the writer has endeavoured to explain in few words, the proceedings of engineers in erecting bridges, in stone, wood, and iron, including the suspension principle, and to give some of the results of their experience. Illustrative descriptions of a number of bridges are added.

As to the treatise on the strength of materials, the writer states that some trouble has been taken to collect and condense the great amount of scattered information supplied by numerous experimenters. Much of that information, however, has been already laid before our readers from time to time, although it certainly is an advantage to have it thus collected, as, indeed, it well deserves to be, for our knowledge of this subject, as remarked, has greatly increased within the last fifteen years. The author, however, will find, by a more diligent search through our pages, that he has not even yet exhausted the collection.

The work is profusely illustrated by woodcuts, and is in all respects well got up. Its size and form, as well as style, are such, if we

mistake not, as will very well bind up with the Library of Useful Knowledge treatises.

Essays from "The Times." London: John Murray. 1851.

A SELECTION from the literary papers which have appeared in the *Times* has been made for Murray's "Reading for the Rail," and forms an exceedingly interesting volume. Nelson and Lady Hamilton, Louis Philippe and his family, Howard, Southey, Coleridge, Swift, and John Keats, are amongst the subjects treated of, and supply matter as interesting as a fairy tale. Those who would know what industry can accomplish, and want encouragement to persist in adverse circumstances, should read the notice of Southey.

Miscellanea.

HOLYHEAD HARBOUR WORKS.—An interesting account of these works appears in the *Liverpool Courier*, from which we extract the following particulars:—"Several plans were proposed by different engineers. Mr. J. Walker, C.E. to the Admiralty, proposed a plan which was to enclose an area of ninety acres, with 3,300 feet of breakwater, and 2,500 feet of pier, at an expense of 400,000*l*. Capt. Beechy, R.N., proposed to enclose 176 acres, with 4,500 feet of breakwater and 3,500 feet of pier, at an expense of 550,000*l*; and Mr. Rendell, whose plan has been adopted, proposes to make a breakwater of 5,000 feet from Soldiers' Point eastward, to terminate at the Platters' buoy, and a pier of 2,000 feet from Yns Gybi (Salt Island), with its head resting on the outer platter, enclosing an area of 316 acres, three-quarters of a mile long, and in 6½ fathoms water; the cost of the works to be 700,000*l*. The works are carried on under the superintendence of Mr. George C. Dobson, resident engineer, and the contract for the breakwater, which is all that has been issued, has been taken by Messrs. J. and C. Rigby, of London. The works were commenced in January 1848. Twelve months were occupied in laying down rails to the quarries, erecting stages, and making other necessary preparations for the works; since which time, on an average, 1,100 men have been employed on the undertaking. There are two quarries used, one called the Moelfra Quarry, from which limestone is procured, and the other quarry is, in fact, the Holyhead Mountain, from the sides of which the materials for the work are taken. The works may be described as consisting of two breakwaters. The east, the smaller, has been commenced, but very little has been done upon it. So far attention has been directed chiefly to the north breakwater, which is the most important portion. The works now extend about 2,800 feet seaward, and they will have to be carried out as far again. The contractors extend their operations about 20 feet a week, on an average. When the breakwater is completed, the wall or pier will then be built upon it, and the works brought to a close.

THE SUBMARINE TELEGRAPH.—A short cut of the great cable has been sent to us for inspection. As we before said, it is a decided improvement on the previous one so far as regards protection to the gutta percha and the wire. As for strength there is no comparison: it is immensely stronger. Nevertheless we adhere to what we have said on the subject of its permanence. We should be sorry to produce an unfavourable impression of so noble a design: our very anxiety for its success leads us to dread a second failure, which would do immense mischief to the object in view, and indefinitely postpone its final adoption. In one point we are glad to find that the reporters for the daily papers are said to have been mistaken, namely, in stating that there was any complete "join" or "imperfection" in the cable at any one place. Would it not have been much more to the purpose, however, had those interested put it in the power of all and sundry members of the press by invitation to examine and judge for themselves and not by mere report of others? Some of the daily papers seem to have

had representatives present at the completion of the work, others had not: no invitation reached us. We were obliged, therefore, to gather the particulars from those who had, and we still find the allegations as to bungling, of which we took notice, reiterated even after being contradicted in the *Times*, which, it is declared, has been imposed upon as to the single "hitch," the heavy "sea," and so on. That the cable runs short, and does not grapple with the very difficulty, on the French coast, which it was made to cope with, no one denies. We only trust that an efficient continuation of it will speedily bring the whole to completion, when there can be no doubt that it will work well so long as the cable and its insulation remain entire. For the manufacture of the rope, Messrs. R. S. Newall and Co. deserve great praise. It weighed 180 tons: an extraordinary piece of work.

THE OMNIBUSES.—Now, we suppose, it will be the people's turn to deal with the multitude of omnibuses called into action during the last six months. Short distance prices appear to be a desideratum, as well as a return to the old threepenny half-distances and Bank fourpenny fares. These, we dare say, will satisfy the middle classes, who would daily and constantly fill the 'buses for short lifts at say 2*d*., while they retain even 3*d*. in their pockets. There is wanted, too, in the metropolis—what Liverpool has already got—a working class omnibus at still cheaper fares—for certain distances even so low as a penny, though it must be admitted that if these are to traffic throughout the whole length and breadth of the metropolis, the fare for the whole distance must be higher,—say 3*d*.—half the middle class price. The penny omnibuses at Liverpool are literally besieged by the working classes, and taken by storm, and the demand for more is about to be supplied by a new and superior kind of vehicle. In whatever way it may be managed, there is likely to be a reform in the omnibus ranks in the metropolis, and a reform is needed in the vehicle no less than in the fare. Let the Parisian omnibus, even, be simply imitated, and the proprietors will find the change to be for their advantage, and to enable them at once to rearrange their fares on the desired scale. A little wider and a good deal longer—just such a machine as was exhibited in Hyde-park—if we mistake not, from Glasgow—will do. Would not iron ones be lighter to draw than those we have, even though they were larger?

DUCTILITY OF IRON.—A singular illustration of the ductility of iron has been produced at the establishment of Mr. G. Downing, Brown Iron Works, Birmingham. It is in the form of a book, the leaves of which are of iron, rolled so fine that they are no thicker than a piece of paper. The book is neatly bound in red morocco, and contains forty-four of these iron leaves, the whole being only the fifteenth of an inch thick.

PUBLIC BATHS AND WASHHOUSES FOR THE LABOURING CLASSES.—The following is the return for the month ending September 27th:—

ESTABLISHMENT.	BATH DEPARTMENT.		WASH-HOUSE DEPARTMENT.	
	Number of Bathers.	Total Receipts.	Number of Washers.	Total Receipts.
LONDON.				
The Model.		£ s. d.		£ s. d.
Whitechapel	13,189	171 17 4	2,946	30 18 10
St. Martin-in-the-fields	17,386	270 18 3	3,869	38 16 5
St. Marylebone	14,651	184 11 3	1,673	18 18 1
St. Margaret and St. John, Westminster	9,293	107 9 1	1,440	15 10 2
Totals	54,415	734 15 11	9,937	104 3 6
COUNTRY.				
Liverpool—				
Cornwallis-street	10,743	154 13 7	not open	
Paul-street	3,764	48 4 5	1,391	13 6 7
Hull	5,722	52 7 3	241	4 3 0
Bristol	4,015	48 7 11	394	3 14 4
Preston	2,920	29 6 4	217	2 15 1
Birmingham	6,643	91 4 9	86	2 0 0

ANIMAL MAGNETISM.—We were invited, the other evening, by the proprietors of Hungerford Hall, erected over the market, for dioramic and other purposes, to witness an exhibition in animal magnetism by M. Lassaigue and Mdlle. Prudence. The phenomena alleged to be manifested were those of transmission of thought, taste, and vision. We are unable to believe that they are anything but clever conjuring, although it cannot be readily conceived how it can be carried on. A believer in the possibility of psychical phenomena such as these urges that the phenomena of electrical induction, of electro-magnetism, or of magneto-electricity, are really as wonderful, and just as unaccountable, but that for an intelligible explanation it is only necessary to stand on Newton's axiom, that "every particle in the universe attracts, and is attracted by, every other particle in the universe," and to grant the possibility of a state of the human mind so acutely sensitive and discriminative as to be capable of appreciating and of analyzing impressions produced in its own brain by varying states of the brain of another, under or in accordance with this universal law of attraction, which compels us to admit that mutual attractions are going on between any two such masses, and are varying with every varying emotion and conception in which at least the senses and their centralisations are implicated, however difficult we may find it to be to conceive of the possibility of any state of mind so subtle and so penetrating as to be able to discriminate these impressions in particular from the infinity of others acting simultaneously from all quarters on the very same masses of nervous matter. Such a state has been recognised by Wordsworth, where he speaks of the mind in certain circumstances as being able to—

"See into the life of things;"

and Iamblichus had in view the very same possibility where he says, in his book on Egyptian Mysteries, that "the love, the affinity (the attraction) between all things renders magic possible." Well: we have probably got far enough, and must stop short of the awful depth of metaphysics into which we see that we are on the brink of being plunged. The entertainment at Hungerford Hall is certainly very curious.

PAVING STREETS AND ROADS.—Mr. Hadley, of Birmingham, has provisionally registered an invention in paving streets and roads, which consists in forming separate blocks of granite or wood into solid plates or blocks of any size or thickness, or areal section, by the introduction and application of thin cast-iron or other metal plates, frames, or boxes. The edges or jointing of these plates or blocks are to be formed with grooved or dovetailed joints, of angular, semicircular, or square, or any other form or shape; the foundations of the roads to be made solid previously to the plates, frames, or boxes being laid thereon, which plates or boxes will be laid in gravel, or suitable concrete, and be allowed to become firm before being used for traffic.

WIRE-WORK FOR CEILINGS.—Some two years back you were the first to usher forth the application of wire-work for ceilings, in lieu of lath. Since that time but little has been done in it here in England, but the statement has been copied from your paper through all nations, and translated into all languages, and the material is now being universally adopted. The objection to it here was its expense, but that ought to weigh but as a feather in the scale, as compared with the security of life and property. I can say that the ceilings already finished are perfect, without even a crack in them: unlike the wood, there is neither contraction, expansion, nor absorption. Nor have we been idle in testing it in every way: it has been subjected to the severest trial by flame, without producing even the smallest effect of ignition: in case of fire in one apartment, to that alone is it confined. What is there that is so inflammable as the dry lath?—the ceiling falls, the lath is lighted, and destruction is inevitable. The cost has been reduced, viz., plain wire-work to two pence per square foot, and galvanized, to two pence three farthings per square foot.—J. A.

ENCROACHMENTS IN ST. PANCRAS.—I am sorry to find that "A District Surveyor" is disposed to excuse or palliate this public grievance, and I cannot allow his statement to pass without observing that the change of purpose or use of the buildings is obviously no justification of the encroachment. The situation has become very eligible for business; no one can reasonably complain of its being so converted; but every person must regret the contracting of the open space between the buildings from 145 feet to 49 feet, which is now done in that part, near Southampton-street, in the New-road. As to the alleged increase of 6 feet in width given to the road and footways, I find that 2 feet 6 inches have been added to the pavement on the north side only, at the part mentioned, and nothing whatever on the south side; and that the whole width is only 49 feet, which is 9 feet less than in Oxford-street, near the Pantheon. From these simple facts, it must be evident that unless the public rights are now asserted and vindicated, we must eventually submit to the infliction of this once fine open avenue and artery being reduced to the width of a second-rate street, viz., 9 feet less than Oxford-street at its narrowest part, and that, too, whilst a law has been expressly provided to prevent it, and whilst we are making such great sacrifices to remedy the same kind of evil in other parts of the metropolis.—F. B. A.

CRANE ACCIDENT IN GLASGOW.—About five o'clock on Wednesday afternoon, an accident occurred at the tower of the suspension bridge in the course of erection at the foot of Maxwell-street, Glasgow, which we regret to learn has been attended with fatal consequences to at least one individual, and serious injury to other two workmen. The machinery employed for hoisting up stones to the top of the tower, is a crane of the common description, its parts consisting of an upright beam bolted down to a raised wooden platform, another beam crossing the top at a right angle, and a third transverse beam forming a diagonal line between the bottom of the upright and the extreme end of the cross beam. The stones were of considerable weight, which required to be hoisted to the top. The melancholy catastrophe occurred while three of the workmen were under the transverse beam, guiding the course of the stone, which was being hoisted to the top. While in mid-air, the weight of the stone acting like a lever, tore up the bolts that fastened the upright to the platform, and, as a consequence, the whole weight of the transverse beam was brought down upon the poor fellows, crushing them dreadfully. They were removed to the Royal Infirmary, where one of the unfortunate men, shortly after his admission, expired.—*North British Mail*.

EXPLORATION OF THE CATACOMBS UNDER ROME.—M. Perret, a French artist, has been engaged for six years in copying the remains of ancient art hidden in the strange city of eternal night at Rome, and he has lately returned to Paris with a collection of drawings which extends to 360 sheets in large folio, of which 154 sheets contain representations of frescoes, 65 of monuments, 23 of paintings on glass (medallions inserted in the walls and at the bottoms of vases) containing 86 subjects; 41 drawings of lamps, vases, rings, and instruments of martyrdom to the number of more than 100 subjects; and, finally, 90 contain copies of more than 500 sepulchral inscriptions. The French Government, with their usual regard for art, have negotiated with M. Perret for the purchase of his whole collection, and have obtained upwards of 7,500*l.* by a special vote from the National Assembly for the purpose. The drawings are, of course, to be published.

METALLIC TUBES.—Mr. S. Walker, jun., of Birmingham, has patented some improvements in the manufacture of metallic tubes. Claims: 1. The bending of skelps or plates of metal in a tube-like form, and the bevelling of the edges of the same by rolling. 2. The construction of a soldering furnace, in which the flame and heated air pass in contact with those parts only to which the solder is to be applied.

THE TIMBER DUTIES.—In pursuance of an order of the Lords Commissioners of her Majesty's Treasury, the Commissioners of Customs have caused the collectors and controllers and other principal officers of Customs at the several ports in the United Kingdom to be directed to continue to charge the lower rates of duty, under the 8 & 9 Vict. c. 90, on timber and wood goods the produce of and imported from the British possessions, notwithstanding the rates of duty mentioned in the table annexed to the Act 14 & 15 Victoria, cap. 62, are in strictness (from an omission of the word "foreign") applicable to timber and wood goods generally.

WATERING-TROUGHS FOR CATTLE.—The Belfast Society for the Prevention of Cruelty to Animals have erected six watering-troughs throughout the town of Belfast. The plan of these troughs is simple: they are of cast-iron, 4 feet 5 inches long, 21 inches broad, and 15 inches deep, with a lid consisting of two parts, attached by the side rim. At one end of the trough, completely covered in from injury, is a ball-cock, by which the water enters, and, passing through holes in the lower part of the partition which separates the enclosure from the open part, a constant supply of water is kept up without the least waste. The trough rests on a stone, about 8 inches deep, with safes to protect the corners. In the cattle market, the town council, about three years since, erected a trough on the same principle. It is to be hoped that the example set at Belfast in this great improvement will be followed by other towns. We have ourselves repeatedly urged their adoption in the metropolis. It is rather notable, by the way, that these Belfast troughs have been partly erected with metropolitan money, 25*l.* having been contributed for the purpose by Mr. and Mrs. Singleton, of Wilton-crescent. The town council willingly granted the sites, and the water commissioners the water supply.

THE CATNETHEN PAVEMENT TRADE.—This trade, it seems, is in a more active state than it has ever been. It is limited only by the want of vessels to carry off the material. Mr. G. Traill, M.P., according to the Wick correspondent of the *North British Mail*, employs upwards of 200 men on his grounds of Castlehill, in raising, sawing, and dressing flags. "The marketable deposit at Castlehill," he adds, "is ten feet thick, is within half a dozen feet of the surface, and is not a hundred yards from a safe and commodious shipping port. Flags from these quarries are now to be seen in the best streets of every important town in the kingdom." To drive his flag-sawing and smoothing machinery, and, at the same time, to drain 200 acres of land, Mr. Traill is now cutting a canal through the Loch of Durrand.

COLCHESTER ARCHAEOLOGICAL SOCIETY.—On Friday last, the Rev. Mr. Jenkins, president, being in the chair, Dr. Duncan, one of the vice-presidents, read a paper on the Ancient Fortifications of Colchester. The wall, rampart, parapet, natural and artificial fosse were described, and measurements in twenty-four places given. A drawing of each part of the wall, measured upon a scale of a line to a foot, and diagrams of the guard-house and covered way in the west wall were shown. After quoting authorities on the subject, Dr. Duncan fixed the date of the wall's erection between A.D. 63–70, that is, after the Boudican war, and before the victories of Agricola, in the north.

ENGINEERING WORKS AT GREENOCK.—Messrs. Caird and Co., of Greenock, have been engaged in the formation of several pieces of machinery amongst the largest of the kind in Scotland. One of these is a new crane erected at the Victoria Harbour for the harbour trustees, and the others two pairs of marine engines for the Royal West India Mail Steam Packet Company's new steamers *Parana* and *Demetera*, the largest engines, it is said, ever constructed in this country. Each pair of engines (on the side lever principle), has the combined power of 750 horses, the cylinders measuring 96 inches, and giving a stroke of 9 feet. The paddle shafts, two for each vessel, each weigh sixteen tons.

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No. CCCCLV.

SATURDAY, OCTOBER 25, 1851.

IT was a capital thought on the part of the *British Archaeological Association* which led them to determine on visiting the antiquities of London City. The first meeting there was held on Friday, the 17th inst., and the Exchequer Court in Guildhall,—kindly placed at their disposal by the Corporation, who, moreover, afforded all other facilities in their power,—was crowded with visitors at half-past one o'clock in the day to open the proceedings. It is a noticeable occurrence, in a quarter where, rightly or wrongly, we have been led to believe the preservation of antiquities has been little cared for. Nearly 200 persons must have taken part in the proceedings during the day and evening, amongst whom we may mention Mr. Pettigrew (who presided), Sir Henry Dillon, Mr. Planché, Mr. Bunning, Mr. Gould, Mr. Saunders (comptroller), Mr. Wansey, Mr. Richard Taylor, Mr. Lott, Mr. Griffith, Mr. W. P. Griffith, Mr. G. R. Corner, Mon. C. Daly, Mr. G. Gwilt, Mr. Newton, Mr. White, Mr. Baily, Mr. Waterlow, Mr. Duesbury, Mr. Haywood (sewers' surveyor), Mr. Tress, Mr. Oliver, Dr. Pettigrew, Mr. Saul, Mr. Haggard, Mr. John Webb, Mr. G. Wright, Mr. Solly, Mr. Godwin, Mr. W. Calder Marshall, and many others whose names we cannot at the moment recall. There was a fair sprinkling, too, of pretty faces under bonnets, without any claims to antiquity. To point out how much there was to see in the City, Mr. White read a classified list of the various objects of interest remaining; and then Mr. Brewer, of the City of London School, communicated an interesting account of the Guildhall, which we have printed in full. A paper by Mr. Lott, on some of the crypts in the City, and a history of Bow Church by Mr. Baily followed, and then the party proceeded to examine for themselves the hall, crypt, library, and other parts of the building they were in, first glancing at M. Alaux's large picture of the corporation and King Louis Philippe which hangs in the Exchequer Court. Chantrey's early statue of George III., Copley's picture of the siege of Gibraltar, Beechey's portrait of John Boydell (all in the Council Chamber), the commenced museum of antiquities in the library, the collection of early plays, and Shakespeare's signature* excited interest. In this last-named room, too, the library, is a picture standing against the wall, passed over by most visitors, representing the Joiners' Company (incorporated in the reign of Elizabeth as "the Faculty of Joiners and Cielers of London"), consulting with their architect on his plans for a new hall after the Great Fire of 1666. This picture, which deserves to be cleaned and examined, belongs, if we understand rightly, to the Joiners' Company, and was placed here some time ago for preservation. In the Record Office is a grant as early as the reign of William the Conqueror.

* The corporation gave 1477 for this.

As we give Mr. Brewer's paper, we need not stop to say anything of the building, further than to urge the Corporation, as we have often done before, to put a proper roof to their noble hall.

Bow Church was the first place visited, more particularly on account of the crypt, though the tower,—Wren's master-piece in steeple-building,—did not escape examination. The doorways in this are very clever. The peristyle on the top of the tower, the care with which the changes of form, from round to circular, are softened into each other, are noticeable points. The history of this church is a strange one. As the writer has elsewhere remarked,—if not originally a Roman temple, as was generally believed, it was one of the earliest churches built by our Norman conquerors: it has been destroyed by storm and fire; was at one time garrisoned and besieged; and was afterwards the scene of an assassination.*

We first find mention of it as a Christian church, in the reign of William the Conqueror. Stow says, it was the first in the city built on arches of stone, and that it was therefore called St. Mary de Arcubus, or the Bow; although he elsewhere says, that it took its name from certain stone arches, supporting a lantern on the top of the tower.† In the twelfth century, a tumult of a serious nature occurred in the City, which led to the assault upon the church before alluded to. The ring-leader, was William Fitz-Osbert, surnamed Long-beard, an individual of loose morals, who apparently possessed great talents, and was almost worshipped by the lower orders, on account of his exertions as a professed advocate for the poor, against the oppressions of the rich. An attempt being made to seize him, he took refuge in Bow steeple, together with various followers, and being well provided with ammunition and provisions, was able, for a long time, to defy the authorities. In order to drive him out, the steeple was fired. This had the desired effect; the rioters were made prisoners, and after a hasty trial, were hanged.

In 1271, part of the steeple, which had probably been much injured during the attack on Fitz-Osbert, fell down, and caused the death of several persons. It seems, however, to have been repaired soon afterwards; for in 1284, we find that one Duckett, a goldsmith, who had seriously wounded a person named Ralph Crepin (under what circumstances is not mentioned), took refuge in this church, and slept in the steeple. While there, certain friends of Crepin entered during the night, and violating the sanctuary, first slew him, and then so placed the body as to induce the belief that he had committed suicide. A verdict to this effect was accordingly returned at the inquisition, and the body was interred with customary indignities. The real circumstances, however, being afterwards discovered through the evidence of a boy, who it appears was with Duckett in his voluntary confinement, the murderers, amongst whom was a woman, were apprehended and executed. On this occurrence, the church was interdicted for a time, and the doors and windows were stopped up with brambles.

After the fire the present edifice was com-

* "Churches of London," Vol. II.

† The Court of Arches was formerly held in this church, and has its name from the circumstance. If Stow were not so precise, it might be suggested, from the occurrence of the French article *le*, that St. Mary *Le Beau* was the original appellation.

menced by Wren. On digging out the ground he found what he strangely enough considered the walls of a temple of Roman workmanship under the level of the present street. In reality, however (unless other remains were found below those now to be seen, which is not probable), this was nothing more than the crypt of the ancient Norman church, and may still be examined in the vaults of the present building; for, as the account informs us, upon these walls he commenced his new church.* The former building stood about 40 feet backwards from Cheapside; and in order to bring the new steeple forward to the line of the street, the site of one house not yet rebuilt was purchased, and on it the excavations were commenced for the foundation of the tower. Here, to his great surprise, after digging down to the depth of 18 feet, he reached a Roman causeway, made of bricks and rubble, firmly cemented, which, it is supposed, formed at the time it was constructed the northern boundary of the colony; and upon this he resolved to lay the foundation for the tower. This was done in 1571, and the whole of the works appear to have been completed in the year 1680.

The crypt, which belongs apparently to the end of the eleventh century, is now filled with coffins of all ages and sizes piled one upon the other, which have doubtless contributed in silence their share of disease and premature death to the inhabitants of the neighbourhood. In 1849 we gave a view of part of this crypt with its fearful furniture,† which we have reason to know had its effect in rousing the public to a sense of their guilty folly in permitting intramural interments. How much longer such madness is to be permitted we know not. We repeat our denunciation of the system, and in spite of the anger of our friend the Vestry Clerk, would urge with respect to Bow Church, that the bodies should be immediately removed to consecrated ground, and any fresh deposits there be strictly prohibited. The crypt is ventilated, the coffins are put in fair order, and we would carefully avoid attaching blame to any individuals connected with this charnel-house, which is far from being as bad as many others. It is against the system which we protest,—a system foul and murderous,—a system of which we are unable to speak with calmness or propriety.‡

At Messrs. Groucock's, in Bow-churchyard, there is a small portion of a crypt or undercroft, which some of the party examined, and then all went to the church of St. Mary Aldermary, in Bow-lane.

If Stow be correct, when he says that this church was called *Aldermary*, because it was older than any other church dedicated to St. Mary in the City, it must have been founded at a very remote time, inasmuch as St. Mary-

* It is difficult to understand how Wren, who appears to have been well acquainted with what was then called Saxon architecture, was led to the belief that these remains were of Roman workmanship; unless, as was pointed out by Mr. Gwilt in an admirable description of the crypt (*Valuta Monumenta*, vol. v. plates 81 to 85), he was deceived by the fact that a number of Roman bricks are used in the construction of the arches. Did he mean merely that they were *More Romano*, or in the Roman manner?

† Vol. VII. p. 414.

‡ The Board of Health have recently published their "Minutes relating to the Metropolitan Interments Act since August, 1850," and the correspondence relative to the purchase of cemeteries and Abbey Wood estate. From this it appears that the negotiation for the latter has been abandoned, and that matters, so far as the public are concerned, are exactly where they were! Mr. Peacock has made his award as to the compensation to be paid for the Brompton Cemetery and the Nunhead Cemetery, and we will recur to it next week.

le-Bow was probably built, as we have said, in the reign of William the Conqueror. The fact that this latter church was formerly called *New Mary Church* is, however, somewhat confirmatory of the statement.*

In 1510, Sir Henry Keble, lord mayor of London, began to rebuild the church. His epitaph, formerly in the old building, calls him,—

"A famous worthy wight,
Which did this Aldermay Church
Erect and set upright."

Before this edifice was completed he died; but in order that no hindrance might arise, he had bequeathed one thousand pounds to finish it.† The tower was rebuilt in 1629, at the cost of one thousand pounds. The church having been destroyed by the fire of 1666, with the exception of the tower, was restored by Sir Christopher Wren in 1681, a sum equal to 5,000*l.* being furnished for that purpose by the widow of one Henry Rogers, in pursuance of his will, which directed that this amount should be expended in the erection or repairs of some church. An inscription in Latin over the west door of the edifice records this benefaction. The tower appears to have been repaired, and in part rebuilt at this time; but in 1703, two of the new turrets were blown down during a storm which then occurred. In 1711, the upper part of it was altogether rebuilt, the expense being defrayed from the fund raised by a duty on coals.

The church erected by Wren is supposed to be a copy of the old building, and may, indeed, include some of the old work. The aisles are separated from the nave by clustered columns bearing very flat arches, so slightly pointed as to appear at first sight to be segments of a circle. From a string course over the arches, smaller shafts proceed up the face of the clerestory above, and from these springs elaborate imitation fan groining forming the ceiling. In the centre of the ceiling are large circular panels deeply indented, containing an ornamental flower in the middle of each, the whole quite distinct in character from that which the building is intended to bear. This is also the case with the shields and foliage which ornament the spandrills of the main arches.‡ The chancel is curiously extended on the north side, so as to render the east end of it very far from forming a right angle with the side walls, and thus to give a distorted appearance to this end of the building.

Before we come out, let us take a morsel of wisdom from one of the tablets on the wall,—
"Learn, reader, that the painful scholar can alone become the able teacher."

The tower is curious as a specimen of very late pointed work, and has a certain air of grandeur, though it disappoints examination.

Gerard's Hall, in Basing-lane, with its very extensive crypt, was the last place named for examination, as here the party were afterwards to dine. Stow says of Gerard's Hall, I read that John Gisors, mayor of London in the year 1245, was owner thereof, and that Sir John Gisors, constable of the Tower, 1311,

* The first rector of St. Mary Aldemary, mentioned by Newcourt, was presented before the year 1200.

† In 1835, some houses having been pulled down in Watling-street, up to the east end of the church, a building which was thought to be the crypt of the church erected by Keble was brought to light. Its course was from north to south about 60 feet in length. The width was 10 feet; it had five arches on each side.—*Gentleman's Magazine*, vol. xciv. pt. ii. p. 300.

‡ The shields contain the arms of Mr. Rogers, and of the Archbishop of Canterbury.

and divers others of that name and family since that time owned it. So it appeareth that this Gisors' Hall of late time, by corruption, hath been called *Gerrarde's Hall* for Gisors' Hall." The end of the thirteenth century would probably not be too early a date to give the crypt. The columns and groins are of stone, the vaults of chalk. It was originally very lofty, about 16 feet high, perhaps, to the crown of the arches, but there is now about 3 feet of ground in it, so that, except at one part, where it has been removed, the bases of the columns cannot be seen. This very interesting remnant of ancient London comes in the line of the intended new street, and as it would stand somewhat above the general level, is threatened with destruction. We sincerely hope, however, that efforts will be made to retain it, and have reason to believe that this will be the case. A trifling rise in the road would be overlooked on such grounds.

At the dinner, Mr. Pettigrew expressed the wishes of the Association on this head. Mr. Bunning, in reply, spoke of the difficulties in the way of preserving antiquities, of which the public were sometimes not aware, and said as to the crypt in question, that it should be preserved if possible.

Mr. Saunders, the comptroller, whose health was drunk as the preserver of the Lady Chapel of St. Saviour's, Southwark, referred to the miserable condition of other parts of that church. He also spoke forcibly of the encroachments made on the banks of the Thames,—the destruction of a wharfage, 40 feet wide, from the Tower to the Temple, which had been paid for by the public,—and he urged the necessity of a watchful supervision. To this growing evil we have several times drawn attention. The Corporation themselves are not blameless.

The visit to the City, it will be seen, was full of interest, and may be repeated with advantage. Let the Association parcel it into sections, and see it all,—

"Far as loud Bow's stupendous bells resound."

AN ACCOUNT OF THE GUILDHALL OF THE CITY OF LONDON.

THE ravages of the Great Fire of London in 1666, and the destruction attendant upon modern improvement, have unfortunately left but few edifices within the City which can claim an antiquity greater than that of the present Guildhall. It is much to be regretted that in a structure of such importance as the seat and centre of local authority, and of the administration of a wealthy and influential corporation, there is not more harmony subsisting between the several parts of the hall itself and the buildings connected with it. Though this circumstance affects in some degree the interest attendant upon its inspection, there are still features enough left to render it worthy of attentive examination, especially in connection with some of the historical associations which properly belong to the place.

The citizens of London having been from the very earliest period a self-governing community have probably never been without a stated place of assemblage for municipal purposes, such as we understand under the name of a guildhall. There seems some reason to believe that a building of the kind existed as early as the reign of Edward the Confessor.* It has frequently been asserted that the Guildhall has always stood upon the same site, but this is clearly a mistake, as is apparent by the account given by Stow in his "Survey of London." Speaking of the street called

Aldermanbury, he says:—"This street took the name of Aldermans burie (which is to say, a Court), there kept in their bery or court-hall, now called the Guildhall, which hall of old time stode on the east side of the same streete not farre from the west ende of Guildhall now used." In proof of the antiquity of this "old Aldermans bury or court," he then quotes a deed by which Richd. Renery, one of the sheriffs in the year 1189, gave to the Church of St. Mary, at Osney, by Oxford, "certaine grounds and rents in Aldermanbery of London, as entered in the hustings of the Guildhall in London." Stow then adds—"this olde bery, court, or hall continued, and the Courts of the Mayor and Aldermen were continually holden there untill the new bery, court, or Guildhall that now is was builded and finished, which hall was first begun to be founded in the year 1411, and was not fully finished in twenty years after. I myselfe (he says) have seene the ruines of the old court-hall in Aldermanbery-streete, which of late hath been employed as a carpenter's yard," &c.

It would be easy to quote from the records of the corporation, and the ancient chronicles of London, many events of municipal interest and importance which took place in this old Guildhall, but we proceed to notice the erection of the present hall. Stow in another part of his Survey says:—"Thomas Knoles Grocer, mayor, 1410, with his brethren the aldermen, began to new build the Guildhall in London, and instead of an olde little cottage in Aldermanberie-street, made a faire and goodly house, more neare unto Saint Laurence Church in the Jurie."

In this passage not only is the alteration in the site of the building again mentioned, but it is also evident from it that the new hall was far more spacious than the old one. And the same thing appears by a subsequent notice, in which Stow, quoting Fabian, says:—"The same was made of a little cottage a large and great house as now it standeth, towards the charges whereof the companies gave large benevolences: also offences of men were pardoned for sums of money towards this worke: extraordinary fees were rayzed, fines, amercements, and other things employed during seven years, with a continuation thereof three years more, all to bee employed to this building." The celebrated Richard Whittington, through his executors, was a considerable benefactor to the work, and other eminent citizens also contributed liberally towards it.

Some of the most striking events connected with the history of the present Guildhall, independently of those of municipal or local interest only, are the following:—

1483, 24th June.—The crafty attempt of Richard III. (through the Duke of Buckingham) to beguile the assembled citizens into an approval of his usurpation of the regal dignity.

1546.—The trial of the youthful and accomplished Anne Askew on a charge of heresy, preferred by command of Henry VIII., Bishop Bonner, and others of his bigoted councillors, which ended in her condemnation, her torture on the rack, and her martyrdom in the flames of Smithfield, on 16th July.

1547.—The trial of the Earl of Surrey, one who was distinguished by every accomplishment which became a scholar, a courtier, and a soldier, and who, to gratify the malice of Henry VIII., was convicted of high treason.

1553, 13th Nov.—The trial and condemnation of the ill-fated Lady Jane Grey and her husband.

1554, 17th April.—The trial of Sir Nicholas Throgmorton on a charge of being implicated in Sir Thomas Wyatt's rebellion against Queen Mary; a trial which is described as the most interesting perhaps on record for the exhibition of intellectual power, and remarkable for the courage displayed by the jury in returning a verdict in opposition to the despotic wishes of the Court, though at the expense of imprisonment and fines.

1606, 28th March.—The trial and conviction of the Jesuit Garnet for participating in the Gunpowder Plot of Guido Fawkes and his associates.

1642, 5th Jan.—Charles I. attended at a

* Nichols's Brief Account of Guildhall, 1819, p. 1.

Common Council, and claimed their assistance in apprehending Hampden and the four other members of the House of Commons, whose patriotic opposition to the King's measures had led him to denounce them as guilty of high treason, and who had taken shelter in the City to avoid arrest.

During the civil war and the time of the Commonwealth, the Guildhall became the arena of many an important incident connected with the political events of the times; and at a later period, when the government of James II. had become so intolerable that he was forced to abdicate, Guildhall was the spot where the lords of Parliament assembled and agreed on a declaration in favour of the assumption of regal authority by the Prince of Orange, afterwards William III.

Being the place where the citizens have for ages been accustomed to assemble, not only to transact municipal business, but also freely to discuss public grievances, to consider and suggest remedies for great social evils, and to promote the general interests of humanity,—many other events of deep public interest and importance might, if space allowed, be mentioned as having emanated from this celebrated spot.

Guildhall has been famous also for the many sumptuous entertainments which have been given in it to royalty and other personages of distinction at various times, apart from the annual festivity which marks the entrance into office of each Lord Mayor. From the banquet given in 1421 to Henry V. and his Queen, on the successful termination of his campaigns in France,—when Sir Richard Whittington, in addition to the luxuries provided for his royal guests, is said to have gratified and astonished the King by throwing into a fire bonds for which his majesty was indebted to the citizens to the amount of 60,000*l.*—down to the reign of her present Majesty, nearly every sovereign of this country has honoured the City by accepting of its hospitality in the Guildhall. Charles II. showed so much fondness for the civic entertainments, that he dined there as many as nine times in the course of his reign.

THE PORCH.

The chief approach to the hall is by the spacious porch on the south side, erected after the mayor's court and other chambers above stairs, in the reign of Henry VI. Before the present front to the hall was built by Mr. Dance in 1789, this porch stood far in advance of the main body of the building. Mr. Nichols, in his "Brief Account of Guildhall," says, "We are now not able to form a complete idea of it in its original state, having been materially altered either in the reign of Elizabeth or James I. It consisted of two stories. The chief features were a large arch of entrance sustained at the sides by columns having enriched spandril, with shields containing the arms of England and of Edward the Confessor, two ornamented niches on each side with figures, and two other niches with figures in the upper story. The four lower figures represented Religion, Fortitude, Justice, and Temperance: their attitudes were easy and elegant, and the sculpture good." "The figures in the upper story represented Law and Learning, and were separated by windows and compartments. The porch terminated with a straight parapet and quatrefoil ornaments, over which were placed the royal arms of England in a heavy square frame supported by scrolls. Round the lower part of the balcony were the arms of thirty-four of the City companies."

This description will be rendered more intelligible by reference to the engraving of the old front of the hall, which is prefixed to Mr. Nichols's account.

It is worthy of being remarked that the figures above mentioned, being taken down when the present front was added to the hall in 1789, lay in obscurity in a cellar until Ald. Boydell induced the corporation in 1794 to permit them to pass into the hands of Thomas Banks, the eminent sculptor, who held them in great estimation as works of art, and retained them in his possession till his death. In 1809 they were purchased at the sale of his effects for 100*l.* by Mr. Bankes, M.P. for

Corfe Castle. A laudatory notice of them occurs in a paper by Sir Richard Westmacott, published in the *Journal of the Archaeological Institute*, No. II., Oct. 1846; and a notice and correspondence, in which Mr. Lott took a part, appeared also in the *Athenæum* of Oct. 24, and Nov. 14 and 28 of the same year.

"The interior of the porch has suffered no material alteration from its first completion. It consists of two divisions formed by an arch and columns crossing in the centre, having the wall on either side subdivided into smaller compartments, with tracery and quatrefoil turns. The roof is handsomely groined with stone ribs, which spring from the sides and intersect in the centre, having bosses sculptured with various devices, the arms of Edward the Confessor," &c.

THE GREAT HALL.

The length of the Great Hall is 153 feet, its breadth 50 feet, and height 55 feet.

The side walls are uniformly divided each into eight spaces by clusters of columns and mouldings reaching from the pavement nearly to the summit of the cornice, which terminated the elevation in its perfect state: their heights have two ranges of arches between panels, which give additional width to the piers. In the upper tier are handsome windows, which have been closed at various times for the convenience of placing monuments against the sides. The only one that remained on the south side was covered during the repairs and alterations effected about the year 1818. The lower story or dado differs but little in design from the upper. The arches are divided into compartments with tracery in their heads.

At each end of the hall is a large Gothic window occupying the whole width, the details of which will be found worthy of attentive examination. The arches rest on short columns with capitals and bases, and retain in a perfect state their rich tracery. At the point of one of the arches is a shield with the arms of Edward the Confessor, and within quatrefoils in the spandril other shields with arms. The former are repeated in the corresponding arch, but the latter differ. The modern painted glass, containing in the eastern window the royal arms, and in the western one the arms of the city, was executed by Collins, of the Strand. Beneath the eastern window, under appropriate canopies, and at the back of the spot where the ancient court of hustings is still hidden, are statues of King Edward VI., Queen Elizabeth, and King Charles I. These statues stood in front of the Guildhall chapel before that edifice was removed, in 1822: they are said to be the work of an artist named Stone. It appears by an entry in the City records that the figure of Charles I. originally occupied a place on the Royal Exchange.

In the angles at the opposite end of the hall, on lofty octagonal pedestals, are the celebrated colossal figures of the giants Gog and Magog (sometimes called Gogmagog and Corineus). They are about 14 feet 6 inches each in height. They are the work of a Captain Saunders, a celebrated carver in wood, who lived in King-street, and was executed about the year 1708. They were placed in their present position during the alterations of 1848, having formerly stood on each side of the steps leading to the upper rooms, which steps were where Beckford's monument now stands, the monument then standing against the great western window. There is in one of the rooms above stairs a painting, presenting a good view of the interior of the hall before these alterations were made.

Three of the compartments on the north side of the hall and one on the south contain sculptured monuments erected at the expense of the corporation to the following distinguished persons; viz., Admiral Lord Nelson, by J. Smith, 1810; Alderman Beckford, Lord Mayor in 1762 and 1769, by Moore; the Earl of Chatham, by Bacon, 1782; the Right. Hon. W. Pitt, by Bubb, 1813.

The original roof was constructed of timber, corresponding with similar buildings erected about the same period. It was destroyed in the Fire of London. The loss was irreparable.

No representation of it is preserved; but it was probably (says Mr. Nichols) little inferior in richness of design and elegance, and excellence of execution and materials, to that of Westminster Hall. The main timbers and arches rested on the clusters of columns at the sides, which are now relieved from any weight, having only large shields placed over them, bearing the arms of the twelve principal companies.

After the destruction of the ancient roof, an additional story was raised to the same height or proportion of the summit of its lofty pitch; the upright walls, which before were only 35 feet in height, being now 20 feet higher; and eight large windows were added on each side, which admit the chief light given to the interior. The ceiling covering this, and rising from coxes, is flat, divided into plain square panels. This departure from the original design was effected under the directions of Sir Christopher Wren.

COURT OF EXCHEQUER.

Near to the head of the flight of steps on the north side of the hall, is the apartment now known as the Court of Exchequer. Before the erection of the courts in the Guildhall-yard, it was called the King's Bench Court. It ranks next in antiquity to the great hall, having been built immediately after it, in the reign of Henry VI., for the court of civic judicature called the Mayor's Court, the sittings of which are still held there. Stow says, "The foundation of the Mayor's Court was laid in the third year of the reign of Henry VI., and of the porch on the south side of the Mayor's Court in the fourth of the said king. Then was builded the mayor's chamber and the council chamber, with other rooms above the stairs." The executors of Whittington glazed some of the windows of the Mayor's Court, as well as of the great hall, on every which window the arms of Whittington were placed."

Stow, also, in another place, speaking of the habits and dresses formerly worn, says,—"For a further monument of those late times, men may behold the glasse windows of the Mayor's Court in the Guildhall above the stairs: the mayor is there pictured sitting in habite, partly coloured, and a hood on his head; his sword-bearer before him with an hatte or cappe of maintenance; the common clerke and other officers bare headed, their hoodes on their shoulders."

Mr. Nichols, speaking of this court, says, "All that remains of its decorative features are two handsome niches and figures at one end, and a curiously ornamented square-headed doorway at the side near the entrance." He also says, "At the back of the judges' seats are paintings of Prudence, Justice, Religion, and Fortitude." Since he published his account, however, in 1819, so many alterations have been made that his description no longer accords with the present appearance of the court. There are now several paintings in it, the chief of them being a large picture presented by the late King of the French, representing the reception of an address from the City on his visiting this country in 1844.

THE CRYPT.

The following is Mr. Nichols's description of this interesting portion of the building:—

"The crypt upon which Guildhall is erected may be considered the finest and most extensive now remaining in London, and is not more ancient than the superstructure. Of these kinds of buildings, and which are not connected with a second edifice, there can be few more elegantly designed, better constructed, or more ornamented, than the example now under consideration. It is likewise remarkable for the perfect condition of all its members, columns, arches, and groins. The crypt extends the whole length from east to west, and appears to have been always separated into nearly two equal parts by a substantial wall of masonry, having an ancient pointed door, by which only a communication between them was formed.

It will be useless (continues Mr. Nichols) to conjecture the original intention of this division, and almost impossible to state

whether the western portion was vaulted like the other extremity; whether it was ever completed, or whether demolished at a subsequent period. Yet it is certain that if it never was groined, it was so intended when first founded, as appears by the shafts and springers attached to the side walls." It is not mentioned by Mr. Nichols, but it is deserving of remark, that these shafts and springers are different in character from those in the eastern crypt: the supporters of the groins forming the openings for the windows, instead of being, as in the eastern crypt, formed of a cluster of columns, are solid piers of masonry. An aisle is formed in the centre, and on each side are cross divisions, forming four separate vaults: the vaulting and walls of these divisions are brick. The windows are nearly all perfect, though they have been long bricked up. It is observable that each window consists of but two compartments, with trefoil arched heads, while the windows in the eastern crypt have three such compartments: they appear also always to have been of less depth than the latter. Two of the windows at the western extremity have lately been opened under the direction of Mr. Bunning, the City architect, by which means some light is obtained in this part of the crypt, which was formerly quite dark. The third window in the western wall is, perhaps, the most perfect of any of them: though blocked up, it retains all its original features, even to the iron cross-bars.

In one of the divisions on the south side of this crypt is an outlet, evidently leading to an ancient staircase, which from its situation probably had some communication with the porch of the hall. The quantity of timber and other stores which fill this compartment have prevented a minute examination of this curious feature.

The eastern crypt is separated into three aisles of equal width, by two rows of piers and arches; the piers consisting of four small pillars, clustered, having plain but handsome capitals, from which the arches and groins spread over the roof. At each intersection of the groins is a boss: some among them are very large, bearing shields with the arms of Edward the Confessor, those of the City, well-sculptured roses, and other devices. Mr. Nichols says, "It is worthy of remark, that the arms of London represented on the bosses in the side aisles, have the dagger, while all those in the centre aisle are without it." It may be observed, however, that it is probable, that the plain shield is not intended for that of the City, but the well-known shield of St. George, the patron saint of England.

The north and south aisles had formerly mulioned windows, consisting of three compartments each: several of them are still tolerably perfect, though now walled up. At the eastern end is an Early English arched entrance in good preservation. But it is evident there have been other entrances besides this. The opening on the south side which is nearest the division wall, has, beyond all question, been a doorway, and has communicated directly with the street. The staples for the hinges of a door are still existing on each side, and on the exterior of the opening there is discernible the bases and shafts of small columns, which appear to have stood in niches surmounted by canopies, and probably contained some kind of sculptured figures. This agrees with the exterior views of the Hall, presented in several of the old engravings of it.

The corresponding opening on the north side also appears to have been originally a doorway, and to have led into the arched way which at present communicates with the kitchens. This arched way, there seems no doubt, is the "porch on the south side of the mayor's court," which Stow (as already mentioned) says was built in the fourth year of King Henry VI. It will be observed on inspecting the spot that it has every appearance of being a porch, having still, under both the outer and the inner arch, staples for hanging doors or gates.

The present existing side-entrance to the crypt is evidently comparatively modern, being formed out of one of the openings for a window.

The height of the crypt from the ground to the crown of the arches is about 13 feet. In the angles of the aisles at the east end are doors leading in the one case to the external tower, and in the other to a small octagonal groined chamber, the purpose of which it is not easy to conjecture.

This interesting crypt having been recently rescued from its undeserved obscurity, and undergone some slight restoration under the judicious direction of Mr. Bunning, has become an object of some attraction, and it is hoped the corporation may be induced at least to preserve it effectually from future misuse and decay.

It is not possible to point out with certainty what were its original uses, but it seems highly probable from the elegance of its construction that it was devoted to useful purpose. It may have been appropriated as a minor hall of assembly for some corporate purposes, or even as a hall of entertainment. J. BREWER.

THE COMMON SENSE OF GOTHIC.

ABOUT two years ago I made the assertion (by no means new, though perhaps not so plainly stated before) that all the distinctive features of what we call Gothic architecture,—all the things which constitute it a style, or are not shared by it with any other style,—were wholly consequent on, and inseparable from, one causative feature, the vaulting. In other words, I said that a Gothic building means nothing more nor less than a truthfully elaborated and decorated vaulted building. And by this I implied two things: First, that whenever a vaulted structure puts on the appearance of any other style, not included in what we term Gothic, either the work is barbarous and infantine art, or else the style an affectation and a sham. Secondly, that wherever a building without vaultings assumes any of the peculiarly Gothic features, these are all affectations and shams.

To most persons my original position would appear to involve both the others, but architects have (as Dr. Robison says) different rules and methods of deduction; and so while not denying the fundamental proposition, and at present quite ready to admit the former consequence (while Gothic is the fashion of their stock in trade), find the latter not quite so welcome.

I was accordingly prepared to expect some argument on this point, but met with exactly the same disappointment of which another writer complains. The architects, instead of arguing, met him with, "Mr. A. thinks the Doge's palace a very beautiful building, but we think it a very ugly one," and there the matter rests. Just so a writer in the *Gentleman's Magazine* treated what he was pleased to call my "vaulting fallacy." Mr. Garbett thinks a building without vaulting cannot be real Gothic, but we think it can be very good Gothic, and so think proper to warn our readers against this fallacy.

I do not mention this to answer it. That would plainly be uncalled for, even if the writer had not sufficiently contradicted it himself, by admitting that I had rightly regarded *universal arcuation* as the essence of the Gothic system, which is all I asked or needed him to grant. For, if this be so,—if the system consist in the constant use and consistent elaboration of one particular mode of covering spaces, such mode must at least be applied to the *largest* spaces, whether carried into all the minor ones or not. Otherwise the mode employed for the smaller coverings is a sham, like the Grecian columns and entablatures attached to arcuated Roman and Renaissance building,—mimicking a mode of structure not really used in the main and structural parts. But this becomes far more ignoble in the Gothic case than in the others, because in them the general (or pretendedly general) mode of covering is superseded in the largest spaces by a *better* one, but here only by a *cheaper*:—in them the substitution is advantageous to convenience, durability, and grandeur; in this advantageous to nothing but a pure piece of niggardliness. In them the falsehood of detail is a matter only showing artistic incapacity or idleness; but here in-

volving also pretence,—mimicry of better things than the builders can afford.

But the *Gentleman's Magazine* position amounts to this: that details constitute a style, and consequently that, *arching* being the essence of this style, arching must be affected in all details, all the smallest openings being covered (or pretending to be covered) in this mode; but that in the case of all inconveniently large spaces, any other cheaper mode may be adopted. Let us take a parallel case. Honest dealing is an essential rule of the Christian religion; therefore it must be observed in all matters of detail; but in affairs on a larger scale, it may be superseded by any more convenient or cheaper substitute.

To return, however, I had said that it would presently be shewn how *all* the distinctive Gothic features (and not buttresses and pinnacles alone) were derived from and made for the stone vaulting; and wholly false and pretentious in any building without vaulting. I certainly expected this to have been proved ere now; but if nobody takes the hint, why then I must do it myself, as soon as I can spare time from matters more intimately affecting the root and core of art. At present I will only observe that I have never seen any other definition of Gothic architecture than the above—attempted, even; viz., that it is the *truthful elaboration of vaulted structure*. And I shall be much obliged to any of your readers who can furnish another satisfactory definition of it. Of course, the same definition may be put into different forms, and I believe its correct form (though less easy to the superficial learner) would be this,—the truthful elaboration of buildings in whose structure, except the outer and concealed roofing (or, in whose whole *visible* structure), the chief aim is to subject the material to simple *compression*, and to no other force. The material, observe, may be anything, but will generally be stone or other brittle matter in small pieces, because in this case alone is the *compress* the most scientific (and indeed the only true) mode of building, as those sound reasoners Dr. Robison and Mr. Bartholomew observed. But with all lengthly, elastic, or tenacious materials, the compressible principle of construction, adhered to exclusively, would be wasteful and unnatural, and would never suggest itself to any but a monkey builder or architectural mimic.

Hence all timber structures affecting Gothicism (I do not mean mere joinery of furniture, assimilated to the character of the erecting edifice, but carpentry on such a scale, and with such constructive organism, as to deserve the term *architecture*), I say, all timber architecture affecting Gothicism, as at Westminster Hall, exactly parallels those Roman examples of lifeless pseudo-art which have so long deceived the world, but are now (as I am happy to see by your extract from the *North British Review*), beginning to be viewed in their true light; as all works will sooner or later, though the poets of a thousand ages mistake or mis-sing them.

"*Delenda est*" Roma. Let the reader take that in any sense he likes as a fundamental principle of all work, and a primary essential to all true art-progress. I will explain it, D. V., elsewhere.

The monuments of ancient Rome, monuments of mental impotence below that of the rudest tribe that carves calabashes; monuments of jobbery and imposture, erected by the most swinish men of a nation singularly full of such men; monuments of incapacity and failure vainly trying to hide itself in borrowed plumes; monuments, every way fit models for the fashions of a "pestilent Renaissance";—consist, as every architect knows, of bad arch-construction distorted and spoilt, to be squeezed into a mask of sham Greek features still worse. Now just so the timber works of the Westminster Hall class are bad carpentry (generally so bad as not to keep its own shape) falsified and spoilt, to be squeezed into disguises of sham arch-work. The parallel is perfect. They are, to the Gothic architecture, precisely and literally what the (Imperial) Roman works were to the Greek. Westminster Hall is the modern Colosseum; and Crosby and Eltham, &c., &c., are our Circi,

Thermæ, &c.; and modern Gothicism (except the one or two that are vaulted) are the Palladianisms of our little private Renaissance. Some, doubtless, will be very well satisfied in such company as Palladio; some, I am convinced, will not.

If Providence spares us our excellent friend Ruskin long enough, and cures him of some few crotchets, he will presently convince more people than you expect, that in all these things the motive of imitation is "base" and "unmanly." It is to *save the trouble of thinking* out and elaborating the kind of construction really employed that men have recourse to dressing it up in paltry representations of a former kind. Every style in which this is done is base from the outset, and, instead of progressing, is in a state of *continual decline throughout its career*. Can any observer deny that this has been the case with the ancient Roman, the high Gothic, from the time of Edward II. (or at least III.), and the Renaissance everywhere? Well, draw your conclusion. Some are expecting progress by following a similar method.

Your correspondent, Mr. J. B. Waring, should therefore think again before reasserting that no style can be called debased till it ceases to display art or afford scope for genius. Some of the greatest geniuses ever devoted to our art (certainly the most known and celebrated ones) have wrought only in debased styles, and only furthered their debasement. Let him remember that, however much self-constituted judges may have differed as to what is or is not debased in our art, there is at present a pretty unanimous agreement among sound critics on *all other arts*, that art of any kind is debased in which the non-essentials supersede or usurp the place of essentials. Mind that. There is *no dissent* about it in the professors or writers on any art but architecture. Moreover, Mr. Ruskin is showing you, or about to show you, or means to show you,—or if he does not, I will,—that this debasement, and *all art* debasement, whether here or abroad, in Christian countries, has originated in one source, and that one source commonly supposed favourable to the fine arts. And I would warn that gentleman, as I know he does not like being forestalled, that if he does not make haste and come to the gist of his argument, I will take a short cut which I see, and tell it before him; which I should be sorry to have to do, because I know he will do it much better.

It is also necessary to receive with extreme caution the pretty saying now general, and echoed, I see, by an eminent professor, in your last number (where you did not qualify it), that we are to look for beauties and not for defects, in the works we may be studying. The time is fully come, Sir, for no longer searching out *either*,—either beauties or defects, but directing our whole attention to *one beauty or one defect*, viz., to fundamental right or fundamental wrong. And I am quite sure I shall not be singular in saying that this searching out beauties of detail, in works fundamentally fallacious, has been the grand bane of our modern practice; and you know what it has brought us to. And this error, this detail beauty-hunting, is now spreading into far more important things than art, and, if encouraged, will work more mischief than I can tell you; aye more than the Renaissance architecture itself.

But I have gone beyond my original object, which was only to reassert the "vaulting fallacy" complained of in the *Gentleman's Magazine*, because its re-statement was necessary as a foundation to the remarks on window tracery which I promised you, and will presently send. G. L. GARBETT.

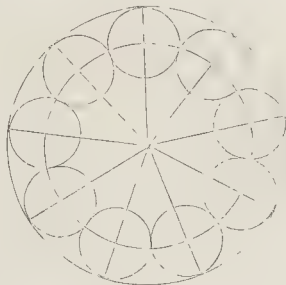
METHODS OF INSCRIBING ANY NUMBER OF CIRCLES IN A CIRCLE TO TOUCH ONE ANOTHER, AND ALSO THE CIRCUMFERENCE OF THE CIRCLE IN WHICH THEY ARE INSCRIBED.

It is a subject of amusement sometimes to witness the attempts made by architectural and mechanical draughtsmen, to inscribe a specified number of circles within another circle, in such a manner, as mutually to touch one another, and also the circumference of the circle proposed.

To those who are unacquainted with the principles of geometry, the thing is usually accomplished by trials, and the labour necessarily incurred by doing it in this way is very great, especially when the number of inscribed circles is considerable; and for this reason, a simple and ready method of obtaining the centres and radii of the inscribed circles must, to practical draughtsmen, be a matter of very great importance; and it is this consideration that has induced the writer to draw up the present paper, and if the information which it contains be found useful to practical men, his object will be answered.

PROBLEM.—In a given circle, to inscribe any number of circles, to touch one another, and also the circumference of the given circle.

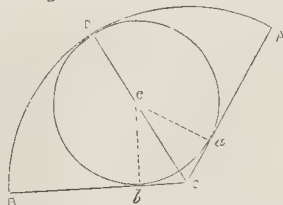
In resolving this problem, it becomes necessary to conceive the given circle to be divided into as many equal sectors as there are circles proposed to be inscribed in it, and in this way the problem resolves itself into the following: viz.—



In a given circular sector, to describe a circle that shall touch the radii and arc of the sector.

The problem thus limited is rendered very simple, and it is this limitation that practical men are apt to overlook, for if it happens to occur to them, the labour is vastly circumscribed, being confined to the consideration of one sector only, the number of sectors being the same as the number of circles proposed to be inscribed, and each circle is inscribed in the same way.

In the first place, therefore, we shall suppose that three circles are proposed to be inscribed in a given circle, in such a manner as mutually to touch each other, and also the circumference of the given circle: in this case the sector to be considered will occupy a third part of the original or given circle, and its central angle will contain 120 degrees.



Let A C B be a sector containing one-third part of the circle, and of which the central angle is equal to 120 degrees; bisect the arc A D B in the point D, and draw the radius C D, dividing the sector into two equal parts, A C D and B C D, each containing a sixth part of the circle, and having the central angle equal to 60 degrees. Assume C as the centre of the inscribed circle, and from

C let fall the perpendiculars *c a* and *c b* upon the radii C A and C B; then is C D equal to each of the perpendiculars *c a* and *c b*, so that the inscribed circle will touch the three points D, *a* and *b*, the radii C A and C B being tangents.

To investigate a rule for determining the radius of the circles proposed to be inscribed, it becomes necessary to have recourse to algebra; but from the nature of the problem, the steps of that science required in the solution are of a very simple character, and are as follows:—

Let R = C D the radius of the given circle, in which others are to be inscribed; *n* = the number of circles proposed to be inscribed in the given circle; ϕ = A C D, half the angle of the sector containing the inscribed circle; and *x* = *c a*, *c b*, or C D, the radius of the circle required to be inscribed in the given one.

This notation being established, the solution of the problem offers no difficulty; for the triangle C a b being a right angle, and C c its hypotenuse equal to (R - *x*), we have, by the principles of plane trigonometry, the following analogy, viz.:—

Rad.: R - *x* :: sin. $\frac{1}{2}\phi$: *x*; therefore, by equating the products of the extreme and mean terms, and resolving the equation, we get

$x = \frac{R \sin. \frac{1}{2}\phi}{1 + \sin. \frac{1}{2}\phi}$. This equation denotes the

radius of the inscribed circle, or the distance of its centre from the circumference of the given circle; but the expression for the distance between the centre of the given circle, and that of the circle required is more simple; and it is, moreover, more convenient in the practical construction of the problem, as it represents the radius of a circle in the circumference of which all the centres of the inscribed circles are found. The expression for this radius, or the value of C c, is, therefore, as follows, viz.: C c = $\frac{R}{1 + \sin. \frac{1}{2}\phi}$, where

$$\phi = \frac{360^\circ}{n}$$

RULE.—Divide 360 degrees by the number of circles proposed to be inscribed in the given circle, and the quotient will be the central angle of the sectors containing the inscribed circles. Divide the radius of the given circle by unity, added to the natural sine of half the central angle, and the quotient will be the distance between the centres of the given and the inscribed circles.

This rule is sufficiently simple and explicit, and its import will be better comprehended from the solution of the following numerical example.

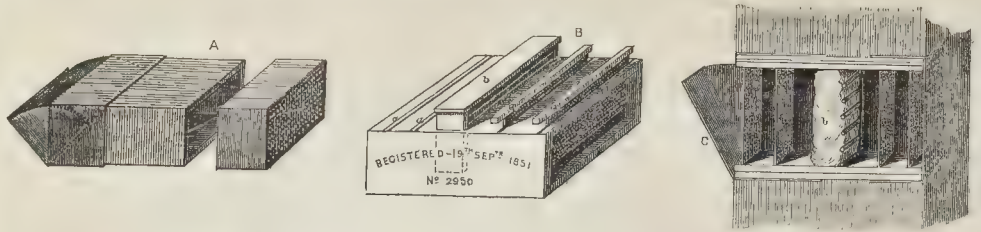
EXAMPLE.—Let it be required to inscribe nine circles within another circle whose diameter is two inches, in such a manner that they shall mutually touch each other, and the circumference of the circle proposed.

Here the number of circles to be inscribed is nine, and consequently the central angle of the sector is 40 degrees, for $\phi = \frac{360}{9} = 40^\circ$ and its half is 20°, whose natural sine increased by unity, is 1.342; hence we have $Cc = \frac{1}{1.342} = 0.745$: with this decimal as a radius taken from the scale of construction, describe a circle interior and concentric with the given one. Divide the circumference of the given circle into nine equal parts of 40 degrees each, and draw straight lines from the centre to each point of division, and these lines will cut the circumference of the inner circle in points that are the centres of those required to be inscribed, the radius being that part of the straight lines intercepted between the two concentric circles, with which the required circles may be described as per figure. T.

THE NEW CARRIAGE-ROAD IN HYDE-PARK.—The new carriageway, which runs from the Marble Arch to Grosvenor-gate, is now completed and thrown open to the public. Railings are being put down, and a broad gravel path is to run along the side. The old carriage-road is being filled up, and other improvements and alterations are to be made.

NATIONAL FREEHOLD LAND SOCIETY.—In reply to the advertisement for a surveyor issued by this society, there were forty-five applications. Eight were selected for consideration, and from these our old correspondent, Mr. James Wylson, was ultimately elected to the office.

SCOTT'S AIR REGULATOR AND AIR STRAINER.



SCOTT'S AIR REGULATOR AND AIR STRAINER.

THE desideratum in ventilation is to supply apartments with air duly fitted for respiration without draughts. An attempt to supply this has been made by Mr. Scott, of Exeter, who has registered an improved air regulator with air strainer, which admits no air into the apartments until it has been filtered and deprived of blacks, dust, and dampness. Annexed we give illustrations of the arrangement, which the following particulars will fully explain:—

A—A wood or metal frame or case with radiating valve (which contains the improved part) to be fixed in the wall.

B—Represents the improvement, an oblong square wood or metal frame or case, with perforated metal slides to be removed for cleaning: the centre one is also a moveable frame containing hair and wool or any other fibrous substance to strain the air as it enters the apartments.

C—A section of the whole when fixed in the wall, made of a variety of sizes as cases may require.

a a a—Loose perforated metal slides for the purpose of cleaning the plates, &c.

b—A moveable frame containing hair and wool or any other fibrous substance to strain the air.

It answers exceedingly well in one case of which we have a knowledge.

STEAM POWER CARPENTRY.*

As the present century has witnessed many additions to the number of woods applied to useful and ornamental purposes, and many excellent modes of preserving timber from decay, so has it been equally prolific in new modes of fashioning timber for practical uses.

The "top sawyer" at present is certainly the steam-engine, and such seems likely to continue to be the case. Year after year steam power becomes more and more employed in cutting bulky timber into planks and staves. It is said that there are no fewer than seventy steam saw-mills in and near the metropolis. These supersede to an unequal degree the labours of hand sawyers; the latter are grouped in four classes—timber sawyers, hard-wood sawyers, coopers' sawyers, and ship sawyers; and the steam-engine is applicable to some of these kinds of labour more than to others. The hard-wood sawyer has to exhibit much tact and skill, since the valuable furniture and cabinet woods on which he is employed have to be economized as much as possible. The coopers' sawyers cut the staves for casks, a kind of work which is now sometimes accomplished by cask-making machines. The ship sawyer cuts the curiously twisted timbers for a ship, the curved surfaces of which require much care on the part of the sawyer. But the common timber sawyer, who prepares the deals and other common woods for carpentry and similar purposes, is the one whose labours are most likely to be superseded by dumb agency: the work is coarse, hard, monotonous, and requires very little thought.

From the earliest times of which we know anything definite, the sawing of timber has

been performed pretty much in the same way: the paintings and bas-reliefs in Egypt tell us thus much. The top-man and the pit-man, the pit and the scaffold, are what they have been for centuries, with very little modification. Every one must see that the labour at a saw-pit is of a very severe kind. In one of the remarkable papers published in the *Morning Chronicle*, some months ago, on the Labours of London, a sawyer's estimate of his daily physical exertion is given. In the first place, he says that his saw weighs from 60 to 70 lbs., that it is about 7 feet in length of blade, and that he and his partner make about ten strokes a minute: this is equal to 70 feet per minute, or 4,200 feet per hour, or 42,000 feet in a day of ten hours: in other words, two men lift 60 to 70 lbs. nearly eight miles high in the course of a day's work. But this is only half the labour, perhaps less than half: in the up stroke the men have only to lift the saw, but in the down stroke the teeth catch like so many sharp hooks in the substance of the wood, and tear it away by main force. The sawyer was too unlearned to estimate the amount of this force, but he had heard "a scientific man calculate and reckon" that it was equal to lifting 86 lbs. If this be correct, it more than doubles the former figures, and presents a formidable appearance. Even supposing the sawyer and his scientific informant to have been not strictly accurate, there is abundant room for thinking that the labour must be severe, and that it is a kind peculiarly fitted to be brought within the scope of steam power.

For a few years before and after the commencement of the present century horse power was occasionally used to facilitate the labour of sawing; but it was about forty years ago that the first steam saw-mill was established near London. The horse-mills were abandoned, partly through the opposition of the sawyers, but more effectively through the system being non-remunerating. The steam-mills have proved to be efficient and advantageous, and have been increasing in number year by year. In most steam saw-mills there are three frames of about nine saws each: this may be taken as an average. The straight saws, which have a reciprocal or up and down motion, make 150 to 180 cuts in a minute; while the circular saws, usually from 18 to 36 inches in diameter, have a revolution of 1,500 to 2,000 times in a minute—a speed which enables them to cut through wood with great ease and rapidity. The teeth are much finer than in the saws used by pit-sawyers, and therefore cut cleaner: being subject to more regular and precise action, they need not be made of such highly-wrought steel as pit-saws, and are on that account cheaper; and in cutting a given quantity of timber, a machine-saw requires sharpening less frequently than a pit-saw—three points of advantage which the new fashion has over the old. Among the curious calculations connected with this subject, one is, that every tooth of an 18-inch circular saw, working at average speed for ten hours a day, travels 900 miles in that time.

But veneers are the forms into which a steam-mill best shows its power of sawing timber. It is in fact now entirely a machine process in this country. The late Sir M. I. Brunel—that extraordinary man, whose in-

ventive mind produced such fruitful results in a professional career of half a century—was the parent of the saw-mill. He invented it about forty years ago, patented the invention, and leased the use of the patent to many different persons. This was for timber-sawing only; but his ever-active mind did not fail to see the applicability of the method to veneer-sawing. He spent two years in the endeavour to surmount unexpected difficulties which presented themselves: he did surmount them; and veneer saws have ever since remained nearly as he left them. He, with one or more parties, established a veneer sawing-mill at Battersea: the mill is still at work, but has passed into other hands.

It is really a beautiful example of mechanical action which is presented by this veneer sawing. So unerringly are the thin plates cut, let the grain of the wood be hard or soft, straight or twisted, that the use of veneers is becoming more and more extensive every year. Not merely mahogany and rosewood, for ordinary drawing-room furniture, but satin-wood, Amboyna-wood, zebra-wood, tulip-wood, ebony, Coromandel-wood, maple, cedar, sandal-wood, king-wood, and other foreign woods, are similarly cut. Nay, our own English oak, yew, elm, ash, birch, walnut, sycamore, &c., are wrought into thin films by similar means. The logs of wood, when about to undergo the sawing process, are first brought to a tolerably clean surface by the adze or the plane, and are then firmly fixed into a frame. The veneer-cutting saws are of enormous size, some of them reaching to seventeen feet in diameter: they are circular, and are built up of several pieces of steel; for it is found that a single plate has a tendency to become distorted by the heat generated during sawing. The adjustment of the saws is most extraordinary for its exactness. Let us consider that as many as fifteen veneers are occasionally cut in an inch, and that any deviation from parallelism would render them ragged and useless: we can then conceive what nicety of arrangement is required. The saws rotate with great velocity: the log moves on by automatic machinery to meet the saws: the sawdust falls to the ground in fine powder; and the aroma from the wood (for each kind of wood has its own peculiar aroma when heated by the friction of the saw) fills the apartment. Thus is veneer-cutting now conducted; and when we are told that the machine can cut nearly twice as many veneers in an inch as the most skilful sawyer, we see ample reason for the change in the working economy of this trade. The English usually adopt the method here described; but on the Continent a singular mode is practised of cutting a continuous veneer in a spiral form: the English plan wastes a little more wood, but yields stronger veneers than the foreign. There is a film of ivory veneer in the United States department of the Exhibition, forty feet long by a foot in width, produced by cutting the tusk spirally or in snail-like fashion.

Like most other steam-power operations, timber-sawing now undertakes more than it was once thought capable of effecting. The elder Brunel thought he had wrought a great work (and it was a great work) when he showed how to saw a huge log into planks by steam power; but modern inventors are not satisfied

* From Dodd's "Curiosities of Industry." C. Knight, Fleet-street.

with this: they wish to make *crooked* saw-cuts as well as straight, for the production of ships' timbers; and they have attained their object. About three years ago, there was a legal contest between two inventors, an Englishman and an American, as to their respective rights to new timber-sawing mechanism: into the merits of the litigated question we do not enter; but it is interesting to note that both inventors had produced machines for making either straight or crooked saw-cuts in timber. Mr. Cochran's machine (one of those here alluded to) is a very complicated piece of apparatus: the fixing of a log of timber, the slow movement of the log as the cutting proceeds, and the reciprocating movement of the saws, are all effectively managed. But when the log is to be cut in a tortuous form, for ship-building and other purposes, there is provision for giving a rotatory or partially rotatory motion to the log; and, what is still more remarkable, the saw is made to shift or oscillate so as to cut successively in many different directions: nay, there may even be two saws working at once, the one cutting straight and the other curvilinear. This machine has been worked at Woolwich Dockyard; and we believe it is now undergoing that ordeal of lengthened trial which must necessarily precede any general adoption of such contrivances. It is said, that at the Earl of Rosse's first *soirée*, as President of the Royal Society, a model of this timber-cutting machine was exhibited; and that the Prince Consort cut a miniature ship's timber with it to test its action—a pleasant apprenticeship this, for one who was destined to be the founder of the greatest industrial jubilee the world has ever witnessed.

Not only is the giant power of steam now applied to the fashioning of wood for the purposes of the carpenter and the joiner, but there are establishments expressly appropriated to this purpose. These are much more modern than steam saw-mills, and contain machinery of a more complicated kind: most of them, however, comprise machine-worked saws as well as planing and moulding machines. Until about twelve or fourteen years ago, the few planing machines in use, were wrought by hand, but the all-embracing steam-engine is now applied with much better effect. The same movement sets to work the saws for cutting boards to the proper width, adzes for bringing the board to regular thickness, and planes for smoothing the surface; and it is said (and may readily be believed) that the boards so prepared are flatter and smoother than those planed by hand. In the *moulding-mills*, as they are called, the operations are of greater nicety, for the wood has to be fashioned to those architectural forms which constitute mouldings, such as are used by carpenters, joiners, and others. The cutting tools are small pieces of steel, fashioned to the shape of the moulding, and fixed to a rapidly-revolving axis: the wood is brought to the action of these cutters, and a perfect shower of little fragments of wood is all that tells us what is going on, for the revolution is too rapid to allow the movement and action of the cutters to be traced.

The great lesson-book in Hyde Park affords its teachings on this subject as on others. There are five different kinds of wood-working machines exhibited by Mr. Furness. One is a *morticing* machine, intended to cut holes for the tenon-and-mortice mode of joining timbers. There is a second morticing machine, moved by the foot instead of by steam power, and fitted to cut holes from an eighth of an inch to two inches in width. A third is a *tenoning* machine, for cutting those projections which constitute tenons: each tenon is completely shaped at one operation. A fourth is a *planing* machine, for giving a flat and smooth surface to planks or any other pieces of wood: the powers of this machine are so easily adjustable as to be easily applied to timbers of all dimensions—from four to fifty feet in length, from eight to forty inches in width, and from a quarter of an inch to thirty inches in thickness. A fifth is a *moulding* machine, to impart to wood the architectural form of mouldings, which are usually wrought

by the carpenter with the aid of hand-planes: it may be applied to the making of sash-bars, or the cutting of grooves, or the forming of any hollows or protuberances which are to extend uniformly along the grain of the wood; and it is applicable either to hard or soft woods, with a slight adjustment.

Besides various English machines of this kind, there is a French machine, called the "Menuiserie Mécanique," or Mechanical Joiner, which both planes and forms mouldings in wood, by plane-irons fixed to an axis which revolves a thousand times in a minute.

NOTES IN THE PROVINCES.

Dover.—It has been resolved at a common hall in the new Sessions-house to promote the restoration of the interior of the Maison Dieu Hall, according to a plan by Mr. Ambrose Poynter, architect, by which, says the *Dover Chronicle*, its style will be preserved, but transformed from its ecclesiastical to a civil character: cost about 2,000*l.* A subscription list has been opened for the realization of the requisite means.

Winchester.—As our readers may remember, a rate for a museum and public library has been fixed here, and a museum appropriated. The library is still small, but additions to it are being continually made, and were a proper depository established, and visible to donors who could thus see that their books would be properly placed for the public behoof, there is not a doubt but that the library would rapidly grow to respectable dimensions. We are not a little surprised, however, to find, on the authority of the *Hampshire Independent*, that the sole accommodation both for books and readers, in the museum premises, consists in "a small back room, situate in the top story, lighted by a small window, without, we believe, a fire-place, and in which the library never can be available for general use." This is not the way to form such a library. Spare space already fitted up is what will tempt donors and subscribers to increase it.

Wroughton.—The ancient church of Wroughton, which was in a dangerously dilapidated state, has been repaired and reopened. Two clumsy galleries have been removed, and the church repewed in oak. Stalls of same material have been raised in the chancel. The repairs include the rebuilding of south aisle and clerestory, with new windows to the former, the whole of the wall of north nave, four new roofs, with various other restorations, the cost of which has exceeded 2,140*l.*, to defray which the sum of 1,799*l.* has been collected, leaving a deficit of 341*l.*, for which the Rev. H. Light, the vicar, is responsible. This gentleman gave a whole year's income from his vicarage (150*l.*) for the purpose of assisting to defray the expenses, and his lady gave 366*l.*, being the proceeds of 150 portraits, painted by herself for the work during two years past: most commendable exertions, which merit note as an example to others.

Penally, near Tenby.—The parish church of Penally, near Tenby, which has recently undergone a complete restoration, under the superintendence of Mr. Brandon, was reopened on Wednesday, Oct. 1. The church is very ancient,—cruciform in plan, with the squints, vaulted roof, and plain square tower—characteristic of the Pembrokeshire churches. It had long been in a very dilapidated condition. Happily much has now been done towards restoring it to a state of comeliness and order. The old windows, which had fixed wooden sashes and were of a very debased character, have been replaced by Early English windows. The coating of whitewash and plaster which covered the stone vaulting of the roof was removed, with the intention of leaving the stonework visible; but in consequence of the rude nature of the material employed, and the irregularity of the masonry, it was found necessary to replaster the roof. The font, a very ancient one, has been cleaned and removed to its proper place, at the entrance of the church, and the unsightly and inconvenient square pews replaced by open seats of stained wood-work. The new east window is the most ornamental feature in the church: it is filled in with

stained glass, the work of Wailes, of Newcastle. The window is said to be a very beautiful one, combining richness of colouring with correctness of outline. A brass placed on the north side of it records, "that it was erected as a memorial of Sarah, wife of the Rev. J. Hughes, by surviving friends." The whole cost of the restoration has considerably exceeded 600*l.* Messrs. D. and C. Jones, of Bradford, Wilts, were employed as the builders.

Lichfield.—St. James's Church, Ogley Hay, was consecrated on Wednesday week. It is a small cruciform structure, in the Early Decorated style, crowned by a small spire, and will seat nearly 400 persons, all the sittings free.

Lincoln.—At the recent half-yearly meeting of the gas company, says the *Lincolnshire Chronicle*, "the usual 20 per cent. dividend was declared, and the affairs were found to be in so very satisfactory a state that there is no doubt the price of gas will very shortly be reduced to 5s. per 1,000 feet."

Grimsby.—The docks are now hastening to completion, and the electric telegraph in connection with them will soon be in operation from sea to sea, i. e., from east to west.

Liverpool.—The town council have decided that Mr. Willis, the builder of the great organ in the Exhibition, shall be entrusted with the building of the organ for St. George's Hall. This organ is intended to be larger than any other in the world,—about twice the size of the famous one at Haarlem, and with at least 120 stops.—Another fatal accident occurred on Monday week much in the same way as that by which a life was recently lost. In the present instance the unfortunate victim was second clerk of the works, Mr. William Hawley. His foot, it is said, slipped while crossing a plank, and he was precipitated through an unfinished floor to a depth of 27 feet, and so much injured that he died after his removal to an hospital. No charge of carelessness is made against any one in the present instance: the flooring was unfinished, and the plank lay across the beams apparently in the usual way.

Warrington.—St. Alban's (R.C.) Chapel was reopened on 12th inst. after being decorated and repaired. The walls on each side of the altar are diapered in gold, with a pattern of I.H.S. enclosed within a border of blue crosses, on a red ground. The large surface of the wall extending from the panels to the arch over the sanctuary is decorated with a cross upon a green ground, with gilded centre. The panelled roof of the large arch which encircles the sanctuary is studded with gold stars on an ultra-marine ground, and each of the numerous mouldings on the face of the arch has a diversified pattern. The centre of the deep cornice projecting from the spring of the arch to the extremity of the walls on each side of the sanctuary is filled with scroll work, and the mouldings of the cornices are adorned with patterns on variegated grounds. The altar is covered with a gold *fleur-de-lis* on an ultra-marine ground, and the columns and panels encircling the altar are also decorated. On the surface of the pedestal which supports the altar columns, a filly forms the centre of a group of some designs executed in gold on a vermillion ground, and the whole is bordered by a quatrefoil. In the niche above each vestry door are statues of the Virgin and St. Joseph, and the back ground is ultra-marine, ornamented with gilded stars. The numerous pilasters, with the capitals, mouldings, and bases, are painted and decorated. The whole of the painting and decorations were designed and executed by Mr. John Walker, of Brown-edge, assisted by Mr. William Crook, of Preston. The tabernacle was designed and executed by them. The painting of the benches and pulpit, &c., was executed under the superintendence of Mr. John Williams, a member of the congregation.

Glasgow.—Baron Marochetti, according to the *Glasgow Herald*, has been selected for the execution of the proposed equestrian statue of her Majesty at Glasgow.

Forfar.—A monument to the memory of the late Sir Robert Peel has been placed in the new burial-ground at Forfar.

Cockermouth.—A correspondent of the *Carlisle Journal* says that there is at last some prospect of an end being put to the unhappy divisions which have so long existed in this borough with respect to the most suitable plan to be adopted for building a church. The incumbent has stepped between the dissenting parties, and "has expressed his determination that the town shall no longer be without a church. He is most sanguine of being able to raise the necessary funds, and in that case he will build the church upon his own responsibility."

Strathdon.—The laying of the foundation-stone of the new church, now erecting in this parish, took place on 9th inst. The church will cost upwards of 2,000*l*.

St. Helier's.—In the *Jersey Times*, a correspondent, "Medicus," mentions that the cemetery of this thickly inhabited town is already filled, though appropriated but a few years since, and that it is proposed to convert the rectory meadow into additional burying-ground. This "Medicus" protests against from its proximity to the town, its low situation, and undrained state, causes certain, as he remarks, to render fever and other severe forms of disease endemic around it.

Stirling.—The first stone of a new Free Church has been laid here. It stands in front of the railway station, on a rising plot of land belonging to the Bank of Scotland. The church consists of nave with north and south aisles, an apse for the choir and vestry, and a lofty steeple united to the south aisle. The nave is lighted by a range of clerestory windows, with a large western window. The aisle windows are segment-headed, and the church is arranged to accommodate 1180 worshippers. On a level with the street is an entrance to a large presbytery-room for week-night lectures and the secular business of the church. The church is approached by returned flights of steps (owing to the rising nature of the ground) through arched gateway. The contracts have been taken by Mr. Gillespie and Mr. Morrison, at the sum of 3,170*l*: the architects are the Messrs. Hay.

Glasgow.—St. Matthew's Free Church was opened on Sunday last. It is the production of Messrs. Black and Salmon, architects, and is in the Decorated style of pointed architecture, with a tower and spire rising to an elevation of 200 feet. The lateral portions of the edifice are finished with buttresses and embattled parapets—the session-house and vestry varying the outline. The interior of the church measures about 90 feet in length by 60 feet in breadth. The width is divided into a central nave and two side aisles, the nave rising to an altitude of 53 feet. The roof is groined, the groins springing from piers and vaulting shafts, having foliated capitals, and the inter-sections enriched with bosses. The pulpit is surmounted by a canopied screen. The large south window, which is filled with stained glass in the Decorated style, with geometric bands, diapered grounds, and rich bordering. The aisle windows are also filled with stained glass, and the ceiling, walls, and timber-work, have been brought to a tone of colour in harmony with the glass. The stained glass, by Mr. Ballantine, of Edinburgh, is one of his most successful efforts. The painting is by Mr. Wardlaw; the mason-work by Mr. Rennie.

Miscellaneous.—The following consecrations have recently taken place:—By the Bishop of Chester, the new Church of St. Thomas, Wigan, containing upwards of 800 sittings, more than one-third free. By the Bishop of Chichester, two new burial-grounds at Worthing and at Littlehampton. By the Bishop of Bangor, the new Church erected at Dolgelly, by the daughter of the late Robert Vaughan Richards, in accordance with the wish of her parent.—The foundation-stone of a new Church has been laid at Kidmore, near Caversham, Berks.—At a large meeting held at Eton, the Rev. Dr. Hawtrey in the chair, a subscription was opened for building an additional Church for that parish, at an expense of 5,000*l*, two-fifths of which are already subscribed.

JURORS' AWARDS IN THE GREAT EXHIBITION.

ALTHOUGH we have already had our share of the dreaded reflections and complaints as to the awards of the jurors, and although these are also manifesting themselves here and there throughout the provinces, we were scarcely prepared for so bitter an attack on the commissioners as that which appears in the French government organ, the *Constitutionnel*, which accuses them, not only of a disposition to underrate the beauties of French manufacture, but to practise gross and undisguised favouritism, to the prejudice of French exhibitors. There is a vanity which no awards would satisfy, short of both the lion's share and the pickings. We were prepared for grumblings from all quarters rather than from Paris.

Amongst ourselves it is complained that "Mrs. Haigt, the fortunate exhibitor of a well-made shirt from the United States, or an exhibitor of 'lambs' tails oil,' a 'clay tobacco pipe,' a 'wedding cake,' a 'box of sweetmeats,' a 'walking stick,' a 'pail,' or a 'broom,' receives a medal of equal value with that awarded for the crystal fountain of Messrs. Osler, the beautiful pianofortes of Messrs. Broadwood and Messrs. Collard, the effective railway break of Mr. Lee, the porcelain and statuary of Messrs. Copeland and Messrs. Rose, Ericsson's new motive power and his other highly valuable and philosophical inventions, and the nationally important and commercially valuable inventions of the Chevalier Clausen."

This, however, is exactly what the commissioners desire as the only means of remedying the error of having determined to give prizes at all.

Among the malcontents is Alderman Copeland, named in the quotation just given from a morning paper, who complains that a prize, or jury medal only, has been awarded to the productions of his establishment, while that of Messrs. Minton has been honoured with a council medal, which, the complainant observes, is regarded by the public generally as indicating a better manufacturer or producer than others to whom the prize medal only has been given. He reminds the commissioners that in conjunction with his colleague, Mr. Ricardo, as members for Stoke-upon-Trent, he protested against the constitution of the jury,—"a protest signed by every exhibitor (from the Potteries), with, I believe, one solitary exception, and that exception, now the recipient of a council medal."

The sum devoted to the purchase of objects from the Exhibition to serve as models for study in the Schools of Design, is said to be 5,000*l*. We hope that this will not be the only sum devoted to a purpose so much in harmony with the very objects and ends of the Exhibition itself.

A memorial emanating from the leading merchants in England, it is said, is to urge on the commission the importance of forming a collection of objects likely to extend and facilitate trade.

Steps, it appears, have been taken at New York for holding an exhibition next year, preparatory to an international one, designed also to be held in the United States. We suspect that France will be the scene of the next really International Exhibition. The Americans, however, merit a preference, were they not so far distant from all the rest of the world most likely to contribute to such an exhibition; for they appear to be the first who have actually taken any steps towards its realisation. Moreover, it is said that Spain, Austria, Rome, and some of the German states have given their assent to the proposal. The building is to be of iron and glass like that in Hyde-park, but not on so great a scale, and is to be erected in the centre of New York.

Autograph letters of a highly complimentary character have been addressed by his Royal Highness Prince Albert to various gentlemen who have greatly exerted themselves to promote the success of the Exhibition. The Prince announces his intention of presenting each with a gold medal: to Dr. Lyon Playfair he further offers the position of gentleman usher, vacant in his household by the appointment of Colonel Reid to the governorship of

Malta. The clear intention of Prince Albert, in this new appointment, is to show that, so far as lies in his power, men of science shall not be neglected, but shall have the offer of a due share of such honour or emolument as he has to give. Such offices are likely, therefore, henceforth to have another sort of lustre shed on them than heretofore.

A HINT TO ARCHITECTURAL AUTHORS.

The architectural writers of the present day are apt to show themselves exceedingly negligent in one respect, and inattentive to the convenience of their readers, it having become usual with them to omit that very essential appendage to all books of the kind—an *Index*. Fergusson's "True Principles," &c., Freeman's "History of Architecture," Garbett's "Principles of Design," Talbot Bury's "Styles of Architecture," are, in consequence of the omission of indexes to them, rendered far less available for the purpose of study, it being impossible to refer readily to any particular matter or passage; so that, unless the reader makes a sort of index for himself as he goes through the book, he has every time the trouble of actually hunting out for what he might otherwise turn to at once. Just the same is it with Ruskin's "Seven Lamps," and also the "Stones of Venice,"—at least as far as the first volume is concerned; and as both these works touch upon a great multiplicity of matters, the want of facility of reference is a most serious inconvenience, although it does not seem to have been felt as such by his reviewers, probably because, notwithstanding their professed admiration, they have been satisfied with a single cursory perusal.

Let us hope that, in case of new editions of any of the works above mentioned, or of similar ones in the like predicament, an index will be introduced; if only because such addition would warrant the words "improved edition" on the title-page, even though the book should in all other respects remain the same as before.

ZETA.

THE CLOISTER COURT.—NEW HOUSES OF PARLIAMENT.

THE Cloister Court, in the Palace of Westminster, offers the most elaborate elevation to be found throughout the building. The other inner courts, it will be remembered, are all very plain and bald. This is for the most part a restoration by Mr. Barry of the old work, which had been miserably altered, patched, and disfigured by previous architects. Our view represents the Court as seen from the south-east, and includes the Chantry Chapel.

In Britton and Brayley's very interesting "History of the Ancient Palace and late Houses of Parliament at Westminster," abstracts are given from the account of William de Chayllowe, surveyor of the king's works in the Palace of Westminster, amongst which, under the date 1325, appears the following:—"For the chapel of the palace, with the new *alur*. For timber for the new *alur* (cloister); between the king's chamber and the said chapel; for stone, as well of Caen as of Ryegate; for lime, sand, iron, coals, plaster of Paris, carriage of materials, and for wages,—in all 376*l*. 5*s*. 0*d*." And again in the following year:—"For the chapel: in timber, stone, lime, sand, iron, coal, in lead to cover the new *alur*, and in carriage of materials, and the wages of workmen, 153*l*. 3*s*. 4*d*."

In this work the cloisters are very fully illustrated by a large number of engravings. The court is 49 ft. 6 in. from east to west, and 63 ft. from north to south. The width of the cloisters is 12 ft. 8 in.

The masonry of the other parts of the Parliament Houses is proceeding gradually; the clock-tower grows and grows, and promises to have a somewhat attenuated effect. A few nights ago, when we passed over the crippled Westminster-bridge, there was a clear sky and a bright moon; the width of the Thames was marked by the lamps on the bridges and on the shores, reflected in long still streaks of light on the water; and the immense pile, which is now beginning to take its real outline, produced a grand effect.



THE GHOSTER COURT, NEW HOUSES OF PARLIAMENT.

RESTORED BY MR. CHARLES BARRY.

ENRICHED GOTHIC MOULDINGS.

I THINK we should accept no theory that our experience compels us to believe incapable of *standing the test of facts*. I, therefore, must reject that of Mr. Little on the subject of "Enriched Gothic Mouldings," from a conviction that he has gone too far, and has on insufficient data advanced statements that cannot be substantiated.

It is surely incorrect to quote Vitruvius and his theory of the triglyph as bearing any analogy to the case in point. For in a society so peculiarly constituted (be it remembered) as that of the Freemasons, in which *so much unity existed*, it is only just and reasonable to conclude that had the rejection of "Enriched Mouldings" been the "result of a principle laid down" by themselves, then *no instance* would have been found of a departure therefrom.

I think that few persons who have gone through a laborious study of our English architecture will readily discard from their folios the valuable matter they have gathered from "sedilia, tombstones," monuments, and other accessories of our ancient ecclesiastical buildings as being unworthy the name of architecture (as Mr. Little seems to imply); but, on the contrary, will rather confess with me a deep debt of gratitude as owing not only to the able men who produced them, but also to the many who have since preserved them uncontaminated to the present time, and moreover will be willing to view them as the most pure and correct evidences of the gradual changes that have taken place in the character and details of our architecture up to the time when, by the dissolution of the monasteries, a sudden and violent stop was put to its further development; and, furthermore, will be with me convinced that it was upon these very "subordinate works of art" that the greatest care, study, and skill were not only bestowed, but absolutely lavished, by the architects of the middle ages. I therefore think that these have even a *prior* claim upon our attention, in the endeavour to ascertain the principles which governed our forefathers in the formation of their wondrous designs.

With these feelings I sent you the two specimens alluded to, believing that they would prove too unexceptionable to render it necessary for me to encroach further on your valuable space or kind indulgence.

The sketch from a *finial* of the sedilia at Exeter Cathedral was (as I stated) but one of many others therein, similar but various in design; and I may here further observe, that where these *enriched* necking moulds occur on a low level, they have a small mould on the top, as well as the bottom of the enriched portion, as it were, clipping it closely to the shaft, and leaving the enrichment as the *prominent feature* in the centre.

This may prove that I am not mistaken. "in regarding the carving on the foot of the finial, as a portion of the necking mould," for it clearly is so, and not as he supposes it to be, "the first swelling of the foliage of the finial;" for it does not *most distantly* resemble this in either character or design, and is moreover nearly unconnected with it, having only the stalks of the foliage running down and stopping upon it abruptly: this and the other examples referred to are of *pure Decorated character*.

Regarding the other example, I am wholly at a loss to understand upon what ground this is considered as "evidently Norman." I can only say that the carving of the effigy, the foliage, and other ornaments are distinctly of Early English character, and that the moulding in question harmonizes perfectly with it in every respect. Besides, by assigning this monument to Bishop Simon de Apulia (in which I believe he is correct), it is shown that the Early English style had prevailed some *thirty or forty years* even at the period of his death. And, again, have we an example of an enriched moulding in the *Norman* style bearing the least resemblance to this one? I think not: at all events, I recollect none.

I send you no example of the Perpendicular period, not that this style is excluded from Mr. Little's period of "four hundred years,"

but because I feared he might consider it as belonging to a period sufficiently late to be classed as "debased."

I cannot think it necessary, at least in our days, that Mr. Little should call in the aid of his theory to establish or increase the honour so decidedly due to our forefathers as the originators of the style we appropriately term Early English, for I cannot conceive myself why it should be thought a thing improbable that the style should have sprung, naturally and gradually, from the study and application of the Norman by men of refined minds. I think it would be an easy matter (from the examples which remain to us) to establish this fact beyond all controversy, simply by bringing together various specimens, showing, first, the *severe*—simple, square, and massive in proportions and details—through the *richer*, to the highly enriched period; then to its gradual refinement in the elongated proportions,—slender detached shafts, smaller mouldings in greater profusion and variety, with less enrichments, &c. &c. This done, it could scarcely be considered a very marvellous thing that some one of the many highly talented men of the period should have suggested to his mind the simple probability that the pointed arch (*shown by the interlacing of their own arches, which probably was of recent application*) would harmonize the better with the state of refinement to which they had brought their style, than the *semicircular form hitherto used*; and, consequently at once tried the experiment that resulted in its partial, and ultimately in its universal, use.

May I ask if this theory is not more rational, and far more probable than to suppose that a sudden leap was taken from the rich exuberance of the Norman to the elegant refinement of the Early English style, or than the absurd theory of its introduction to this country from far distant lands?

W. H. B.

RAILWAY JOTTINGS.

THE Railway Board is now dissolved, in pursuance of the Act of Parliament passed on 7th August last. The officers appointed by the Commissioners are to be continued, subject to the orders of the Board of Trade.

In a recent case at Reading, the County Court judge decided, notwithstanding a notice by the Great Western Company, "That they will not, under any circumstances, be liable for goods should any claim arise from delay, detention, or any other cause,"—that if a train was five or six hours late, and that by that delay any goods were injured, the company were liable. It was no argument in their favour to say that the train was so heavy that they could not proceed quickly. Putting a greater quantity of luggage in the carriages than could be conveyed was tantamount to putting clogs on the wheels to prevent the carriages travelling at their usual speed.—Mr. Slocombe said that if the goods had not been attached to the train at the various stations they must have been left behind.—His Honour said that in that case they must have more trains, or else reduce their traffic. He should give a verdict for the plaintiff for the amount sought. It was intimated that this case was only the forerunner of hundreds more of a similar nature. The "notice" by the company seems to be simply a ridiculous attempt to take the law into its own hands. Railway companies, in whose hands the highways of the empire are entirely monopolized, would really appear just to require to be kept short by the law, with stout legal reins cast over them, since they imagine that all that they have to do to rid themselves of responsibility is just to issue notices that they *won't* be responsible. Only think of the next probable "notice," had the one now in question been held to be legal, or legislative rather:—"Notice: The Great Western Railway Company will not, under any circumstances, be liable for the safety of passengers should any claim arise from accidents, injuries, deaths, or any other cause!" A new fountain of legislation would have thus been at once established, the issue and ultimatum of which it is not easy to see, although the uniform direction of its current, we dare say, would be obvious enough.

The eight metropolitan lines of railway had an increase of 821,863*l.* on their traffic for twenty-three weeks of this year, ending October 11, over and above that of the corresponding period of last year. The extra receipts from the exhibition itself the *Times* estimates at 557,483*l.* half a million—besides a small item of 57,000*l.* in addition! "It thus appears," remarks the *Times*, "that immense as have been the receipts of the Exhibition itself, the receipts of the eight metropolitan lines from the same source have been greater. Nay, it is evident that it would have answered their purpose to defray all the expenses of the Exhibition, and hand over the whole of the 505,000*l.* received for admission, &c., to the Royal Commissioners, to be applied as they please!" If this suggestion is too late for this year, it is in good time for another, and for many more yet to come. Notwithstanding the great reduction of fares made by all the railways to meet the general class of visitors, that reduction may be carried still further, or rather the accommodation given for the same fares may be greatly increased, and yet leave a handsome profit to the companies. Further, we beg to suggest, whether it will not answer the purpose of the metropolitan railways to contribute towards maintaining periodical and even permanent attractions of the same sort; such, for example, as would be implied in the notion of a winter garden used occasionally for entertainments and exhibitions. Of course it would be ridiculous to expect that so great an occasion as that we have witnessed could be sustained; but something on a less scale, and varying from year to year, might answer the purpose." This is a year that seems likely to open the eyes, as well as to fill the pockets, of the railway companies. No positive loss of traffic, moreover, has been sustained in any direction, except in a few special instances. The aggregate traffic of all the railways of the United Kingdom, from January 1 to October 11, is greater than that for the same period of last year by no less an amount than 1,581,604*l.*, and nearly three millions greater than that of same period in 1849. In fine it is still more satisfactory to know that "the money spent on the Exhibition by its provincial visitors has been generally rather saved beforehand than borrowed at the time, so that we need not apprehend a reaction such as usually follows an improvident expenditure."—Nearly 2,000 men and between 300 and 400 horses are in active operation in the formation of the line from Shrewsbury to Hereford. The viaduct over the low land on the sides of the River Rea at Shrewsbury has been completed, and the bridge over the expanse of the Abbey Foregate will shortly be advanced. In excavating for one of the piers, at a depth of 10 feet from the surface, was discovered a portion of an old stone wall connected with the abbey, and on the other side were found the remains of an old bridge, supposed to have formerly led to a monastery over the adjacent marshy ground. The bridges throughout the line are nearly finished. The cuttings and excavations and permanent way are also being rapidly pushed on. Ten stations will be erected between Shrewsbury and Ludlow. The gradients throughout, with one exception, are said to be not more than 1 in 100. The railway to Ludlow is to be opened by Christmas.—Measures are being taken for the formation of a dock and railway at the Low Lights, mouth of the Tyne, in connection with coal fields in the district.—The most productive railway in Germany is said to be that from Furth to Nuremberg, which is at the same time the shortest and the oldest of the lines on the Germanic territory. This line, which is only about a league and a quarter French measure (about 3½ miles English), was constructed at a cost of 200,000 florins (500,000*l.*). The gross receipts, in 1850, amounted to 59,338 florins, and the expenses to 31,471 florins, leaving to the shareholders a net profit of 26,861 florins, or 13½ per cent. on the capital. During the fifteen years that this line has existed more than seven millions of persons have passed over it, out of whom only one passenger has met with any injury, and that was by his own imprudence.

TRIBUNALS OF COMMERCE.

THE International Exhibition has come and gone, but, so far as we are aware, not much progress has been made towards the organization of tribunals of commerce throughout the country, or even in the metropolis. Powerful influences may be brought to bear against them; yet we hope that so great a public good, however much evil it may be supposed to bring to a single class of the community, the lawyers, will ere long be firmly and universally established in every commercial city and town throughout the empire. The assistant secretary to the committee of the Tribunals of Commerce (Mr. E. H. Stanley) has just published* a little sixpenny pamphlet, titled "What are Tribunals of Commerce?" addressed to the commercial community, which seems well adapted to promote the end in view. "It was shown by Mr. J. MacGregor, M.P. for Glasgow," he states, on p. 14 of this publication, "that the Tribunals, of Commerce in France settled more cases in *one day* than all the civil tribunals did in a month: thus the average duration of such cases might be fairly calculated. Before these tribunals every one should be allowed to plead his own cause and examine his opponent as to facts, and also to call witnesses if desirable, although in most instances there are no witnesses to commercial transactions, except the two parties concerned. It should be optional to employ counsel; but as his technical knowledge would be of no avail, his services would, perhaps, be sought for. In the Stock Exchange, where a Tribunal of Commerce has existed upwards of fifty years, all questions are decided upon justice and not law; and there is no instance of any appeal from the decision of the committee in existence. All railway companies make any disputes dependent on the decision of their engineers and others, i. e. the principle of Tribunals of Commerce. An Arbitration Court is not exactly a Tribunal of Commerce, because the one is optional, the other must be binding by Act of Parliament. You cannot compel a rogue to arbitration: you could oblige him to come before the tribunals; and to gain such tribunals depends solely and entirely upon you who are engaged in commerce."

BRUMMAGE ARCHITECTS' CHARGES.

In the case of *Taylor v. Stephenson*, mentioned by you last week, you, in the depths of your simplicity, say, "If this (2½ per cent.) be the usual commission, the Birmingham architects must be getting rich." Why, bless your simple heart, Mr. Editor, you do not for a moment suppose that 2½ per cent. is ALL we get? No, no! We are sharp, keen, wide-awake fellows, we Birmingham architects. We have an idea that by charging *low* for our services, we, as it is with any other trade, get more business; but then, you see, there is such a thing as being "paid by bricklayers and carpenters for our services."

There is an old adage, which says, "when the eye does not see, the heart does not grieve;" and if we do, instead of charging 5 per cent., say but 2½ per cent., I suppose it is possible to add the difference in commission, and now and then something *more*, on to the builder's account: we get the money, and our employers, *not knowing anything about it*, are perfectly satisfied: so what does it matter?

Many are simple enough to suppose that, to be an architect, it is necessary to have been properly educated, and to go through the regular routine of an office. Nothing of the sort! I never did anything else than plane a few floor-boards,—and my master told me I had not sense enough to do that well, and kept me at that for the whole term of my apprenticeship; but the fact was, I had a soul above it; and being tolerably well up in arithmetic, and able to tell the difference between Ionic and Gothic, and to draw a plan, I thought myself fully qualified to write "Architect" to the end of my name; and here I am, an ARCHITECT and SURVEYOR, and get a better living at it, I assure you, than I ever could have done as a carpenter.

Some architects in our town, who affect to

* Effingham Wilson, Royal Exchange.

look down upon such as I,—foolish sticklers for honour, uprightness of conduct, and all that sort of humbug, of which I know nothing, continue to persist in charging their 5 per cent.; but then they have had to pay pretty dear for what knowledge they have (a great deal of which is quite unnecessary—witness me), and have, as they say, a reputation to support, but that's "all my eye."

Neither are we architects the only sharp people in Birmingham, for our town council, when they require gaols, lunatic asylums, and other corporate buildings erected, are too good judges of the value of money and an architect's services, to pay 5 per cent., but advertise for those who will make designs and superintend the works at the cheapest rate: the result is they get their work for half what they would have to pay to one of the above-mentioned "honourable men;" but they are well pleased, so what does it matter?

I consider, Mr. Editor, you and your readers will owe me a good turn for this "putting you up to a thing or two," and showing you how we do it in smoky "Brum," and that this communication ought not to have been made without a pretty good fee; but having the good of the profession in view, I present it gratis, hoping you will profit by it.

A KNOWING "BRUMMAGE"
ARCHITECT.

THE DIOCESAN TRAINING INSTITUTION FOR SCHOOLMISTRESSES AT DERBY.

ON Wednesday in week before last the Diocesan Institution for the Training of Schoolmistresses, in Derby, was inaugurated by the Bishop of Lichfield, and a large assemblage of the resident clergy. The mayor and a numerous body of the local gentry were also present.

The building has been recently finished. It stands on the Uttoxeter road with its principal front and main entrance to the south. The length of this front is about 100 feet, and the depth from south to North is about 45 feet. The style of design adopted by the architect, Mr. Stevens, is that of the period of James I.: it presents a complete façade on all sides, with pinnacles, breaks, and angles. The general structure is of brick, while the door pieces and window mouldings are of hewn stone, and belts of encaustic tile run round the whole at the junction of the different stories, and numerous panels of the same material decorate portions of the different fronts. These tiles, together with the tessellated pavement of the corridors and the mosaic floor of the entrance hall, according to the *Derby Mercury*, were the gift of Mr. H. Minton, who also contributed 100*l.* to the institution.

The entrance-hall leads directly to the principal corridor, by which it is transversely crossed. The roof of the hall is a combination of semi-circular groined arches, supported in the centre by a stone pillar. The dining-room, or refectory, facing the hall on the right, measures 28 feet in length by 19 in breadth. On the same floor are the chaplain's room, waiting-rooms, class-rooms, sitting apartments, &c. The second and upper floors are occupied by bed-rooms, hospital-rooms, and other dormitories, bath-rooms, lavatories, &c.

The general ventilation is secured by air-flues, opening into a central ventilating shaft; and there is an open fire in each apartment. The corridors and staircases are heated by Price's apparatus. A fall in the ground towards the north secured a basement or sunk story without the expense of excavation. In this floor there is a corridor corresponding to those above; the south side of which is occupied by an extensive range of cellars, &c., while its north side gives entrance to store-rooms, kitchens, &c.

The contract was taken by Mr. George Thompson. The entire cost of the building, site, and furniture, is nearly 7,000*l.* The funds to meet this outlay will be raised in the following manner:—Grant from Committee of Council, 2,000*l.*; ditto from National Society, 400*l.* The remaining 4,600*l.* provided by subscription throughout the diocese.

COMPETITION ARCHITECTURE.

OBSERVING in your paper of the 11th inst. an extract from some old work, headed "Competition Sculpture," I presume that the following short extract, from a journal of the same date, may not be otherwise than acceptable. It forms a kind of series on art, and that which follows is styled—"Advice to ye young student in ye profession of ye ancient craft of building," and runs thus:—"Advice to ye young student in ye profession of ye ancient craft of building and architecture, whereby ye youth may betimes become truthful in ye representation of ye great works of ye glorious ancient cities of Athens and of Rome, and may (with ye guide hand of ye committee of taste) build up works of ye modern times, which never was hereto seen before.

Imprimis,—Make ye elevation and ye view in ye perspective well colored in ye most brilliant colors; ye sky, with ye fitting cloudes, and ye four-ground, studded with ye regimento's of gay and valient soldiers, nor be unmindful of ye good kynges carriege, with his prancing horses and running footmen, all of which do give life and great gaiety to ye scene, and cause great attraction to ye gentlemen of ye committee.

Secondo,—Ye elevation thus complete, trust to ye success with ye committee, for though be it advertise for ye plans, ye sections, ye estimates, and ye &c. &c., they are of a verity more taken with ye regimento of gay and valient soldiers, than the plain lines, at angles and right angles, which doth show ye great sense and ye accommodation within ye building.

Terzo,—Oblige ye committee with ye estimate on ye lowest terms, and when ye walls rise and ye genius is made thereby apparent; slight mention may be signified of hasty estimates, difficulties unforeseen, and exceeding great delays, which ye committee will duly consider and may be tack on 2½ per cent. extra, if not screw it from ye builder, &c. &c."

NEW OMNIBUS ASSOCIATION.

WE are glad to find that our efforts of late to prepare the public mind for a reform of the omnibus system, so soon as the Exhibition harvest was at an end, have not been unavailing. Our last week's proposal the daily papers did us the honour to lay before those interested on Saturday, and a preliminary meeting of omnibus proprietors, on Monday, numerously attended, led to another, which resolved to establish the 2*d.* fares suggested by us, along with the 3*d.* and 4*d.* ones, and for these purposes, to form a new association for working the various routes at the reduced fares. The first route to be opened will be from Bayswater to Tottenham-court-road, 2*d.*; thence to Bank, 2*d.*; second route from Great Western Railway, at Paddington, to Great Northern at King's-cross, 3*d.*; and from Yorkshire Stingo to King's-cross, 2*d.* Mr. Crawford, the originator of the Hungerford and Camden-town lines, pointed out that on every 100 omnibuses such fares must yield a profit of 30,035*l.* per annum, though only half full,—66,435*l.*, if two-thirds full,—84,635*l.*, if three-fourths full, and 139,235*l.*, if full! The expense of working each omnibus he estimated at 2*l.* 8*s.* 9*d.* a day. The rules have been all agreed to. We may here add, that we perceive, too, by an advertisement in the *Times*, that our suggestion of a penny omnibus has been also taken up, and that the route on which it is to be tried is along Oxford-street, from Edgware-road to Tottenham-court-road. The public should support any respectable scheme whereby the old monopoly under which they were so lately tricked on false pretences may be overthrown. We hope something will also be done for the introduction of improved vehicles, but we fear that the three hundred now said to be "laid up in ordinary" form a rather formidable obstacle to immediate reform in this respect. We observe, from the *Glasgow Examiner*, that four "elegant, substantial, and commodious" new ones have been built there for Liverpool. Surely we shall not be allowed to be long behind Glasgow and Liverpool in this respect. —Mr. J. B. Lyall, of Brompton, writes us

to state that he has patented an iron omnibus such as we spoke of in last week's *BUILDER*. It carries seven additional passengers, and is of lighter draught and greater durability than those in use.

BELFAST.

THE new Church of St. Paul's, York-street, Belfast, which was consecrated on the 30th ult., is built from the designs of Mr. Lanyon (county surveyor), in the Early English style, and consists of nave and chancel without aisles. The east window is a triplet with shafted jambs both internally and externally, the arch mouldings being enriched with the dog-tooth ornament, which is also cut over the doors, chancel-arch, and on the trusses of the chancel-roof: the pulpit is of stone, entered by an arch from the vestry, and is situated at the junction of the nave and chancel. There are no galleries, and the church will accommodate about 600 worshippers. The centre light of the east window is filled with stained glass, the gift of the architect, and there is a small memorial window in one of the lancets of the nave. There is a tower and bell-cot at the south-east corner of the nave, a south porch, and vestry at north side of chancel. The gable-crosses were twice purposely thrown down during the erection of this church, and the gables are now surmounted (not adorned) by enormous stone finials of questionable taste.

The new building for the Northern Bank, by the same architect, is rapidly approaching completion. It is of Portland stone, excepting a plinth of granite, and is in the Italian style, of one story over a sunk basement. The windows are arched and deeply-recessed, the jambs enriched with engaged Ionic columns and pilasters, the whole being finished with cornice and balustrade.

The Corn Exchange in Victoria-street, designed by Mr. Jackson, is a plain astylar building, the basement being fitted up as a series of shops, above which is a lofty hall with segmental headed windows.

FRANCE.—NOVEL HUMANITARIAN AND SANITARY ESTABLISHMENTS.

It has been of late observed, in some of the large towns, especially the seaports of France, that a number of travellers arriving from a great distance, either by land or sea, are in a very low condition, often on the brink of dangerous illness. But, on the other hand, it has been also found that such persons will, by timely aid and attention, recover in a few days; whereas, when left to themselves, their subsequent bodily condition will be impaired so much as to require a long and expensive treatment. Consequently, the "Hôpital de la Ville de Marseilles" has attempted to guard against those emergencies by apportioning part of their wards to the establishment of Salles des Voyageurs (travellers' wards), containing room for thirty male and ten female inmates. Stringent regulations have, of course, been laid down for guarding against abuse, &c.; and no person can remain longer than three days in the hospital as a mere traveller. As in most sick-houses of the Continent, no letter of introduction is required, as these establishments are maintained either by the State or the corporations. It has been duly remarked as a strange coincidence, that while our first hospitals (*hospitium*) were established for the care and comfort of the Crusaders and other wayfaring men, the same sort of benevolent *hostelries* has again sprung up by the exigencies of these latter days.

THE PROPOSED FINSBURY PARK.—Considerable progress has been made within the past fortnight by the authorities of the Woods and Forests, in surveying the site of the new park, and also in collecting information required to be obtained previous to an estimate being made of the necessary outlay for compensation, &c. and for taking the preliminary steps to bring in a bill for making the park next session.

THE STRANGER IN LONDON.

THE stranger who comes to reside in London, and who has no connexion or circle of acquaintance, such as requires time to form, is apt, especially if he is of a thoughtful and not over buoyant disposition, to experience a strong reaction of feeling. When the excitement produced by the "great city" has passed away: when its sights have been seen, and its streets, with their shops, have grown familiar; then he begins to understand what it is to be a hermit amongst millions. The sense of self-importance is crushed: he knows no one, and no one knows him: he is a mere atom amongst the thousands that flit around him,—a drop of rain that has fallen into the ocean; and it is a long time before he becomes reconciled to his loneliness. London presents to him, with all its ramifications and details of trade, a large field of employment: its comforts and its enjoyments are divided and subdivided, exhibiting a scale of many degrees, from the great facilities for amusement and the many temptations to beguile the leisure hours or deaden the moral feeling: still, if he has not fallen into vice or run into dissipation, the sense of loneliness will rise above all, and "home sickness," for a time, may depress his energies. But the manly and cheerful mind gets over all this, and the streets of London become full of instruction and entertainment, and then it begins to classify them, and to remark the differences produced on beings of like passions and feelings by circumstances and education,—to see how widely men differ who dwell on the same soil and live in the same neighbourhood. "London cries," at first unintelligible, begin to have some meaning, and even music in them; and the guttural croaking of the old clothesman as he paces in the morning is less harsh and more pleasant than before.

London becomes truly a living panorama: the most humble and dingy-looking streets have some points of interest: the shops, from the coal-shed and potato-store to the stately show-room, with its plate-glass doors and mirrors that multiply its extent, are full of animation: on either side ample accommodation is offered upon the most reasonable terms, such as hats that you can fold up and put into your pocket—cloaks impervious to rain—boots and shoes the neatest, easiest, and cheapest—clothes of the newest cut, and warranted to wear at least for some time—patent sauces—patent medicines—patent harps—patent mangles—portable steam-engines and economical boilers—iron and brass bedsteads—invalid sofas and chairs—bazaars, &c., with "no charge for admission"—Britannia metal that cannot be distinguished from silver—goods selling off at an "immense sacrifice,"—and everything, in short, for money that money can buy.

The most common resource by which a large share of public attention is attempted to be drawn, is that afforded by handbills and placards; but these, though often pungent enough in expression, and set out in all the advantages of large and small type, are sometimes insufficient to effect a particular purpose: consequently, the principle of moving in mass with placards is frequently adopted, and, upon consideration, fifteen or twenty placard bearers, scattered over London, might each, singly, accomplish nothing, but the same number in company, marching single file, can scarcely fail to arrest attention, and passing a number in a row, each telling the same thing, is like receiving a succession of rapid blows on the memory.

From the many opportunities afforded, a stranger will find that nowhere but in London can he live at so cheap or dear a rate, nor do various articles of furniture or dress undergo such mutations. The pier glass which in Brook-street or Grosvenor-square has often revealed, in silence, the charms of a beauty to herself, may come at last to decorate the parlour of a marine-store. The suit which has been paraded in Bond-street, now hangs in Holywell-street or Rag-fair. The hat which has covered the head of a duke may at last adorn a porter's brows on Sunday. An economical man may furnish his house, from the kitchen to the drawing-room, without paying a visit to an upholsterer. Taking London

as a whole, the words of our great dramatic poet, with a slight substitution, may be justly applied to it,—

"How rich, how poor, how abject, how august,
How complicate, how wonderful, is London."

G. J. RHODES.

RAILWAY AND OTHER WORKS IN IRELAND.

THE portion of the Killarney Junction Railway, extending for ten miles out of Killarney, is to be completed by Mr. Edwards, and the 30 miles between that and the Mallo station, on the Great Southern and Western Railway, will be contracted for by Mr. Dargan.

The works on the Cork and Youghall line are expected to commence early next spring.

The contractors for the Waterford end of the line, on the Waterford and Kilkenny Railway, Messrs. Ellis and Husler, of Leeds, having given over the portion between Knockwilliam and Mullinavat, to sub-contractors, we find that Mr. Butcher and Messrs. Barnes and Fletcher are in full operation upon their respective contracts, and the works are progressing satisfactorily. Mr. Joseph Burke is also engaged in finishing his contract between Jerpoint-hill and Knockwilliam. Considerable employment is being afforded to the poor in this district.

The Board of Public Works are constructing a large deep canal from the harbour of Galway into Lough Corrib, which is the second largest lake in Ireland. The lake will be navigable for small steamers as far as the town of Coy, which contains an abbey in which the last of the Irish kings died.

The Midland Great Western Railway Company are fitting up extensive gas works at the Mullingar terminus. The directors are about making arrangements with the inhabitants for the lighting of the town upon reasonable terms.

The Waterford and Limerick Railway will be opened for traffic as far as Cahir in about five weeks, and the whole way to Clonmel before the end of December.

DECISION AS TO THE DISTINCTION BETWEEN A "SHORE" AND A COMMON SEWER.

PALMER v. HUGHES.

THIS was an action in the Shoreditch County Court to recover the sum of 14l. 14s. expenses incurred in the construction of a common sewer to two houses situate in St. James's-street, De Beauvoir-road.

Mr. Ashley, who appeared for the plaintiff, stated that the defendant, who had built extensively on the De Beauvoir estate, undertook to build and finish two houses for the plaintiff for the sum of 735l., and that it was expressly stipulated at the time of the contract that the defendant should bear the burden of the sewers. On the 14th of October, 1845, the plaintiff paid a deposit of 99l., for which sum the defendant gave a receipt, in which he agreed to pay for the construction of a "shore" to each of the houses in question. The defendant had since received the whole of the money (735l.), in addition to which the plaintiff had paid the sum which he now sought to recover of the defendant for the making of the common sewer, for the expenses of which the defendant, in accordance with the terms of his agreement, was liable.

Mr. Lewis (instructed by Mr. Beard, from the office of Mr. Buchanan), contended that the defendant had acted strictly up to his agreement, and had done all that he undertook to do. The houses were substantially built, and were finished to the satisfaction of the plaintiff; and the defendant had constructed a "shore" to each house, which was a totally different thing to a common sewer, and the literal meaning of which was a drain. The agreement expressly stated that each house was to be laid on the "shore;" and it was obvious from the spelling of the word, as well as from the omission of the adjective "common," that the defendant had no other intention than that of forming or making a drain to communicate with the common sewer.

Mr. Ashley urged that it was an error in the spelling, and proposed to examine the plaintiff as to the meaning of the agreement.

His Honour said he could not allow a party to explain by parole evidence what he had put in writing. The contents of a written instrument could not be altered: the instrument must speak

for itself. He was clearly of opinion that the agreement meant nothing more than the communication of the sewer, or "shore," from the house to the public sewer. If it meant anything that was not expressed, he (his Honour) could not help it, and he could not alter the law because a party had made a blunder; but he thought it a pity that parties who knew nothing of the law should make agreements of this kind without consulting a professional adviser. The judgment must be for the defendant.

LOSS ON BROKEN CONTRACTS. EMPLOYERS' RESPONSIBILITY.

WE some time since reported the particulars of a case tried at the County Court, Windsor, in which a brewer there was defendant, and Messrs. Fryer, builders, were plaintiffs.

A new trial in this case was granted at the last Court, on the ground that the payment of 12l. into court was a legal admission of the agreement under which the work had been performed. The present was an action to recover 21l. 10s. as compensation for the loss sustained on the preparation of materials for building a house which was not proceeded with, the defendant having given notice to plaintiffs to that effect. Evidence was again led, but it is unnecessary to re-enter on it. A full report will be found in the *Windsor Express* newspaper. The Judge, after recapitulating the evidence, gave judgment for the full amount claimed, 21l. 10s. He said,—I think, looking at the whole of this case, and taking into consideration the loss sustained, or likely to be, on the 13,500 bricks, even by the evidence of defendant's own witnesses, that I should not be doing justice, if I gave judgment for less than the whole amount claimed by plaintiffs, which I think very reasonable compensation, as in addition to the loss, they must have experienced considerable anxiety, and as the contract was not terminated for above a twelvemonth after its commencement, plaintiffs may have been prevented from entering into any other contracts, having the present one pending. I do not see how I can give plaintiffs the costs of the second nonsuit, but I shall give them the full costs of the application for the new trial, as well as for the trial to-day, for the plaintiffs have been put to more trouble and anxiety in recovering their claim, from the litigious conduct of the defendant, who has entailed more anxiety and expense upon the plaintiffs, in endeavouring to recover a reasonable demand, than any case that has come before me since the establishment of these courts.

Books.

The Law of Patents and Registration of Invention and Design in Manufacture: with Statutes, Forms, and Rules. By THOMAS TURNER, Esq., Barrister-at-Law, Author of "Counsel to Inventors," &c. Crookford, Strand, 1851.

PATENT law writers have of late been marshalling their forces for the coming strife, which it is to be hoped will be stirred up in the ensuing session of Parliament for the settlement of this moot question. Mr. Turner ranks amongst the ablest of these writers. The present work, however, is a practical one, illustrative of the law as it stands, and useful to all inventors who would wish to thread their way through its intricacies without being caught in its meshes or disappearing altogether in its pitfalls. Though a practical work, it assumes a theoretical form, being, in fact, a theory of the practice of the patent law,—a

"Theory of a subject of jurisprudence which presents some very peculiar and some rather subtle features." 'The whole of the Patent Law,' says the present Master of the Rolls (Evidence, House of Lords Committee, 1851), 'is exceedingly difficult, particularly in practice. Nobody I have ever yet known has been able to arrive at a satisfactory definition, precisely to ascertain in any case what is a new and what is a useful invention. The cases at law (which are very numerous) give a sort of rough definition of the matter; but the judges have found themselves totally at a loss to do more than decide in each individual case.' Of these cases a selection is here given (with some preference to recent decisions, and including some which are not in the standard reporters), and used, not so much for

authoritative precept, which, indeed, they often do not furnish, as for illustration of the principles. These, though few and simple, occur in combinations infinitely varied by the special facts, and it seemed expedient to condense the account of such general doctrines, which are applicable to almost every case."

In the preface the author alludes to the unjust desire of some to abolish all protection by patent.

"One word on patent law amendments," he remarks, "for which some persons seem disposed to substitute abolition, forgetting that there is an instinct of property, the developments of which it is the business of the law to regulate—not to suppress. There are some notorious evils, some vexatious formalities, and ill-adjusted fees—if they were removed (and the work of excision in reform is easy), the system would right itself. The success of constructive legislation is more doubtful, and superfluous statute law always mischievous."

Superfluous legislation we would assuredly not desire; but the question here may turn on the conflict of opinion as to what or whether legislation would be really superfluous. The sweeping reduction rather than the mere adjustment of fees is certainly a main desideratum.

The Patent Journal and Inventors' Magazine, Vol. XI., from April 5th to September 27th, 1851. Edited by CHARLES BARLOW and EDWARD JOHN PAYNE, Esqrs. London. THE *Patent Journal* well sustains its character. It forms an interesting and curious collection of the results of man's scientific ingenuity.*

Miscellaneous.

ELECTRO-TELEGRAPHIC PROGRESS.—The telegraph has been introduced, it is said, into the principal school at Bishopswearmouth, the wires being laid through the establishment, and the orders of the head master being instantaneously transmitted to the associates and servants.—The *Athenaeum* states that the same two gentlemen who first suggested and commenced the telegraph across the Straits of Dover, "have expressed to some of our eminent engineers and capitalists their conviction of the feasibility of establishing a single line of communication between this country and America, for a less sum than was paid for making a single mile of the expensive portion of the Great Western Railway." It was proposed in this instance to have only a single wire covered with gutta percha, similar to that used last year to prove the practicability of passing an electric current across the Channel from England to France—to which it was proposed to add an additional protection of hempen plat—the hemp having been passed through a chemical solution, to render it indestructible in salt water. Such a line, it was said, of gutta percha and prepared hemp, would, although only about three-quarters of an inch in diameter, be of nearly double the strength of the experimental line laid down between England and France last year in a strong sea and running tide. A sum of 100,000l., it is estimated, would more than accomplish it. "The extension of the line across the American continent to the Pacific," it is added, "would follow certainly, and we should have the astounding fact of a communication from the shores of the Pacific, crossing America, and the Atlantic, and touching our shores, in an instant of time."—For the information of those who require it, we may here state, that the cost of the new cable in the English Channel is said to have been 15,000l.

THE IRON TRADE.—The quarterly meetings have taken place, and have proved as flat and useless as usual, so that there is really nothing to report, unless it be that recent failures have given further alarm. The nominal prices of manufactured iron are 5l. 5s. to 8l.; pig-iron, 45s. to 65s. per ton.

* By the way, how does it happen that paragraphs from *The Builder*, that have lost their true paternity, and go under an alias, as so many of them do, gain admission to the columns of the *Patent Journal*, while by no accident is *The Builder* itself quoted that we can discover? E. g., "Steam once more going,"—false paternity, *Scottish Railway Gazette*, real honest origin, *The Builder*.

DRAX CHURCH.—On Thursday in last week the ancient church at Drax, near Snaith, was reopened, after extensive restoration, under the direction of Mr. G. Fowler Jones, architect. The parish church at Drax, like most of our old churches, still retains a few relics of by-gone days, interesting alike to the amateur and the architect. The south front, which is seen from the road, presents in the nave a very nice specimen of enriched clerestory of the Perpendicular period. The tower, which is at the west end of the nave, is of much earlier date, surmounted by a well-proportioned spire, also of the Perpendicular period. In the interior there are several parts of the old Norman building remaining: the piers and arches on the north side of the nave are of this period, the arches having simple label mouldings, ornamented with a small dog-tooth ornament. The tower and chancel arches are also Norman. The body of the church is 56 feet long by 47 feet broad, consisting of nave, with north and south aisles. The chancel is 37 feet 6 inches long by 21 feet broad, having lancet windows in the sides,—the east window presenting a specimen of the general mode of restoring country churches in the early part of the nineteenth century, being a large square opening with sash frame. The north aisle is carried further eastward than the arch dividing the chancel from the nave and forming a chapel which was separated from the church by a carved oak screen, similar to that in the chancel arch. The present alterations have been carried out through the liberality of the vicar, the Rev. Jocelyn Willey. The contractors were Messrs. Brown and Flintoff, of York.—*Yorkshire Gazette*.

DECORATIONS IN ROME.—A correspondent of the *Athenaeum* says, respecting the church *San Paolo fuori le Muri* at Rome,—"The gilt ceiling of the nave is completed,—that of the side aisles with sunk panels and coffers elaborately carved, is in a state of forwardness. The wisdom of lavishing such magnificence in the head-quarters of pestilence is more than questionable; but should the next five-and-twenty years see the completion of the building, the edifice will be one unrivalled in impressiveness and beauty,—gaining, perhaps, in entire concord and harmony of form and colour what it has lost in time-hallowed associations,—and to the mere dilettante eye, which becomes surfeited with repetition upon repetition of the devices of Bramante, Borromini, Bernini, &c., &c., most welcome as affording the relief of variety among the countless ecclesiastical edifices of Rome. Thorough-going restorations, too, are going on in the fine church of *Santa Maria sopra Minerva*. The vaults of the transepts and choir have been just newly covered with frescoes: the pillars of the nave are repaired, and in process of being polished: the monuments and altars are re-arranged; and the building is a hive of workmen. Would that art and zeal were one!—but the new frescoes, showy enough as is their entire effect, cannot compare with contemporary German paintings nor even with the French essays in the portals of St. Germain l'Auxerrois and the chapels in St. Méry at Paris; and their want of style, I fear, will be found all the more prominent and disappointing when the works of elder art, in which this church is rich—the Christ of Michael Angelo and the altar-piece by Fra Beato among them—shall be again visible, on the completion of the repairs in progress."

THE READING SURVEY.—Is it usual for the Local Boards of Health to reserve the "filling in" of town surveys for their own surveyor after advertising for tenders for the complete work? In the case of the Reading survey the local board has accepted a tender for the triangulation at 297l. and given their own surveyor the filling in portion of the survey for 300l., making together 597l., whereas tenders for the triangulation at 250l., and for the complete survey at 480l. (both by competent persons) were rejected. As the amounts of the tenders have not been published it may be interesting to surveyors as well as rate-payers to know how this description of business is settled after public competition.—A COMPETITOR.

PAN-GYMNASTICS.—An advertisement under this title, in our outside columns, has just caught our eye. Mechanism and apparatus of small compass and bulk, easily managed and stowed away, and while in use promotive of general bodily exercise and health, and not merely strengthening some of the muscles systematically at the expense of others,—thus overturning the equilibrium of a well-proportioned development, and perhaps doing evil as well as good,—is certainly a desideratum, of the accomplishment of which we seem here to have some prospect. The importance of gymnastic exercises is becoming more and more generally recognised and acted on. We observe that a "Juvenile Gymnasium" for the royal children has just been erected in Buckingham Palace, and we hope shortly, by help of some such convenient apparatus as that now promised us, to find private dwellings and back-grounds as generally supplied as schools are now with apparatus of more cumbersome and unremovable dimensions.

NORTH AND EAST RIDINGS LUNATIC ASYLUM.—The paragraph which you quoted from the *Staffordshire Advertiser* is so erroneous in respect to the cost of this establishment, that I must beg of you to insert the accompanying statement. The asylum is capable of containing 320 patients, and has cost in erection, including the farm and garden premises, garden wall, palisades, &c. *31,943*l.* 13*s.* 7*d.** The purchase of about 90 acres of land, furniture, clothing, linen, glass, earthenware, fittings (such as gas, baths, waterclosets, &c.), law expenses, and indeed every charge, amounts, together with the buildings already mentioned, to *49,112*l.* 19*s.* 10*d.**, a rather remarkable contrast with the sum of *120,000*l.** said to have been expended.—**SAMUEL HILL**, Medical Superintendent.

CLEANSING BY STREET ORDERLIES.—The report of the surveyor of the City Sewers Commission, on the system of cleansing by street orderlies has been published: from it we gather that while the average cost of dusting and cleansing for the last ten years was, from Michaelmas 1841 to 1843, *3,435*l.* 2*s.* 6*d.* per annum*; 1844 and 1845, *3,329*l.* 17*s.* 3*d.**; and 1846 to 1851 (inclusive), *5,788*l.* 11*s.* 6*d.**, the expense of cleansing the whole of the City carriageway upon the street-orderly system, estimated according to the experiences of the experiment made in 1845-6, would have come to an annual sum of *52,052*l.** From this report it appears that the total area of the carriageway of the city of London was at that time *418,000 square yards*; and the area of the footway, *316,000 square yards*; making a total of *734,000 square yards*.

SCARBOROUGH ARCHAEOLOGICAL SOCIETY.—The members of this society met at Lord Londesborough's, on the Cliff, Scarborough, on Monday evening in last week. Some beautiful urns were exhibited, belonging to Mr. Kendall, of Pickering, who sent them over for the occasion. Mr. Richardson, of Huntriss-row, also exhibited three beautiful cups, her looms which have been in his family upwards of 200 years: one of these cups was elaborately engraved out of a solid elephant's tooth. A paper was read by Mr. Tissiman, the secretary, upon the Druid circle on Cloughton Moor, near Scarborough, in which he contended that the so-called Druid circle was nothing more than part of a large cairn or encircled tumulus. A vote of thanks was given to Lord Londesborough, as patron of the society, for his kindness in bringing before the members at all times the most valuable works of ancient and modern art.

USES AND LIMITS OF SCHOOLS OF DESIGN.—At the annual meeting of the Sheffield School of Design, recently held, Dr. Ferguson Branson observed, that the great objects of the school were twofold. In considering one of these objects, that of design, they ought not to overlook the fact that the principal object was the instruction of many who could never hope to be designers, but who might form a race of workmen able to enter into and realise the conception of others, and so give that feeling and spirit to the designs they worked out, which added so much to their value. But

with regard to those, and they must be very few, even in a large number of pupils, who could ever hope to be real designers, he ventured to say that the instruction of schools of design would never make them altogether designers. It would merely put into their hands weapons which they must bring to bear upon the varied objects of nature around them. It gave them eyes to see and hands to work—power to appreciate and select objects of beauty by which they were surrounded—and unless they did that they would degenerate into mere copyists, repeating conventional forms which had existed for ages. He believed in the axiom that no beautiful design was ever invented, the type or principle of which was not found in objects of nature. It was to be able to select these objects that was the ultimate result to be hoped for from schools of design.

CHELSEA HOSPITAL IMPROVEMENTS.—The work of filling up the far-famed water gardens, is being rapidly proceeded with, the brick walls forming the sides of the two canals having been cleared away, and when the trees are gone, which they soon will be, the principal Dutch characteristic of this part of the hospital will have entirely disappeared. The reason for the alteration, which is not much relished by the pensioners, is that the whole of the great quadrangle of the hospital may present an imposing appearance from the new park, on the opposite side of the river, and the bridge to which will be approached from near the bottom of the gardens, which will then have been converted into a large open lawn, from which the river and Battersea-park may be viewed most advantageously for a considerable distance. It will also add nearly twenty acres of promenade to the public, who resort there in large numbers in the summer months.—*Morning Advertiser*.

ARCHITECTURAL SOCIETY OF THE ARCHDEACONRY OF NORTHAMPTON.—At a committee meeting held on Monday, October 13, the Rev. C. H. Hartsborne in the chair, plans for the reseating and restoration of the chancel of South Luffenham Church, by Mr. Street, were submitted by the rector, and approved, with slight modification.⁽¹⁾ A design for a new altar table for Wootton Church was exhibited by the rector, and approved. It was stated that plans for the restoration of Ashwell Church, Rutlandshire, and for a new church at Rugby, as also one for reseating of Oundle Church, were about to be transmitted for the inspection of the committee. The opinion of the committee was also requested regarding Stowe Church. A rough ground plan for the restoration of St. Sepulchre's was submitted, and the vicar was present to ask the aid of the society in the undertaking. The plan embraces the extension of the fabric eastward, leaving the round part free and unincumbered. It was approved, with some alterations.

VICTORIA-PARK.—A correspondent informs us that the Commissioners of Woods intend again to give the usual parliamentary notice for forming the approaches to this park from Hackney-road and Bethnal-green: it is to be hoped this time the commissioners will carry out the work. The plantations in this park are growing luxuriantly: the lakes and other features of the park would all tend to make this a favourite resort, if there were good means of approach with a vehicle. The proposed extension of Hackney-road will make a very fine opening: the handsome Elizabethan lodge and gates will be visible for more than half a mile, and will form a good feature in this approach.

DONCASTER WATER-WORKS.—Various communications reflecting on the decision of the borough engineer have been published in the local *Gazette* by competitors, who enter minutely into details, and complain, on the one hand, some of them of misrepresentation, and others of partiality and of carelessness on the part of the referee. The communications, however, are so voluminous, that we find it quite impossible to afford space even for an abstract of each, and the local paper itself first named has been obliged to intimate that it cannot go on with further or anticipated communications of the same kind, but must deal with them summarily, or in the abstract.

TASTE IN MANSFIELD.—Having seen a notice in your paper of the building of a new Wesleyan non-conformist chapel at Mansfield, I took an opportunity of inspecting it a week or two back, and am sorry to find that the erection of the Bentinck memorial has not yet led the townspeople to cultivate a more correct taste in building matters. Taking this chapel as a specimen, it is very low indeed. The style of the edifice may strictly be called "Carpenters' Gothic:" the windows are of wood, painted and sand-coated (good stone may be obtained within 100 yards of the site), and glazed with sheet-glass in large squares, the whole width of light, and no horizontal bars. The interior is fitted up with deal benches, which look as if some mischievous boys had daubed them over with treacle, and scratched out an oak figure with their finger nails: the trusses appear below the ceiling ornamented with the resemblance of a large turnip; and to finish the description, the pulpit is an ugly deal box, covered with a kind of gingerbread openwork, and a flight of steps on each side.—*QUIZ*.

STRIKES AT KING'S-CROSS AND VICTORIA PARK.—The bricklayers, carpenters, and labourers employed in building the permanent terminus of the Great Northern Railway, at King's-cross, upwards of 300 in number, struck work on Friday in last week, in consequence, it is said, of the contractors, Messrs. Jay, not paying them for an hour and a half's work short time on the Saturday afternoons, according to custom, unless when the weather permitted of full work, at the rate of ten hours a day throughout the week. In consequence of the great demand for workmen, it is further stated that other firms almost immediately offered work to those on strike, and that Messrs. Jay then agreed to the terms of the men.—Another strike based on the one just noticed has taken place, under precisely similar circumstances, amongst the large body of bricklayers and labourers in the employ of Mr. Myers, contractor for the erection of the new City of London Hospital at Victoria Park.

THE WOODS AND FORESTS AND PUBLIC BUILDINGS.—The new Act, 14 and 15 Vict. c. 42, separates the management of the Woods and Forests from the direction of Public Works and Buildings. Henceforth the salaries and other expenses connected with the two departments will have to be defrayed by money provided by Parliament, and not out of the revenues of the Crown estates. The First Commissioner of the Woods has become the First Commissioner of Public Works and Buildings, at a salary of 2,000*l.* a year. Her Majesty is empowered by the Act to appoint a Surveyor-General at a salary of 1,500*l.* a year. The Treasury, after such appointment, may appoint a professional land-surveyor, as an itinerant surveyor. The principal clerks in the office of Works remain as they were. About a dozen employees, however, have been dismissed.

GLASGOW ARCHITECTURAL ASSOCIATION.—This association, formed of the draughtsmen and pupils in the various architects' offices in the city, celebrated its introductory *soirée* on Tuesday, the 7th instant, in Angus's Temperance Hotel, Argyll-street. In the course of the evening, according to the local papers, Mr. Boucher, the president of the association, expatiated from the chair upon the principal object for which the association has been formed—the study of practical architecture and its accessory fine arts. Mr. Cousland illustrated its machinery and economy,—essays, professional library, and occasional exhibition of original designs. Mr. Guildare pleaded briefly for the fine arts in general; and Mr. Macfarlane commented upon the department "Architecture" in the Exhibition of all Nations.

THE AMERICAN LOCK.—Mr. Garbutt, who undertook to pick one of Messrs. Newell and Day's Paratopic Locks, exhibited by Mr. Hobbs, has returned the lock unopened, after thirty days' possession.

CATHEDRAL AT SYDNEY.—A meeting has been held in Sydney, to promote the erection of a church (St. Andrew's), to serve both as a cathedral and a parish church.

The Builder.

No. CCCCLVI.

SATURDAY, NOVEMBER 1, 1851.

AN organised "strike" on the part of a large body of artisans is so serious a matter,—so fraught with loss and evil,—that we think it necessary to state more fully than we did last week the circumstances which have led to the withdrawal from work of all the men employed by Mr. Myers, the contractor, and the appointment of a committee on their part to obtain an adjustment of the difference. Many of our readers are aware that, in compliance with representations made by the workmen some time ago, the men cease work on Saturdays at four o'clock in most of the large metropolitan establishments, and are paid for that as a full day. The same course was pursued in Mr. Myers's establishment, but he has added a condition which is not made by some other employers. This condition is, that if any man lose more time during the week than a quarter of a day (two hours and a half), he shall not have the advantage of the short time on Saturday. In order, however, to let the workmen tell their own story, we will quote a printed document which they have issued. It is headed—

"Notice on behalf of the General Strike in Mr. Myers's Firm.—Four o'clock Movement."
And is to the following effect:—

"Fellow workmen,—In order that our present position may be fully understood in the building trade, and to make known that our secession from work in Mr. Myers's employ was not determined without the greatest deliberation and judgment, and that our conduct has not been arbitrary or overbearing, we beg to submit a few facts in connection with this affair. We have not struck from work to establish a precedent; all we require is to be treated by our employers as other respectable employers treat their workmen, viz., that we should be allowed the privilege of leaving work at four o'clock on Saturdays, which is an established rule in the building trade."

The notice then goes on to state that their employer had deviated from that rule, and had laid down a regulation, that if the man lose more than a quarter of a day in the course of a week he has to pay the penalty of one hour and a half extra; and on this the committee remark,—

"It is impossible, at this season of the year, to work a week without losing time, and more especially those who reside at any distance from the works. Now we ask," the notice goes on to say, "are we not justified in resisting so unjust an encroachment on our rights and liberties? Place us on the same footing as the men employed by Messrs. Baker, W. and T. Cubitt, Lee, Grissell, and several other principal employers, and we shall be satisfied. We consider such an attempt to wring from our hard earnings such a paltry amount as degrading in the extreme, and we look to our fellow workmen for protection and assistance in this struggle for our rights. There are, in consequence of this strike, upwards of one thousand men out of employment. It is not a struggle of one branch alone, but of all the various branches in the building trade, viz., bricklayers, masons, carpenters, wood and stone carvers, smiths, plumbers, and labourers."

The notice is signed on behalf of the com-

mittee by a "chairman," and "secretary."

In reply to this, Mr. Myers says,—

"As I find some misapprehension exists with regard to the terms I offered to my workmen at the commencement of the present 'strike,' will you allow me to give the following explanation:—

First. All men working fifty-eight hours and a half a-week, and leaving at four o'clock on Saturday afternoon, are paid a full week's wages.

Second. All men working less than fifty-six hours lose the privilege of the short day on Saturday, and are paid for the exact number of hours they have worked.

The motive for establishing this rule was to induce the men to make full time, as great inconvenience and positive loss to the employer is the result of their not doing so. Take, for instance, the bricklayer, the plumber, or the mason-fixer, each of whom requires one labourer, and occasionally two, to serve him. Should either of these workmen be absent, the labourers' time is rendered unavailable, though still paid for.

If a workman loses time from wet weather or sickness, he does not forfeit the privilege of the short time on Saturday, but is paid for that as a full day.

I find the late strike at the Great Northern was owing to the workmen losing the privilege of the short Saturday, when they were unavoidably stopped by wet weather. This point being conceded, they have returned, and are now contentedly at work, with a privilege of losing two hours per week, while my rule is two-and-a-half hours."

The workmen to this make rejoinder:—

"Mr. Myers states that 'if a workman loses time from wet weather or sickness, he does not forfeit the privilege of the short time on Saturday, but is paid for that as a full day.' This we deny; and positively assert that if any man, or body of men, in Mr. Myers's employ, lose more time than two and a half hours, or one quarter of a day, during the week, no matter from what cause such time is lost, he is denied the advantage of the short time on Saturday; which we hold to be unjust, and also contrary to the practice of the most respectable and largest firms in the building trades. Now, Sir, we put it fairly to the sense of justice in the public mind, should we be acting fairly and honourably to such gentlemen as Messrs. Baker, Grissell, Lee, W. and T. Cubitt, and the other respectable firms in London, were we to receive from them a larger amount of remuneration for our labour than we are willing to accept from other firms?"

In the first instance, Mr. Myers declined replying either one way or the other to their request, on the ground that the matter was under discussion by the other master-builders. Since then he has given the committee an interview, re-asserted that it is not and was not his desire that men should forfeit the privilege through wet weather or sickness, and endeavoured to convince them it was necessary for his own and his employers' interest to induce regularity in attendance on the part of the men. At present, however, this is without effect, and there are now two thousand men idling about. Thirty or forty of them, it appears, have been taken on by other firms, and the rest will have what are called "strike wages." The wages they received from Mr. Myers, we may say, were 5s. a-day the artificers, and 3s. a-day the labourers.

From the above it will be evident that Mr. Myers yields making the deduction when the loss of time is caused by weather or sickness, even admitting, as asserted by the workmen in the letter quoted, and to ourselves personally since, that he had previously insisted on it under those circumstances. The question, therefore, only relates to the denial of the privilege on Saturdays, in the case of those

who absent themselves for their own pleasure during the week, which to us really does not seem unreasonable. In the case of irregularity on the part of individuals, causing inconvenience and loss, the remedy would seem to be in the master's own hands: he would, we suppose, as in other trades and services, discharge them, and look out for men that suited him better; but by offering, as it were, a premium for regular attendance, this extreme proceeding would be rendered less often necessary.

We must be permitted to remind the workmen what their own good sense must have suggested to most of them, that a *diminution in the duration of labour is in truth an increase in the wages paid*. This increase finally resolves itself into an increase in the price of the object produced, and if this be greater than the consumer will pay,—greater than he would have to pay elsewhere,—the employer, to put an extreme case, must soon cease to have occasion for their services, and instead of increased wages there will be none at all. The real value of labour is not settled by strikes. No one can deplore more sincerely than we do the hopeless toil to which thousands are condemned without respite: no one can be more anxious than we are, however inefficiently we may show it, to obtain for the labouring classes a greater proportion of the good things of life than they now enjoy, with less fatigue, a pleasant home, and time for recreation and improvement; but the causes which regulate these things lie deeper than the mere demand of those who want and the will of those who have.

The condition of the building operatives is fortunately much better than that of some other classes. "Look," said a writer in *Frazer's Magazine*, last year, "at the Spitalfields weavers, 'formerly the only botanists in the metropolis,' possessing, within the memory of living man, an Entomological Society, a Horticultural Society, a Historical Society, and a Mathematical Society, all maintained by the operatives,—bringing forth a Dollond, a Simpson, and an Edwards; and then, in the course of this very half-century, seeing their wages cut away from them year after year, falling from 14s. 6d. (average) in 1824 to 7s. in 1839, and to 5s. 6d. in 1849; till the second or third-rate weavers are found living twenty-three persons in a house; tasting sometimes animal food once a month. Look at the 3,000 labourers scuffling every morning at the London Dock gates for a single day's hire of half-a-crown, and if failing of admission, still waiting in the yards by the day long, on the chance of earning 4d. an hour if wanted for some stray ship,—the average earnings of the whole class not exceeding 5s. per week throughout the year; whilst an easterly wind will throw 7,000 out of employ, or, with their dependents, 20,000! Look at the sloop-work tailors, the men receiving 3s. 6d. for the coats they made at 5s. 1d. two years ago,—sometimes eating, drinking, sleeping, working in one room, as many as ever the room will contain; the women earning at the best from 4s. 6d. to 5s. per week, let them sit from eight in the morning till ten at night, and paying out of that 1s. 6d. for trimmings and 6d. candles every week, so that altogether they earn about 3s. in the six days,—hopeless creatures, that 'never knew a rise, but continual reductions!'"

The improvement in the condition of the

building operatives of this country has been, and we sincerely hope will be, progressive. Mr. Macaulay shows us that in the seventeenth century the ordinary pay of a skilled workman was 6s. to 7s. per week, whilst the ordinary pay of a labourer was 4s. per week; and on referring to the table of the prices of wheat, given by Adam Smith, it is seen that during the Commonwealth and subsequently, a workman must have paid about as much for his bread as he now pays, while he received rather less than one quarter of his present wages. "If we even look back," says Mr. Smirke, in an interesting paper on this subject, printed in our pages,* "to so recent a period as the year 1800, I have it on excellent living testimony, that the wages of a good mason in London were only 16s. per week, who now receives from 30s. to 33s. In the year 1800 wheat was, on an average of five years, as appears by the tables given in 'Tooke's History of Prices,' 90s. 6d. per quarter; and indeed during a year of great scarcity about that period the quarter loaf, for which we now pay 7d. or 8d., cost 1s. 10d."

God forbid it should be inferred for a moment, from what we have said, that we would not gladly see these wages more, if time and circumstance justified the increase. Our object in drawing attention to these facts is to show that the position of building operatives is hopeful, and to lead them to reflect before taking any steps which might tend to injure it. There are no men more eminently worthy of their hire, and none more entitled to support in a right course. We may say in conclusion, that we have visited the tavern in Drury-lane on more than one evening since the committee of workmen have been sitting there: groups of men were lounging about the street; every room in the house was full; and what we saw was not calculated to lessen the earnestness with which weintreat workmen and masters to avoid strikes, which never have been and never will be productive of good results. We ask from masters kind consideration for those who are engaged under them; but we must at the same time ask from workmen candid consideration for those by whom they are employed.

THE QUESTION OF A GOTHIC DOME.

Why may we not have a Gothic dome? Many a reader of these lines will look at the question with incredulity as to the seriousness of the writer; while among the devotees of medievalism—that numerous and enthusiastic priesthood who now burn perpetual incense at its shrine—he will probably meet with no other sympathy than pity for his derangement. But the question is, indeed, submitted in all seriousness. Why may we not have a Gothic dome?

The admirer of mediæval taste will be obliged to admit that in the matter of the worship of precedent the Gothicists now are worse, rather than better, than the despised Classicists of the last generation. Probably our Gothic architects are never to be found actually reproducing in detail a building of the ancient, as the Greek and Roman school felt bound to do, or in common practice copying mouldings from the books as if they were drawing for a schoolmaster's prize; but there is displayed to the full the same reluctance to revert to fundamental principles, and the same disposition to follow routine, to keep within the rules, to keep clear of error, like a little boy at his book. And it is safe to assert that in this the modern Goth is less excusable than the modern Greek, in so far that there can

never be set up for the mediæval remains anything like that claim upon the sympathies of the refined poet or profound scholar, which could never be denied to the relics of an age from whose ruins all that is excellent in modern taste and learning first arose. And, further, inasmuch as there are now-a-days a somewhat numerous class of romantic theorists and archeological amateurs who dictate rules of architectural practice with anathemas and other sublimated weapons in their hands, and inasmuch as the chief of our mediævalist practitioners govern themselves, it is to be feared, much more by the dogmas of such masters, than by the results of their own research; therefore, surely precedent-worship such as this shows even less of common manliness than that of the now old-fashioned, but always elegant, elevating, and poetic formalism of those who had acquired their taste from the severe and majestic model of the youthful world. Yes, indeed, despite of all the many points where they excel, the fact must be deplored that the dogmatism of the present school is much worse than that which it has overthrown. The dogmatism of the Classicists was never less, at the worst, than the philosophical persuasion of educated minds that in the ancient world there appeared a profound divinity of genius now unapproachable. The dogmatism of the Gothicists is never more, at the best, than a romantic devotion, frequently repugnant to the educated mind,—a merely archeological mania, where no divinity of genius comes into the question at all. The one was a noble hero-worship, which left the vulgar in amazement; the other is too much what we do not care to name, which leaves in equal wonder the refined and elevated. The contrast,—the immeasurable gap, is that which lies between Solon, or Socrates, or the Stagyrite, and a miracle-mongering bishop; Pericles the Grand and a half-naked, half-witted, pig-headed baron, who could not write his name; the breathing marbles of Attica or Augustan Rome and the miserable effigy of a rude knight templar or an ascetic monk; the divinity of the soul and the earth for ever earthy. Despite the merits, which every one ought fully and proudly to grant, of very many of the present school, such is the melancholy truth. And a pity it is that our noble art should be so pursued by prejudice,—casting off the yoke of one, only to become the speedy victim of another.

Now, what would be the answer of a mediævalist to our question as to why we may not think of a Gothic dome? He would probably refer us to the examples at once, as the quickest way to conquer; or, at the best, he would enter upon some theory of Gothic principles, which would ultimately revert to the same idea, that in the authentic works of the period alone are we to find the system of the style. And what is such an argument? That mere reluctance to revert to the fundamental, which is so much a failing of human nature,—that indolence or incapacity, or both, which keeps this old world of ours jogging on so imperturbably in its old way, among all manner of inconveniences, imperfections, impediments; when these, as many a man mourns to see, could so easily and so quickly be remedied for ever, if the lazy, stupid old world would only shake itself, and think for a moment.

We will not, therefore, be content with any such argument: we must have something more logical than the best of mere precedent and authenticity and romance.

Who that has gazed from a distance at St. Paul's in London, can have failed to admire that grand and majestic *chef d'œuvre* of our art? That dome,—so serene in its magnitude and loftiness,—so exquisitely graceful, too, in its stupendous form,—a wonder of the world it stands, as it lifts its beautiful majesty into the silent heaven, calm and triumphant like an archangel! No mere tower that ever fancy planned—no spire, however gracefully it penetrates the sky—seems to possess a tittle of the grandeur of that pompous crown; for like the crown it is of the great empire of the seas! Around it the towers and spires—each one itself a princely form—stand

like a hundred waiting men; its imperial crest looks down upon the mighty House of Industry afar, prostrate like a colossus in homage; while our gay young palace of the river half hides herself behind the old bridge as she slowly rears one arm of beauty and another to do her utmost—all in vain—to vie with that calm passive queen.

Why might not the new Palace of Westminster complete its toilet with such a crown? Because there is no precedent for it: precedent ordains towers and spires, but nothing else; and it matters little whether the idea of a tower in a dozen stories is at all appropriate in a house of the British Legislature, where there is not even a muezzin to call the members to prayers: it matters little that the scattered masses against the sky seem to call to each other, whether in the sunlight or against the moon for some mighty chief in their midst to gather them together in that union which is strength, and whose absence is weakness; there is no precedent for aught else, and there's an end on't.

A dome is meaningless unless it be on a large scale. Small as the domes of Greenwich Hospital are, and poor and paltry, as well as small as those of the London University, the National Gallery, and Bethlehem Hospital are, there is something grand in the form of a dome to which no grandeur of a mere tower or spire can approach. But a dome ought to be on a large scale—the vaulted roof of a stupendous hall on the ground,—in proportion with the entire altitude of the edifice: this is the idea of the form, and if there is still grandeur in a diminutive cupola only in proportion with an upper story, or as the lantern in the ceiling of an apartment of the building, it is but a proof of how impressive in its nature is this form when even the mimicry of it is impressive.

And seriously, the idea has not seldom occurred to the mind of the writer, of late, as he has taken his daily way into Westminster, that a dome is precisely what that structure, so beautiful and graceful in its detail, but so deficient in the majesty which its unexampled cost and magnitude ought to afford, demands as a powerful and appropriate climax and focus of effect, and that those two tall isolated, unsupported, staggering, towers in the rear, however fine in their individuality and detail, and however much in accordance with precedent, form precisely the most effectual means for distracting the unity of the structure, dismembering it, shooting it off, as it were, in opposite directions away into the void, out of the picture.

Now, supposing it were definitely ordered that a dome should be superadded to the Houses of Parliament, and supposing the task of its design fell into the hands, not of any such architect as the able master who conducts that work, but of one of the main body of our profession, how would he proceed? The day is now gone by, although it is not far in the distance, when he would have taken one of Batty Langley's five orders of Gothic columns for his peristyle, with architrave, frieze, and cornice, all according to rule, and a balustrade of Tudor archings on the top; but it is to be feared that there are few among us, even yet, who would commence, as we ought, at the fundamental germ of the idea, and build up a conception step by step from the beginning to the perfect end—from the foundation to the summit. If our architect were to cut the matter short by perching the dome of St. Paul's in the centre, divesting it of its dress and decoration, and then reclothing the naked form in the new fashion, it is pretty much what his best friends would look for at the least. Nine out of ten among us would do so—would think of nothing else than to take a regulation dome, alter its style of structural appearance, and overlay it with the standard details of Gothic decoration. But this would never be a Gothic dome by any means. It would be only a monument of the fallacy of precedent, professing to dispense with thought and even with education, and invariably leading to confusion and mistake in the application of the results of one idea in the circumstances of another.

* Vol. vii. p. 146.

But most of the mediævalists would scorn to entertain the idea of a Gothic dome, and declare it simply impossible and absurd. Another instance of the fallacy of precedent is here; for it may safely be contended, not only that the idea of the dome may be adopted in Gothic architecture, but that it may be better adopted therein than in the Renaissance,—and that between the pure arcuated Gothic and the pure trabeated classic, the applicability of the dome lies entirely on the side of the Gothic, and becomes an impossibility in the other,—showing at last that it is only the mongrel arcuation of the cinque-cento style which admits of the dome being used therein at all. Even such amount of pure classicism as Wilkins attained makes the dome preposterous, as all the world can see.

In the dome of St. Paul's, when looked at constructionally, the perfect trabeation of the peristyle is an inconsistency. Or, at any rate, it implies at once that the dome is no real dome at all,—no vault, but a roof of timber framing. That it ought to be a vault in pure constructional architecture is unquestionable; for what else could it be? It might be a vault covered for protection by a roof-surface of appropriate material, but a vault it must be, or it is unarchitectural. If, then, it is such a vault, arcuation becomes the principle of the structure; and the position is a perfectly safe one to assume that trabeation ought to be altogether excluded. The peristyle would then be formed in piers and arches; and here at the same time there would be better carried out that principle of verticality which is essential in the dome. In scientific arcuated architecture, if of a light character, the buttress and pinnacle become parts of the style; and here again the verticality, and also the pyramidal form of the design, are further carried out, and here is the foundation of a Gothic dome.

But let it be borne in mind that the principles now coming into play are so entirely different from those of the cinque-cento dome, that, even constructionally, the complete design would entirely differ in character, and considerably in form; so that if it were said, as it may justly be, that considerable further modification of existing details would have to be made in such an adaptation of the dome, this would only refer to still further application of the principles, chiefly in ornament, so as at last to assimilate it in outline and in detail, perfectly to the Gothic character.

It is of course not in every variety of the Gothic style that the dome could be introduced. But, to keep to our illustration of the Houses of Parliament (merely in theoretical illustration, however), it seems probable that a dome, as the roof of some great central hall, might be attempted with scarcely any violence to the design as it stands, except as regards the angle towers. A dome, surrounded by flat roofs, is an inconsistency: the roofs of this structure are beyond reproach so far. It might next be remarked, that a dome among spires is an inconsistency; but as no spire ought to be built except for a legitimate purpose, such purpose is quite a sufficient reason for dismissing the objection: if the spire have one legitimate purpose and the dome another, both are right; as in a cathedral, the spire-towers for bells and the dome for the great central vault could never be inconsistent with each other; besides which, as a dome of pointed work must necessarily become probably more pointed in general form than the present standards, the consistency would be aided (even thus).

Whether a dome could properly be carried out with an open timber roof is a question, although to possess so grand a feature externally would be well worthy of an exercise of ingenuity in this direction if necessary; but as the external dome is beyond all comparison the most majestic architectural feature of its class, so the internal dome is the grandest ceiling which can be conceived,—and in Gothic detail there is no reason why such grandeur should become diminished. As no central tower would ever suffice for the dome in the exterior effect of St. Paul's, neither would it in the interior supply the place of the vaulted

roof: in both respects the dome is the climax of power.

In conclusion an apology is due to the eminent architect of the New Palace of Westminster for the reference made to his celebrated work in theoretical illustration (but no more) of the position here assumed; but as there is no other building which affords a familiar illustration of the point so well, so there is no other architect who can better afford to permit such handling of his work. K.

MINERAL PRODUCTS RELATING TO THE BUILDING ARTS IN CLASS I. OF THE GREAT EXHIBITION.*

NOTWITHSTANDING the close of the Exhibition, which places it out of the power of our readers, in future, to visit for themselves one of the finest collections of mineral products ever brought together in any country, we have thought it right for several reasons to continue our notice of the building stones. We desire in this way to commemorate and place on record the state of advancement at which the industrial arts of extracting the raw materials for building have arrived in the year of the first Great Exhibition of the industry of all nations. This may form a starting point of great interest to look back upon in future years. Another object we have in view, is to show our readers where they may procure the most precise and accurate information of every kind, with reference to the building stones, by always adding the number under which each specimen is exhibited. A reference to the latest edition of the Catalogue will always show the name and address of the exhibitor, who will, of course in any case, be glad to furnish any additional information as to price, &c.

There are probably few branches of industry increasing in a greater ratio than that of quarrying minerals in this country. It appears that the profits arising from quarries in England, in 1810-11, amounted to 29,160*l.*; and in 1842-3, as determined by the assessments under the Property and Income Tax Acts, the profits amounted to 207,009*l.*, being an increase of seven times. This is a far greater increase than that which has taken place in the same period either in mining property or iron works,—the increase in the former being only four times, and in the latter something under twice.†

Yorkshire has long been celebrated for the number and variety of its building and paving sandstones, and accordingly we find the northern part of the great midland coal field, which is chiefly situate in Yorkshire, contributed more than three fourths of the specimens in this series. There was also a single specimen from the Forest of Dean, and a few from the Bristol coal field. Of Yorkshire stones we have a good selection from the neighbourhood of Leeds, Bradford, Halifax, and Sheffield, which I proceed to notice in more detail. In Nos. 160 and 183 we had specimens of Potter Newton stone from near Leeds. This is a fine-grained yellowish stone, with very minute specks of mica, and is used extensively for paving, landings, and general building purposes. No. 171 was a hard, grey coloured, fine gritstone, from Burley, near Leeds, locally termed delf stone, and much used for steps, headstones, &c. In No. 160 was a stone from Hare-hill Quarry, Gipton Wood, near Leeds. This is a very fine grit, of a light drab, approaching to cream colour, and was used in constructing the Westminster Bride-well. In the same number we had two specimens from the neighbourhood of Bradford, namely, one from Park Quarry, Shipley, and the other from Gasby Quarry. These are both fine grained, with a light brown greyish colour, and the latter is said to have been used for the principal staircase of the British Museum. From Halifax are the following specimens: No. 188, two blocks of very fine gritstone, of a whitish cream colour, from Shelben-head Quarries. This stone is interposed between the Low-moor beds of coal, and the Halifax beds, which latter immediately overlie the

millstone grit. No. 172 contained a fine-grained laminated block of gritstone from Greeland, near Halifax. This is a very light drab or cream-coloured stone, and lies below any of the known beds of coal. There were also specimens in this No., in No. 160, and No. 174, from quarries at Cromwell Bottom, Southowram, and from Northowram, near Halifax. Some of these are excellent freestones, with scarcely any mica: others contain mica, are laminated, and consequently better adapted for steps and landings. The Southowram stone has been employed extensively at the Bank of England, and the paving stones generally are used all over England, besides being largely exported. The Northowram flagstone lies beneath the Low Moor coal. In No. 29, outside the building, we had a large block and steps exhibited from Green Moor Quarries, Wortley Hall, near Sheffield. This is a light brown gritstone, with traces of carbonaceous matter, and is suitable for steps, gravestones, and ornamental carving. In No. 45 were several specimens from Green Moor Quarry, grindstone rock from Wickersley, two blueish varieties, or very dark grey with very fine lamination, from Burncliffe Edge, and a brown-coloured, rather coarse-grained stone from Greenside Quarry. No. 182 furnished a specimen of light brown gritstone from Wingerworth, near Chesterfield. No. 186 was a specimen from the Forest of Dean, a grey-coloured gritstone, which takes a very smooth and even surface when rubbed down, stands well in the most exposed situations, is well adapted for carving, and highly valued locally for architectural and engineering works. No. 193 contained a specimen from Hanham, in the Bristol coal field, being a light grey-coloured micaceous grit, much used for paving. No. 29 contained five specimens from Easton, Crews Hole, and other places in the Bristol coal field. Four of these are from the Pennant rock previously mentioned as forming the great central mass of sandstone in this coal field. These stones vary in colour from a very light grey to a darker brownish grey; some are used as freestone blocks for engine beds and other heavy machinery, and for a variety of general building purposes, while others, which are more laminated and contain vegetable remains in a carbonaceous state, are more suitable as flagstones for paving. The Pennant stones vary in weight from 158 to 171 lbs.

As many of the sandstones of the coal formation are used as flagstones in forming foot pavement, an observation on the subject of this kind of pavement may not improperly be introduced in this place. No one can have attentively observed the foot pavements of London without being struck with two things, namely, the irregularity and broken rugged character of the surface, in many places owing to the scaling off and disintegration of the stone, and secondly, the shameful manner in which the pavement is laid down. This latter evil frequently causes the largest paving stones to break entirely across, and if the mischief does not go so far as this, it is found in great irregularities of surface at the joints, where the stones ought to be perfectly flush and level with each other, instead of having differences frequently of an inch or more between one stone and another. The first of these evils arises from an inferior stone being used: the second is attributable to a defective foundation and an imperfect mode of laying down. The pavement in Trafalgar-square may be mentioned as an instance of Yorkshire flagging disintegrating and breaking up with scarcely any traffic on it; for parts of that area are little, if at all, trodden by passengers. The edges of paving stones will frequently afford an indication of their character. Those with very distinct lamination should be avoided, and so should those stones which show partings or layers of carbonaceous matter, as they are almost sure to split where such matter is interposed. A flag-stone should also be avoided if it shows any sign of opening at the edge, and if a knife point can be inserted between the layers or laminae of the stone. These tests will frequently fail to detect inferior stone, so that the quarry should be particularly examined, and all shaly beds avoided:

* See p. 639, ante.

† *Iride McCulloch's Account of the British Empire.*

it may be observed generally that the lower beds in a quarry are the most durable. A few years ago it was suspected in the Mauritius that the Yorkshire stone sent out to that station for use in barracks and other Government works, was not calculated to withstand the heat of the sun in that climate, a great deal of it having blistered and peeled in a remarkable manner. In consequence of this, reports were called for from Barbadoes, Jamaica, Bahama, and other tropical countries in which Yorkshire pavement had been used, and these reports were unanimous in denying any such effect as due to solar heat, although similar instances of peeling had been observed where the stone was of inferior quality. The result of the investigation was, that Yorkshire paving of good quality was perfectly adapted to resist the effects of a tropical climate.

With reference to the defects in laying down pavement, they generally arise from a bad foundation. Pavements are frequently laid on new or made ground which should either be closely and carefully rammed or pressed all over and filled up with dry hard rubbish, or what is much better, with 6 or 8 inches of good concrete, perfectly levelled to a fair and even surface, on which the paving stones should be laid. I have often observed where paving has been laid down in court-yards, &c. in front of new buildings, the stones have slid away from the walls, and left unsightly gaps, highly suggestive of carelessness, or something worse, on the part of the contractor, and of equal inattention by the architect. All this would be prevented by forming a proper concrete foundation before laying the stones. If this be not done, and if the bed on which they are laid be irregular, or yielding in parts, and hard in others, the large paving stones are sure to be acted on most unfairly, to be tilted about by pressure, in which case they act as strong levers, aiding their own destruction, and are certain either to be broken or settled into some unsightly and irregular position.

MAGNESIAN LIMESTONE AND NEW RED SANDSTONE.

This formation is of very high geological interest, as it comprises the first deposits of that great sea which surrounded the elevated islands of the coal formation, and left its mud and sand on the flanks of the mountain limestone, the old red sandstone, and the Silurian rocks. With the exception, however, of the magnesian limestone beds, which constitute the lower part of the new red sandstone series, the formation furnishes few building stones of great value. It is true that the new red sandstone everywhere contains beds of indurated sand, which are quarried and esteemed locally for building purposes; yet they are seldom transported to any considerable distance, and seldom enjoy more than a mere local reputation.

The magnesian limestone is found skirting and overlying the coal measures wherever they appear in this country, and I shall now briefly trace the course of the principal ranges. Commencing with the eastern side of the island, it appears at the mouth of the Tyne, and extends along the eastern edge of the Newcastle coal field, and on the same side of the midland field as far as Nottingham. Its direction will be understood by tracing the position of the following towns, which are all situate on or close to the magnesian limestone, South Shields, Sunderland, east of Durham, east of Bishops Auckland, Darlington, Middleton Tyas, Ripon, Knaresborough, Tadcaster, Sherburn, Knottingley, Doncaster, Worksop, Mansfield, and Nottingham, the average breadth throughout this range being four or five miles. Passing round by Derby and Uttoxeter, the magnesian limestone again appears at the latter place and continues in a very circuitous course, skirting the Potteries coal field by Lane-end, Newcastle-under-Lyne, Church Lawton, and Congleton. Approaching the Lancashire coal field, it proceeds by Macclesfield, Stockport, Manchester, Middleton, Newton, Liverpool, Ormskirk, and Preston, with an average breadth of about 2 miles. Another extensive range of mag-

nesian limestone commences at Wrexham, and after skirting the Flintshire coal field and the various Shropshire coal districts, proceeds down under the Malvern hills through the saliferous district of Worcestershire to the eastern side of the Forest of Dean. A wide crescent of magnesian limestone belts the Whitehaven coal field on the north side. A large bay in the Tamworth coal field is entirely filled up by it. The Dudley coal field is entirely surrounded by a belt of it, averaging 3 miles in breadth. It skirts in patches the southern boundary of the South Wales coal field, and appears hanging on the sides and overlying the edges of all the older rocks throughout the Bristol and Somersetshire coal fields. The structure of the magnesian limestone varies considerably, from that of a fine-grained crystalline sub-oolitic rock to a coarse conglomerate of carboniferous limestone pebbles and fragments of old red sandstone, imbedded in an argillo-calcareous basis. In this conglomerate the imbedded fragments are of every size, from that of a marble up to masses of several hundred pounds weight. Generally the fine-grained magnesian limestones are the most valuable as building stones, and of these the Exhibition contained a very good collection.

No. 197 contained a specimen from Knaresborough, a compact cream-coloured stone, with imperfectly oolitic grains and crystalline calcareous cement. Most of the magnesian limestones, however, when perfectly dry attain a lighter cream colour, but never that peculiar light grey of the best Portland stone, which harmonizes so well with the sky and atmosphere of this climate.

In No. 160 there was a specimen from Huddleston quarry, near Sherburn. This quarry is particularly described by the commissioners appointed to select the stone for the Houses of Parliament. They state that very large blocks are procured from it, namely, from 8 to 10 tons weight and 16 feet long; that one block lately extracted weighed 14 tons, and that good freestone below the bottom of the quarry has been bored to the extent of 40 feet. The quarry contains beds from a few inches to 4 feet in thickness: the colour of the stone *whitish cream*. It consists chiefly of carbonate of lime and carbonate of magnesia in nearly equal proportions: weight 137 lbs. 13 oz. per cubic foot. When acted on by artificial frosts, according to Brard's process, this stone lost less than '04 per cent. of its weight by disintegration, or 1 grain in 2365; whereas some of the other stones experimented upon lost 1 grain in 174, and most of the oolitic stones lost from 1 in 300 to 1 in 400, showing an amazing difference in the power possessed by these various stones to resist decomposition by atmospheric influences. The stone from Huddleston quarry is in very high repute, and was used in the erection of York Minster, Selby Cathedral, Huddleston Hall, Sherburn Church, Westminster Hall, the new Houses of Parliament, Galeforth Hall, &c. This stone is estimated to cost 2s. per foot at the quarry, and 16s. per ton carriage to London, making the price there 3s. per cubic foot. As the Great Northern Railway, however, passes close to the quarries, and as that company has announced its intention of carrying heavy mineral produce at a greatly reduced rate, it is probable that this stone might be delivered in London at about 2s. 6d. per cubic foot.*

GUILDHALL, LONDON.—In Mr. Brewer's paper the destruction by fire of the ancient roof of Guildhall, London, is deemed "irreparable," and in the line immediately under, page 669, it is added, "no representation is preserved." This is a mistake, for it will be found in "Specimens of Ancient Carpentry" (plate 16), by James Smith, published by J. Seago, High-street, St. Giles, 1787.—A SUBSCRIBER.—Another correspondent, the sexton of Christ Church, Spitalfields, says that beneath the east window of Guildhall the female statue is that of Queen Henrietta, consort of Charles I.—not Queen Elizabeth.

A HISTORICAL NOMENCLATURE FOR ENGLISH GOTHIC.

In your number for 4th of October, there is a proposal by Mr. Garbett to introduce a historical, instead of descriptive nomenclature, for English Gothic. The discussion to which it must have given rise will probably be nearly over by the time you receive this; but I should be glad if you would permit me, though thus late, to express in your columns my entire concurrence in Mr. Garbett's views, and my hope that his suggestion may be quickly and generally acted upon. I am not sure that the names he proposes are the best which could be chosen, but I am very sure that the principle is right, and that the adoption of a nomenclature of this kind would not only put an end to innumerable vain disputes and harmful obscurities of expression, but help the general public to a better understanding of the relation of art to the political circumstances of nations.

I see there is fault found, in the same paper, with my way of talking of Orders. I will render reason for this elsewhere, having time at present only to fulfil a neglected duty towards another of your correspondents. Several months ago, some plumber or glazier* was trying, in your columns, to defend the modern practices of marbling, graining, and such other lying ornamentation, from what I had alleged against them, when one of the ablest of your correspondents took up the good cause, and answered him so thoroughly, handling several parts of the subject much better than I had been able to do, that I have ever since had it in my mind to request you to convey my thanks to him for his defence, not of me or my sayings, but of most important truth. I have not your paper by me here, and cannot, therefore, say in what numbers the discussion appeared; but your readers will probably remember it, or, if not, will find it worth the trouble of a little search.

Venice.

J. RUSKIN.

HOW CHINESE WORKMEN BUILT AN ENGLISH HOUSE.

THE second part of the volume for 1851, issued by the "Architectural Publication Society," consists of a curious and interesting essay on *Chinese Architecture*, partly compiled from various authors, and partly written by Mr. E. Ashworth, of Exeter, who was resident in China nearly two years: he has also supplied a number of illustrations, which are printed in colours.

We transfer to our pages the following memorandum concerning the erection, by native artizans, of an English house in China designed by the writer:—

"The evidence that a bargain had been struck between the English merchant and Chinese contractor, appeared on my plans in the form of a perpendicular column of characters neatly traced with a brush and Indian ink.

My employer would not have the specification translated. 'You'll have no difficulty with Achone,' he said: 'he's been a ship carpenter, and is well accustomed to building for the Europeans, and he'll do anything you ask him. They're infernal rogues, these Chinamen—confounded rogues, all of 'em, but they know I'm too deep for 'em, they can't cheat me.' The foundations being laid about four feet thick, of long masses of granite as large as a milestone, I felt there was less necessity to oblige the contractor to dig up some large natural rocks that interrupted the level of the trenches. We had a serious difference of opinion, however, about these rocks: Achone declared that if they were extracted, the soft bed underneath them would swamp the footings. I was pleased to observe a proper English mason's level employed in place of the clumsy water-trough generally used by the Chinese. The three customary courses of granite ashlar, above the plinth, to keep out *lutealions* (thieves), were a long time in laying. I admired the patience of the masons, each perched upon a block, punching with iron hammer and chisel steadily through

* Mr. Ballantine and those who know him will, we have no doubt, excuse us for allowing Mr. Ruskin to choose his own mode of expression.—Ed.

* To be continued.

the long, long summer hours, snatching only a few moments for the simple refreshment of little else but rice and tea, and a few whiffs at a pipe, without stepping off their block.

When the granite window-sills were laid, each having a central perpendicular stroke struck with a line wetted with muk suey (Indian ink,) and brought accurately to coincide with the centre of the window marked on the masonry below, and the jambs were set up, the bricklaying began. The face of the wall was kept exactly flush with the granite below, leaving not a quarter of an inch for plastering. The grey-headed—I mean grey-tailed, veterans of the trowel had never thought of this, and vociferated most fiercely when made to pull their work down by the foreman.

I was dumb-founded to see the plasterers treading on the heels of the bricklayers, and laying on the pricking-up coat as fast as the wall rose in height: being very thin, this plaster is not disturbed by the settling of the brickwork. Sereads were altogether rejected as wasteful; indeed the forming them would have been impossible, for to save scaffolding one part of the wall was always carried up nearly ten feet higher than others.

Achone was very troublesome about his instalments, which were paid at the merchant's treasury, on his presenting my certificates. He was to have one thousand dollars to begin with, a thousand when the foundations were in, and another when the first floor joists were laid. He had taken his contract so low, or ready money commanded such discount, that he quite led me a life.

One day, whilst the round spars were laying as bridging-joists upon some old masts as girders, that had already 'put a girdle round the earth' in the merchant service, Achone put the question: 'Can let my have thousand dollar now?' 'No, you must do some more work first.'

'My wanthee catchee thousand dollar first. Have got twenty-five piece carp'nter-man, forty piece coo-lee (labourer), thirty breck may-sun: suppose no got no moa-ney, no can give wage dat man—you see—all dat stun foundation very large stun: eb'ry day I go out, dat coo-lee come talkee my—why no give moa-ny?—eb'ry day wantsee moa-ny, buy dat rice?' and in his agitation he inserted a great fan under his white jacket, and began to ventilate his spine most vigorously. 'Inside my heart werry sore, no can catch wage; all dat coo-lee man come round my ous, make *to—o* much barby,—say,—Achone! Achone! You all same tief Achone! Talkee too much bad my.' 'Well, why don't you send to Canton and get more joists?' 'My hab sendee Canton. No can buy spar, no got moa-ny. You gib me thousand dollar, my catchee dat Cheena spar werry soon.' And here Achone, overcome with sadness, lifted up his voice and wept. There is something remarkably touching in the sight of a strong, stout man shedding tears. 'I never,' as Corporal Trim says, 'in the longest march, had so great a mind to my dinner, as I had to cry with him for company.'

As soon as he was gone, I proceeded to the house of my employer to plead for him. 'Is Mr. S. in,' said I to a loitering, effeminate Chinese lad, with a smooth shaven head, after having doubtfully walked to and fro in the veranda, and knocked with very little effect at four or five sash-doors? 'He av go out, wat choo want-shee, you makee house pigeon?' I acknowledged the compliment to the profession with a nod to the youth, and went to meet Mr. S.

'Oh, Mr. —,' said my employer, 'when you know the Chinamen so well as I do, you won't be so tender-hearted as you are now: why that scoundrel Achone, living as he does rent free in a mat shed on my premises, dirtier, and more meanly than his men, he's one of the richest Chinamen in the place! No, no, let all the joists be laid first: he's got his thousands of dollars out at fine interest, I'll take an oath.'

To return to the building: I had shown my greenness in placing the strong room for the dollars against an outer wall, accessible to housebreakers: this was altered. We were now working at the level of the first floor,

where the sitting-rooms were to have fire-places. To avoid corbelling, the joiners nailed a single floor-board close to the wall, and based the brick jam upon it. Every means was employed to save bricks, the windows gaped inwards with splays, that placed the lintels in a critical position. The granite door-jambs had awkward projections left for pivots to work in, instead of proper hook and twist hinges. When the marble hearths came, quite an excavation had to be made in the round spars, which could not be trimmed, and ran their inflammable ends into the fireplace, and the hearth could not be got down flush with the floor. It was useless to remonstrate; Achone knew that Mr. S. was satisfied with the regular way of doing things.

Part of the first floor was to be a veranda, with Doric columns and entablature. I had profiles cut for the rough brickwork, which Achone vowed should be executed to a nicety, leaving three quarters of an inch for plastering everywhere. Unfortunately, I was compelled to leave the men to their own devices for a few days, and Achone to his opium pipe. When I came back—good heavens! what was the veranda like? The pillars were right in height, but the coupled columns were stuck together; the bases, two clumsy toruses, in form something between a turnip-radish and a pumpkin; the capital was a single meagre tile. After having the columns reconstructed, the stucco work began. All the fillets and squares leaned inwards, the soffit of the architrave cut an inch deep into the abaci, the triglyphs were pentaglyphs, the cornice the masons would not project more than the half of a 20-inch tile instead of nearly 2 feet (I got it done eventually with granite slabs). Instead of the plain blocking course designed, I found the industrious plasterers flourishing away in flowery enrichment, of a series of little piers, projecting from other slight projections, so that each division of the attic had six arisres, and the corresponding mitres in the moulding coping, to say nothing of intervening panels, all filled with elaborate designs. It seemed a sad pity to have to abolish all this exuberance, especially as the contractor never dreamed of an extra for it.

For the roof we had provided king post trusses; and when these were set up, the carpenters began to bed the hip pieces; four clumsy round pine logs—they were tied to nothing, had no square bearing anywhere—being just bedded in the brick walls, and the purlin spars rested on them. Upon these the tiles lay, bearing on battens rafterwise. The entablatures over the windows were great difficulties: in these the Chinese generally keep the return of the upper fillet within the width of the window dressings; and when I ordered the extra length, they ran all the members out alike. I corrected this by tracing the return of the bed-mould against the wall. Then they cut crown mould and all off to this mark, and had to insert bricks again to repair their mistake. Every morning some blunder stared me in the face. One day I found all the window outside architraves painted green to match the jalousies.

A large shed, shaggy with its thatch of dry leaves, close to the building, accommodated the joiners. Here they got up the sash doors, which are commonly used to both doorways and windows, to assist the ventilation, preparing the stiles on little forms, not more than six feet long, the bench sloping from about twenty-four inches to twelve in height. With a narrow plane, destitute of top iron, and worked with a cross handle, the workman sitting astride his work, it was wonderful to witness what true and smooth work they put out of hand. It appeared rather barbarous, indeed, for a man to be turning up his naked toe and holding a sash-bar with it on the bench, while he worked the moulding and rebate. They were not so *au fait* at fixing. To my dismay, I found the doors, two inch double-worked doors, hung with brass butts, before the floors were laid; there was no fear, to be sure, of the doors not shutting, as there was above half an inch clear of any possible floor board, and when the floors were down, there was little more cause for satisfaction:

huge ragged-headed brads attached them to the round spars, that could not be termed joints, and where an inequality presented itself, a dull adze scrubbed off the raised edge.

Mitering the moulded architraves was always a difficulty; the bead had to be shaved down, and the faces curved at the intersections.

The carving was worse than the joiner's work. A console truss to a door cornice they incised in flat lines on a half-inch board, though shown the front and profile on paper; and when a deal block was got out, the carver played with it as a cat with a mouse, and I was obliged to hack it out myself by inches to show him the way. A model would have helped on matters much, for but few workmen could understand a drawing.

Long before the building was finished, all the joints of the panels of the doors and sash door windows gaped wide, and let in streaks of the withering rays of the sun most provokingly. The cedar treads and risers of the stairs also showed seams most unseemly. We made a cylinder in the well-hole and chalked up the handrail pretty correctly. The greatest proof, perhaps, of want of civilization shewed itself in forming the access to the cellar in the staircase compartment, about 15 feet square. Instead of contriving the descent under the staircase, they boarded the whole floor before beginning to *build* the staircase, and sawed out a large square trap in the centre of the apartment to get at the cellar. For the balustrade to the veranda, which was to be of grey porcelain, they brought several stone bottle-like productions, glazed, which could be produced at about half a dollar each. I gave them a profile, which they executed with very round arisres.

As soon as the rooms were floored, the workmen, who had been roosting at night like fowls on little perch-like platforms in the roofs of the temporary workshops, brought their beds (little more than mats) into the house, and there some of them lay sprawling and fanning themselves through the day. This appeared much more innocent than an English mechanic's week's 'fuddle'; nevertheless, I said to Achone, 'Why do you let your men leave their work and smoke?' 'Cheenaman,' he replied, 'no all same Inglis-man. Spose Inglis carp'nter ten minest away from walk, stoppee he wage—Cheenaman all same. Dat man (pointing to one) stun may-sun, to day he no got walk, to-morrow he catchee walk, nex day spose no got—spose rain come, be catchee lice (rice);' that is, in rainy weather, when they cannot work, there is an allowance of rice to the mechanics, who get about the third of a dollar wages per day, or sixteen pence; labourers about sevenpence half-penny.

Centre flowers of radiating acanthus leaves, were most patiently modelled against the ceilings of the best rooms, and in tolerable imitation of my drawings, but in a few days they cracked and fell to pieces, whilst the quaint sprigs, birds, and fishes, shaped by the plasterers out of their own heads, set beautifully hard; seeming to say, this is a land of old institutions: new fangled notions will not answer here.

At an early stage of the works one of the ground floor rooms was furnished thus: against the wall were some upright boards, about seven feet high, the upper part covered with orange paper, inscribed with black characters, and in some parts punched into rows of diamond-shaped apertures, and spangled with square spots of gold leaf, its surface further diversified with little bouquets of tinsel, fructifying most gloriously with red and green gems. A small table stood close to the boards: on it were two earthenware lampstands, a little blue and white teapot, some diminutive basins, a vessel containing a large green fruit, and some matches, or incense sticks, in stands.

This altar was in honour of Lu Parn, or Lao Parn, the 'opifer per orbem dior' of Chinese carpenters. His interesting biography was thus touched upon by Achone: 'He lib long time go, he werry cleb man,—savey all dat carp'nter pigeon (business), all dat stun walk, all same Inglis man (I bowed) savey make—all carp'nter man, all breck may-sun,

all stun may-sun, chin chin he (worship him). Ten thousand year,—more, he makee die, go upside sky,—make dat emperers house. Emp'r makee he mandaree, he verry praprer man, all same school master; when got verry hard walk all man chin chin he (invoke him), all same Inglis man talkee chin chin Jos' (idol worship). 'Well, but,' said I, unwilling to appear to assent to his mythology, 'Englishmen will tell you that 'Jos pigeon' is only fools' pigeon. There is only one God, and Chinamen have no more. He does everything well, and will not allow what is bad.' 'Oh, yes, my savey dat Gott berry well, he all same Jos.' 'No, he is not all same Jos.' 'Yes, my savey dat Gott, my likey Cheenamen Jos more better; Cheenamen Jos let him makee walk, catch wage S'nday. Inglisman Gott say no walk S'nday.' Achone was too courteous to stick to any opinion he advanced when opposed to me, so it became in matters civil as well as religious, useless to 'argue the point' with him.

We have yet to describe the plumbing, painting, and glazing, to complete our mansion. Of the first we may safely say there was none, the hard lime furnishing the linings of all the gutters, and the water-closets being on the night-lab principle.

Paint is laid on sometimes in almost a paste, with a piece of chip, and is very glossy when dry. Glazing is done as with us. The Tong yao foot, lime and oil (putty) is as indispensable to Chinese joiners as to the English, and the glaziers accustomed to work their oyster shell into labyrinthine compartments of carved casements, find sash squares very easy to stop in.

We have thus imperfectly traced the progress of construction, and the difficulties which occur in the erection of an ordinary English house, where all is square work, line and rule work. A little reflection on the clumsiness and inaccuracy displayed by Chinese artisans in such simple constructions, awakens our wonder at the truth and correctness with which the complicated curves of elaborate temple roofs are produced, bristling with porcelain dragons, fishes, frets, and scrolls, exhibiting contortions of eaves, board, gable, ridge, and hip, setting geometry at defiance, and yet in a manner symmetrically subservient to some of her rules, seeming, in the quaint contour of their fantastic creatings, to be less the productions of a plodding, persevering, unchanging people, than the magic creations of a race of fairies."

EDWARD ASHWORTH.

NOTES IN THE PROVINCES.

Faringdon.—The old town-hall here is shortly to be put into thorough repair. Bow-windows and other alterations are to be made for the petty sessions, &c. The town fire-engines are to be stationed under it.

Bourton, near Highworth. On Thursday week the new Baptist Chapel, erected at the cost of Mr. H. Tucker, of Bourton House, was opened. It is in the Gothic style, with turret and bell, and will seat about 300 persons. Adjoining it is a minister's house.

Shrewsbury.—A memorial, by about 400 of the clergy, burgesses, and inhabitants, to the Council, for the establishment of baths and washhouses, has been seconded by a report of a committee of the council in favour of the proposal, and favourably considered by the council. The probable cost is estimated by the town-surveyor at 800l. to 1,000l. A site has been selected between the Raven-road and the river Severn belonging to the corporation, and where it is also proposed to erect slaughter-houses.

Exeter.—The governors of the Devon and Exeter Hospital have resolved to make certain alterations in the building, to provide an anatomical lecture room, and improve the School of Medicine and Surgery, at an expense of 400l. to 500l.

Exmouth.—It is proposed to start a new gas company here unless the present exorbitant price, 10s., be reduced to 6s. 8d. The company have been allowed a fortnight to consider of it. Their own interest, even though no rival company were threatened, ought to in-

duce them at once to abolish a price so impracticable and obstructive to the extension of gas-light in any town.

Newcastle (Staffordshire).—A new organ built by Mr. Nicholson, of Rochdale, has been put up in St. George's Church at a cost of upwards of 200l.

Bridport.—A painted window by Mr. Baillie, of London, has just been erected in the south chancel aisle of the parish church, to the memory of the late rector. It is in the Perpendicular style, and displays the Crucifixion, Resurrection, and Ascension of our Saviour. Each compartment is surmounted by a canopy corresponding in architectural character with the stonework, the ground being filled in with diapering on colours.

Chartham.—Two cottages have been built by Mr. Baker, in Howfield Wood, Chartham, as dwellings for the labouring classes. They consist of four rooms each, a good sized kitchen, 13 by 14 feet, and 8 feet high; a scullery, with an oven and pantry; and two bed-rooms. The kitchens are fitted with fire-lump cottage grates, such as are used in Prince Albert's model cottage, and recommended by the Society for Improving the Dwellings of the Labouring Classes, as it gives out more heat than the common grate. The cost of the two cottages has been 216l.

Liverpool.—It is proposed to connect Liverpool and Birkenhead by sinking an iron tube in the bed of the river, buried so completely below the surface there that there would be no more obstruction to the currents than at present. The tube would have perpendicular sides and an arched roof. It would be placed in a prepared bed, and would be protected outwardly by various contrivances, which Mr. Cunningham, is said to be ready to submit to those interested in furthering the design. Internally there would be two lines of rails running on each side of the tube, with a passage in the middle for pedestrians. The entire work, Mr. Cunningham estimates, would cost not more than 250,000l., and it would form a complete means of transit for goods, railway passengers, and pedestrians, between Liverpool and Birkenhead, besides opening a communication to and from Liverpool for all the railways feeding the Cheshire Junction. The idea is by no means new, however feasible as applied to the Mersey, as it was suggested, by a Liverpool correspondent of our own, for the English Channel even before the Menai channel was provided with its suspended tubes.

Ormskirk.—Mr. R. Rawlinson, of the General Board of Health, has suggested a plan of sewerage and supply of water for Ormskirk. Water is to flow perpetually through the sewers. The supply of water is to be obtained from neighbouring springs. Lord Derby, the proprietor, has offered the land on which they take their rise on liberal terms, as well as a site for a reservoir above the elevation of the town, which will ensure a constant supply under pressure to every house, available also for fire. The expense of the projected work is estimated at 8,000l., as follows:—Sewerage, 3,500l.; water supply, 4,500l. The local board has sanctioned an application to the general board for the necessary powers to take up the amount of loan, to be repaid in thirty years.

Timperley.—Christ Church, Timperley, was consecrated on Thursday week. This edifice was opened on 20th September, 1849, by licence. It is in the Norman style, and built of Runcorn stone. The area occupied by the church and its grave-yard is 3,894 square yards; by the parsonage-house and grounds, 990 square yards. The plan comprises a body with north porch, chancel, and a tower with spire. The length of the body is 59 feet by 33 feet wide, and the floor is divided into two longitudinal aisles, and two cross aisles by the seats, while at the west end there is a gallery, entered from the tower. The accommodation in the church is for 510 persons, of which 204 are free. The cost of erecting the church was 1,700l.; of laying out the grounds around it (which required much care), inclosing the churchyard, 400l.; the endowment, 1,700l.; the parsonage-house, 500l.; altogether about 4,600l. Of this there still remains about 70l. to be obtained.—*Manchester Courier.*

Manchester.—It is proposed to convert the collegiate church into a cathedral, at a cost of 50,000l., in commemoration of her Majesty's visit to Manchester. The Rev. R. Parkinson, canon of Manchester, who suggested the idea, offers 1,000l. as his own subscription, if the remainder be made up within twelve months, and we cannot conceive that the Manchester magnates will find the slightest difficulty in carrying out so noble an idea into successful and speedy accomplishment. Mr. Holden, architect, has furnished the rev. canon, at his suggestion, with a design and working drawings for the conversion of the church into a cathedral worthy of Manchester.

Portwood (Stockport).—According to the *Stockport Advertiser*, the new church of St. Paul, Portwood, was consecrated on Wednesday week. It is a stone edifice, in the Perpendicular style, and consists of nave, north and south aisles, south porch, chancel, and lofty tower and spire at the west end. The nave and aisles are 64 feet 4 inches long, and 50 feet 6 inches wide; the chancel 34 feet long, and 18 feet 8 inches wide inside; and the tower 17 feet 7 inches square over the walls, and, with the spire, 166 feet high to the top of the cross. The porch is placed in the second bay from the west end,—the sacristy at the north-east corner of the chancel. The nave is divided from the aisles by octagonal piers and pointed arches, and is five bays in length, in each of which (except those occupied by the north and south doors) is a lofty window of three lights, with rich tracery in the head. The chancel is three bays in length, and is lighted by a window of five lights at the east end, filled with tracery, and on the sides by three light windows. The spire is perforated at different heights by three tiers of spire lights, crocketed, and enriched with tracery, and the whole structure is surmounted by an ornamental metal cross and vane. The roofs are of open timber framing, with hammer beams and arched braces. The pews are stained and varnished to imitate old oak. The cost of the erection will be about 4,000l. The Church is calculated to hold 608 worshippers, in uniform open seats, 402 of the kneelings, or two-thirds of the whole, being free. The designs and working plans were prepared by Messrs. Bowman and Crowther, architects, Manchester; and the entire stonework and masonry have been executed by Mr. Bertram, of Romley. The whole is enclosed within a stone boundary wall. The foundation stone was laid on 22nd August, 1849. The Church is provided with an organ; and also a large bell, cast at a foundry at Belfast. Gas has been introduced, the fittings having been arranged under the superintendence of Mr. Richmond, of Salford; there is also a hot-air apparatus for warming and ventilation.

Preston.—The movement in favour of a reduction in the price of gas here has at length induced the company to state that they contemplate a reduction in charges both to private consumers, and to the local board of health. The water-supply question is also progressing.

Bradford.—The foundation-stone of St. Andrew's Church, situated at Lister Hills, was laid on Wednesday week. The plan of the building consists of a nave with aisles (the south aisles extending one bay eastward in the church), lower on the north side forming a quasi-transept, and chancel with sacristy on the north. The style is Decorated. From the want of sufficient funds, the spire will not at present be carried up.

Leeds.—The first general meeting of the Society for promoting Public Improvements in the Borough of Leeds, was held in the Philosophical Hall, on Thursday week. The object of the society is to influence public opinion, and encourage public taste, in reference to the removal or mitigation of nuisances, the prosecution of useful works, and the improvement of the streets and buildings of the borough. The mode of its operation is to be by lectures, and by obtaining plans and designs, or eliciting suggestions, for promoting the ends in view—the sanitary and social well-being of the inhabitants, the architectural character of the town, and the adoption of the best means of securing public comfort and convenience. The mayor

as president of the society, occupied the chair, and the public operation of the society was inaugurated with a lecture by Mr. William Felkin, mayor of Nottingham. The towns of Nottingham and Leeds have enough in common with each other to render the remedial measures which have been useful in the one applicable to the other; and Mr. Felkin was able, from his own experience and labours, to cite improvements actually effected in Nottingham, which would meet nearly all the cases which most need amelioration in Leeds. His hints for improving the dwellings of the working classes showed how much might be done in this way, at the most trifling cost, and without legal compulsion. We hope that other towns will adopt the excellent example set by Leeds.

South Osselt.—A new church here was consecrated on 16th ult. by the Bishop of Ripon. The church, which is named Christ Church, is a plain building, capable of accommodating 608 persons, more than 400 of the sittings being free. Its design is cruciform, and its style Gothic, of thirteenth century. The architects were Messrs. Mallinson and Healey, of Bradford. The church is built on a site given by Mr. Joseph Thornes, of Osselt-green, and, by the provisions of Sir Robert Peel's Act, henceforth becomes a parish church.

Dumfries.—The first pipe of the water works, opened on 21st ult., was laid on 16th January last. The design for them was supplied by Mr. Gale, C.E., and the pipes have been laid by Mr. Travis, under the direction of Mr. Inglis, the local engineer. The works, besides pipes, sieves, scouring sluices, and fire-plugs, include two pairs of filters, about 550 yards distant from Lochruton loch, or lake, whence the water is taken, and possessing a surface of 4,640 square feet; and a stone tank, into which the filtered water falls, and which is capable of containing 233,000 gallons. The pipe for the first mile from the tank is 9 inches in diameter, and for the rest of the distance of 4 miles, to Dumfries, 8 inches.

THE BUILDERS' BENEVOLENT INSTITUTION DINNER.

The annual dinner of this excellent and thriving Institution took place at the London Tavern, on Wednesday, when the chair was occupied by Mr. Thos. Grissell, F.S.A., the President. The company numbered about 200, including many eminent builders, architects, and others, amongst whom were Mr. Alderman Cubitt, M.P., Mr. J. B. Graham, Mr. W. Herbert, Mr. Lee, Messrs. George, Joseph, and Stephen Bird, Mr. Nesham, Mr. G. Spencer Smith, Mr. H. Kendall, Mr. Tyerman, Mr. Dunnage, Mr. H. Hunt, Mr. Hold, Mr. Curtis, Mr. Soward, Mr. J. B. White, Mr. G. White, Mr. Myers, Mr. Dennis, Mr. Wagstaff, Mr. Langton, Mr. John Barnett, Mr. Watts, &c.

The customary honours having been warmly rendered to the Queen and the Royal Family, the Chairman proposed "Increased Prosperity to the Builders' Benevolent Institution." He knew that the toast required neither eloquence nor ability on his part to recommend it; and that the company around him were determined to carry out the objects of the society to a successful issue. The institution had been founded only a few years, and had commenced in a very humble manner: it had, however, thus far proceeded satisfactorily, and there was every prospect of its continuing to do so. It was a matter of surprise that the builders of the metropolis had not taken up a subject of so much importance earlier, but now that they had done so in a spirited manner, he had no doubt they would carry it out effectually. Although their profits, perhaps, were not so large as the public generally supposed, they had the means of rendering the Society as prosperous as any other of the kind. They had already twelve pensioners on the funds of the Institution, receiving altogether nearly 300*l.* a year; and they were not solely dependent on current subscriptions, for the directors had taken care to invest a portion of the funds as a provision against any emergency. Every builder in London ought to belong to it, and with a little

exertion they might easily be enabled to double their numbers in the next three years. He hoped even at the next anniversary to find a considerable increase in consequence of the proceedings of that evening. Warmly then he would propose "Prosperity to the Institution."

The Chairman next gave "The Patrons of the Institution," in connection with Mr. Alderman Cubitt, who, as a former president, had done great benefit to the society.

Mr. Alderman Cubitt said he was hardly worthy of the honour conferred upon him by placing his name in association with the other patrons of the institution, distinguished as they were alike by rank and popular estimation. He adverted to the presidency of the Earl of Carlisle at a former anniversary, and ascribed much of their present success to the eloquence with which his lordship had then advocated their cause. For himself he felt as a builder that he should neglect his duty if he did not take every opportunity of aiding the society to the best of his ability. He had last year advised the appointment of a new president, and he congratulated the members on the election of his friend Mr. Grissell, who he hoped would have health, strength, and inclination still to promote their interests, and would not resign the position he so ably filled until he had secured for the society a worthier successor: this would keep him there some time. He feared they would never want objects on whom to bestow their relief, and he hoped that relief would always be afforded; for by doing good to others they would best consult their own happiness.

Mr. William Lee proposed briefly the health of the Chairman.

The health of Mr. George Bird, the Treasurer, was very warmly received. That gentleman responded to the compliment in an earnest appeal for increased support to the Institution. They were not able, he said, at the last election of pensioners to place all the candidates upon the list, but he hoped sufficient funds would be raised by the present meeting to enable them to have another election within a very few months; and thereby to relieve the disappointed applicants, who were probably almost at the doors of the workhouse. The Institution had already prospered far beyond his first anticipations: they had already a considerable fund, and he confidently hoped it would very soon be doubled.

Mr. H. Hunt acknowledged the toast of "The Architects and Surveyors," and expressed their satisfaction in being associated with the builders, on whom, indeed, much of their success depended.

The Chairman proposed "The Press," and the health of Mr. Godwin, referring in kindly terms to *THE BUILDER* and its editor.

Mr. Godwin said—The public press, which regulated the social and political condition of the world, was indeed a mighty and important engine, and wielded, as it was at that time, almost wholly for good, deserved their thanks. That portion of it which he represented was but a confined one, and did not entitle him to return thanks for the press in general. He had sought to aid the Institution from the time when Mr. Cozens, Mr. Biers (whose name ought not to be forgotten on such occasions as the present), with Mr. Bird, and other early labourers, could scarcely muster a dozen friends around them, to promote the cause in which they were engaged. It had always given him pleasure to do the little he could to aid it; and he rejoiced now to see the Grissells, the Cubitts, the Birds, the Curtis's, the Lees, the Neshams, and other eminent builders rallying around the society, with a company of two hundred friends, and a nest egg of some thousands of pounds in the Bank. The Institution was most important, not only on the ground of charity, but as affording opportunities for such assemblies as the present, bringing men together, and educing kindly feelings. He could not avoid hoping that he should one day see various existing institutions of a similar nature all amalgamated into one great Builders' Benevolent Institution, in which the masters, foremen, and workmen might be all united into a common

guild, and see their mutual dependence on each other. At the present moment he might especially urge the importance of establishing that community of interest between masters and workmen. When this was the case, they would be able with truth to say with Thompson,—

"Ours are the plans of peace;
To live like brothers, and, conjunctive all,
Embellish life."

The health of "The Vice-Presidents and Trustees" was acknowledged by Mr. Herbert for the former, and Mr. Stephen Bird for the latter. The "Stewards" were represented by Mr. Thos. Cozens, who, as the founder of the Institution, adverted to his first attempts to direct public attention to the necessity for such a society, through the medium of the press. His communication to one newspaper being neglected, he wrote a letter to *THE BUILDER*, in the columns of which the subject was warmly advocated.

Mr. J. Soward, jun., replied to the last toast,—"The Directors of the Institution."

The proceedings of the evening were in every respect satisfactory, and the amount subscribed was upwards of 400*l.*, including the following donations:—Mr. Jay, 21*l.*; Mr. Grissell, 10*l.* 10*s.*; Mr. J. Bazley White, 10*l.* 10*s.*; Mr. Joseph Bird, 10*l.* 10*s.*; Mr. Stephen Bird, 10*l.* 10*s.*; Mr. James Wagstaff, 10*l.* 10*s.*; Mr. William Dennis, 10*l.* 10*s.*; Mr. G. Spencer Smith, 10*l.* 10*s.*; Mr. Alderman Cubitt, 5*l.* 5*s.*; Mr. J. B. Graham, 5*l.* 5*s.*; Mr. Peto, M.P., 5*l.* 5*s.*; Mr. Herbert, 5*l.* 5*s.*; Mr. W. Lee, 5*l.* 5*s.*; Mr. R. Watts, 4*l.* 4*s.*; &c., &c., &c.

DOINGS IN EDINBURGH.

The statue of her Majesty by Mr. Handyside Ritchie has been erected in front of Holyrood Palace: she is represented in the costume of the ancient Scottish queens, her robe being elaborately embroidered with the device of the thistle: in her right hand she holds the palm branch of peace. The pedestal is of very ornate description, presenting on its four sides emblematical figures of the seasons in high relief, with clusters of flowers and fruit, executed with great freedom and taste. The material used is a block of free-stone from Redhall Quarry, which can be procured at one-tenth the cost of marble or bronze; and, considering its pleasing colour and known durability, it is matter of wonder that it is not more frequently used in the production of sculpture.

A new surgical hospital, in connection with the Infirmary, is being completed: its arrangements are good. It contains about twenty-four wards, each capable of accommodating eight or ten patients: the ceilings are twenty feet high, and fresh air is admitted by small upper windows, the foul air being carried up ventilating shafts to a central tower. The supply of water is copious, and baths and other conveniences are at every hand. Patients are conveyed to the upper flats by means of "lifts," and visitals, &c. are transmitted in the same manner. Externally it presents a plain but effective Italian front with a central tower.

It is interesting to observe that houses for the labouring classes are rising in many localities where they are much required, but a great deal must be done before anything approaching what is necessary is effected. Building in general is brisker than it has been for several years.

DUN EDIN.

THE ARCHITECT OF ST. PANCRAS NEW CHURCH.—May I beg of you to contradict an assertion quoted by you from Mayhew's *London Labour*, relating to the late architect of St. Pancras New Church, by stating that William Henry Inwood died in Upper Seymour-street, Euston-square, and was buried in his family vault beneath St. Pancras New Church, and that his son Henry, who was joint architect with him, died at sea about March, 1843. Your insertion of the above will oblige the surviving relatives of his family as well as his grandson,

OCTAVIUS INWOOD THISELTON.

MONUMENT TO FREDERIC THE GREAT, OF PRUSSIA.

THIS year has been characterised by the completion of two great monumental works—the Bavaria, at Munich, and the above huge mausoleum at Berlin. In a time when the deserts of persons to be monumented are somewhat inquired into, the erection of a monument to Frederic of Prussia is perfectly warrantable. Besides being a warrior and statesman, he prided himself in “being the chief functionary of the nation;” and to a deputation which came to thank him for some act of royal solicitude, he answered, “I merit no thanks: I have only done my duty.”

It was already during his life time, that the chiefs of his army projected to erect to the king a statue of large size, at their own expense; when the monarch, being made aware of their intention, had them informed that “it was a praiseworthy custom to erect monuments, not during the life, but after the death of persons thus to be honoured.” Still, some of his generals were not prevented, by this declaration, from commemorating the deeds of the great king even then; as, for instance, Count Hoditz, who placed a bust of Frederic II., with a suitable inscription, in his domain, Rosswald, in Moravia. Later, the Estates of Pomerania erected a marble statue of the king at Stettin, &c. In the reign of Frederic William II., the subject was again taken up: the actual place of the monument was selected as the site most appropriate, and even plans and other preparations made; but the critical position of Prussia at the beginning of this century, frustrated all similar efforts. Frederic William III. also was embued with a high sense of duty towards his great ancestor, and the general peace then established, fostered his purposes. But it was the Estates of the Mark Brandenburg and Nether Lusacia, who in 1830 brought the matter to an issue, by memorializing the king on the erection of a monument to Frederic the Great, by contributions raised from the bulk of the nation. The king highly approved of the proposal, but decided on placing the undertaking under his own charge. Thus, States-councillor architect Schinkel and Professor Rauch, the latter of whom was then at Munich, received orders for making plans and estimates for a monument of Frederic the Great. According to these first plans it had to be placed twenty paces from the entrance to the Linden, and consist of a column similar to that of Trajan at Rome, &c. Conjointly, however, with the progress of the plans, weighty objections were elicited. In the following year Schinkel was engaged in the architectural projections of the monument, and Rauch made statuary sketches of the departed hero. At last Rauch became seized with the idea of representing the king on horseback, attired according to his times and fashion, the equestrian statue to be supported by a large pedestal, which would afford sufficient room for the representation of contemporaneous warriors and statesmen, &c. These original and bold ideas are those according to which the monument has been eventually constructed. Frederic William III. suggested some improvements, and thus three models of small size were exhibited in the Berlin art-show of 1839. On the 8th December of the same year, the royal warrant for the execution of the monument was signed, of which, in May following, the foundation stone was laid by the hereditary prince, now Frederic William IV. Already, in 1839, Rauch had commenced the full-size model of the horse, and in February, 1842, horse and rider were completed by him and his assistants, Albert Wolf and Gustav Bläser. When the present king saw the original model of the pedestal, he selected it in preference to that approved of by the late king. The selection of the personages to be represented and inscribed on the monument was a matter of historical delicacy and etiquette, whereon statesmen and learned men were duly consulted, &c. On the 8th of May the colossal clay model of the equestrian statue, measuring 16 feet 3 inches high, was completed by Rauch and his assistants, Bläser, Wolgast, and Genschow, ready for casting. But larger spaces were required for that

operation than had been hitherto at hand in Berlin. Hence, therefore, the former building of the Mint was appropriated thereto, workshops of large size fitted up, and a new casting furnace for bronze built on purpose, for which M. Schüler, privy councillor of architecture, made the plans, which were executed by the inspector Kreye, then employed in the construction of the New Museum. It was on the 11th July, 1846, at midnight, that the casting of this huge piece of bronze was completed by the overseer Friebe. The other works of the pedestal, still of great importance, went on in succession, and at the end of the year 1849 the last portions of the bronze castings were done, and the construction of the mason and granite works begun at the place marked out in 1840. It may be well imagined that at such an undertaking a large staff of artists and artificers were engaged, of which the following may be especially mentioned. Sculptors Haagen, Bräunlich, Afinger, &c.; modellers Bianconi and Mitsching; the bronzemakers Warmuth, Nürenberg, Scheer, &c.; chasers, Klatzenberg, Steckner, &c.; carpentering and scaffolding, master-carpenter Pardow and his men, who made and arranged these huge masses with circumspection, accuracy, and great steadiness. This abridged narration will give some idea of the preparations requisite for this fine and huge monument.

Its entire height rises to 43 feet. The granite socle is 5 feet 9 inches; the first course being composed of sixteen stones, the second and third courses of eight stones each. On this rests the bronze pedestal on an aggregate weight of above 367 cwt. The bronze socle contains between the projecting consoles, on the front side, the dedicatory inscription: on the three other sides are inscribed the names of deserving men of the time of Frederic the Great. The inscription (translated) runs thus:—

“TO FREDERIC THE GREAT,
FREDERIC WILLIAM THE THIRD,
1840.
COMPLETED UNDER FREDERIC WILLIAM THE FOURTH,*
1851.”

The crown above, with sceptre and sword, palm and laurel, denote the hero, the king and the poet. The angles of the volutes of the consoles are ornamented, at the larger sides, with sculptures of warriors in various positions. The front side represents the genius of Light with the burning torch, and the genius of Fame with palm and wreath, the former having at his side the owl, the other an eagle, sun-ascending. On the opposite tablet are geni of Peace, supporting rich garlands of flowers and fruit.

Above this bronze socle rises the principal feature of the pedestal—a colossal cube of the same metal, consisting of sculpture, representing the chief military, states, literary, and art notories of the Frederician era. It is in this part of the pedestal that Rauch has executed an original idea, viz., of combining figures of alto-relievo, sun statues, with the basso-reliefs on the four faces of the cube. These four equestrian alto-reliefs being placed at the corners, project and impart great life to the whole of the sculpture. They represent generals Prince of Brunswick, Prince of Prussia, Ziedlitz, and Zieten, the latter especially still living in the memory of the Prussian people. A host of general and staff officers form the remaining part of the *bassi-relievi* of this part of the pedestal. Guarded, as it were, by this phalanx, the portion of the sculpture turned towards the Brandenburg triumphal arch contains the figures of the representatives of the intellect of the Frederician era—Count Cormer, the founder of the public law of Prussia; C. H. Graun, a great fosterer of German musical art; Lessing; and last, but not least, Immanuel Kant, “the stern, conscientious thinker, who, by teaching and authorship, paved the way towards new and serious thought.” Amongst the names of the persons inscribed on the socle are, Rambler, the poet; Gleim, a man whose rhymes still remain in the mouths of the people; Christina Garve,

* German art-critics have truly observed, that the Monumented merges nearly in the names of the Monumenters.

whose characteristics we also translate *verbatim* from the official programme: “C. Garve, who, clothing his philosophical inquiries in pleasing forms and plain language, has much contributed towards the spreading of serious thought (!) and general culture of the people.” Then follow Gellert, Maupertius, John Winckelmann, and some others. Above these groups and names tower the geni of Peace and Public Welfare (*Felicitas publica*), and a row of columns behind indicates that the building of the intellectual dome of mankind is never to cease.

The pyramidal (decreasing) shape of the huge postament exhibits *basso-reliefs* of minor size, relating to the more personal history of the late king. Alike as the angles of the under part are ornamented by projecting equestrian statues, we perceive here four female figures, representing Strength, Justice, Wisdom, and Moderation. Amongst the *basso-reliefs* is Clio instructing the youth, and pointing to high patterns, worthy of imitation. On the side turned towards the university we perceive the king in the hut of the Silesian weavers, intent on the examination of their work: another sculpture represents the king playing on the flute in lonely retirement: in another, Knobelssdorf, the art-adviser of Frederic, presents to him an antique work of bronze. Between these larger *basso-reliefs*, that of the front exhibits the great man in his reverse circumstances,—Frederic sitting on the famous pump after the lost battle of Kollin, sorrowful but not dejected. On the rear, in fine, the eagle of renown conveys the sage and the ruler, crowned with laurel and palm, to higher abodes, where, even among the constellations of the heavens, his star “*Frederici honor*” is shining.

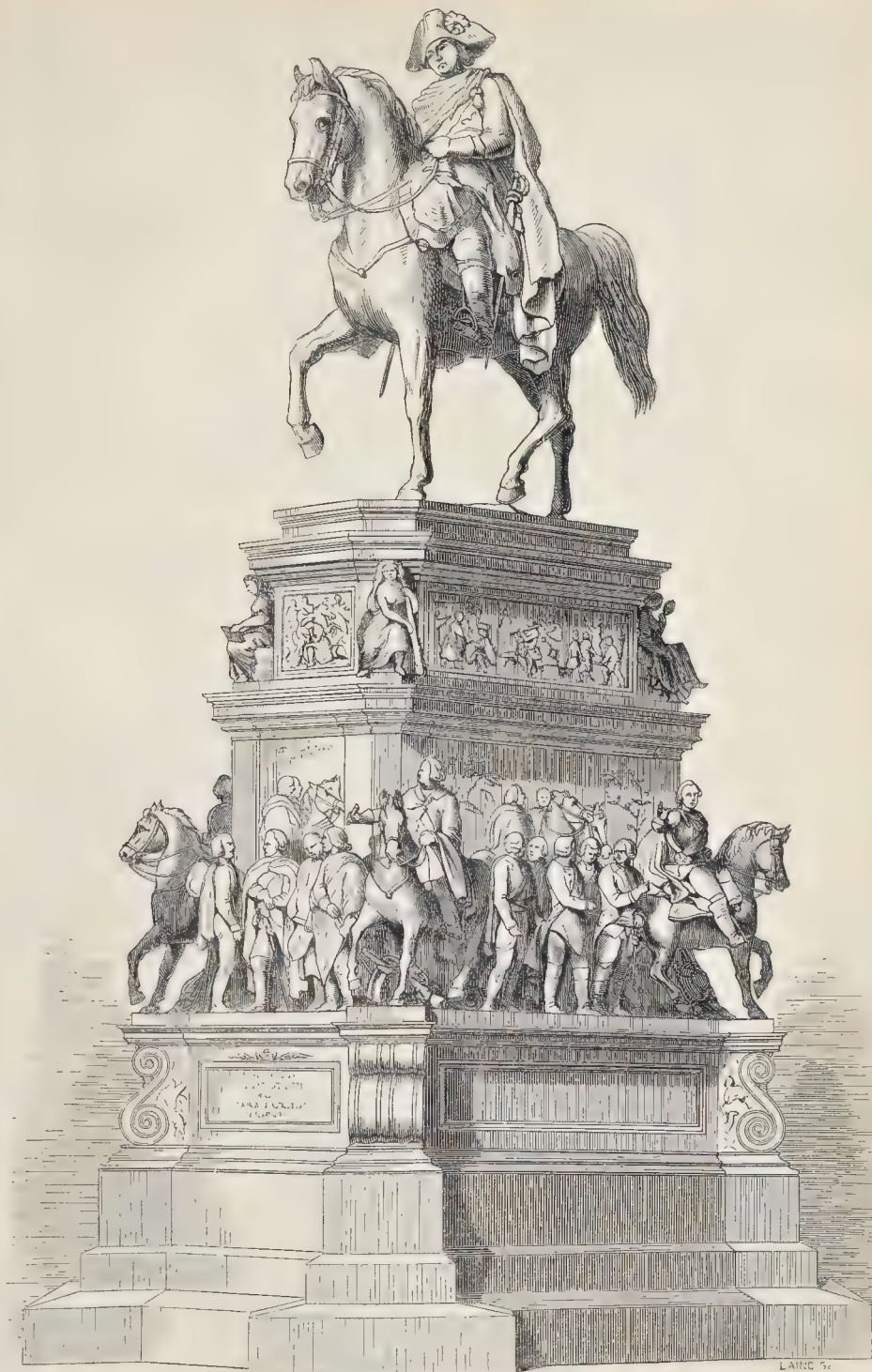
All this, in fine, is crowned by the colossal equestrian statue, representing the king as he usually rode through the streets of Berlin. The royal mantle has been added by the sculptor, to give the statue, placed at such altitude, more plenitude: this, however, Frederic II. never chose to wear. We may conclude this notice on the great art-work lately completed, with the words of the Common Council of Berlin, on presenting Rauch with the liberties of the city: “You have completed a work which long will serve as a means for the mind-elevation of the people.”

STATE OF OUR BELFRIES.

HAVING been into a score of belfries, at the request of a member of our (Somersetshire) Archæological Society, I was surprised and grieved at the positively beastly state of the bell-chamber of every one of them, simply from the luffer-boards never projecting sufficiently outwards to hinder the entrance of wet, and from there being no wire-netting to prevent birds roosting and defiling every inch. The straw and birds' dung being always moist, ferments, and rots even the best oak, so that the repair is a constant source of expense, and a very heavy one. Very many towers have no luffer-boards, but only some stone screen work of late date, or a few ill-fixed slates. Wire to fill the windows of any tower can be procured and fixed for less than a pound; but, like all churchwards' duties, it cannot be compelled, and will not be done. AN ARCHITECT.

AID FOR THE ART-ARTISAN SCHOOLS.

AMONGST the numerous memorials presented to the Royal Commissioners of the Exhibition, relative to the disposal of the surplus funds, one is from the Committee for establishing Suburban Art-Artisan Schools, praying for assistance to enable them to carry out their entire scheme of schools in different districts of the metropolis. The success which has attended their present school in Camden-town, where, since 1st May, 1850, 550 men and lads have received art instruction, and where at the present moment, there are above 100 students, undoubtedly gives them a claim for support, as the introducers of the system of *artisan* instruction in drawing and modelling into this country. Such schools are among the legitimate objects on which the surplus funds of the Great Exhibition should be bestowed.



MONUMENT TO FREDERIC THE GREAT OF PRUSSIA, BERLIN.

ENRICHED GOTHIC MOULDINGS.

RESPECTING the enriched neck mould, mentioned by your correspondent, "W. H. B.," in answer to the theory of Mr. Little, I would observe, although I do not remember the example pointed out by "W. H. B.," that it is not at all uncommon to find neck mouldings carved, as will be seen by referring to the following plates of my work on Gothic Ornaments. Vol. I. Plates 14, 76, 89, 85, 93, 94; Vol. II. Plates 1, 81 (where it is very fully developed, and a plan given of it), 85, and 91: the last example is from Exeter Cathedral.

I can point out other examples which are fully entitled to be called enriched mouldings, and, further, I consider that it is incorrect to say, that "the effect was produced by super-added ornamentation." For instance, we very often find used instead of a bead in the abacus of capitals, as in the nave piers at West Walton, a moulding formed of two sides of a triangle: when cut of a similar form transversely it forms a series of pyramids, and is the nail-head moulding found used very plentifully at Skelton Church in place of beads, &c. The dog-tooth ornament is formed upon the same principle, and now we first begin to see a feature which is very prevalent after its introduction, that the ground upon which the ornament is placed is worked into a hollow. Here, I conceive, is the great difference between Classic and Gothic enriched mouldings: in the Classic the ornament follows the contour of the moulding; but, in the Gothic, it is nearly always directly opposed to it.

Now, it might rather be said that the ornamentation of classic architecture is *superadded*, than it can be said respecting the Gothic, because in the classic it is either added upon the moulding, as in the enriched cyma, or it is cut down from the surface, as in the enriched ovolo, cyma reversa, &c.; but these mouldings are also found without these enrichments, without being carved, having precisely the same contour. The enrichments can be added or taken away at pleasure; but in Gothic the enrichments form a portion of the original design: they have never been added, but are a part of what was originally intended, and the adjoining mouldings have been arranged to receive them. They stand in the place of plain mouldings, not only one, but sometimes occupying the place of a whole group. They are therefore entitled to be called enriched mouldings, not upon the same principle as in classic, but that they are designed and arranged to occupy the place of plain ones. They cannot be said to be superadded any more than the whole system of mouldings, none of which are actually necessary in Gothic architecture, as many buildings are found without them.

Mr. Little says: "The sculpture might be removed, as it now is in some places, by havoc or time, and the form of the moulding still appears perfect." There is an example to the purpose in the large Early English double door in the cloisters at Westminster, where the large hollow which originally received the moulding is almost left bare of ornament. Now the hollow which we there see is not the form of the moulding, but of the ground upon which the moulding was placed, because, as it is at present, the capital carries nothing.

Where we should see a group of mouldings coming out upon the abacus of the capital, we have nothing but a large bare hollow, the enriched moulding which originally came out upon the capital in a convex form being lost. I cannot see, either, that "it was from the desire of the architect to preserve the contour of his mouldings that the system of deep undercutting and perforating their foliage arose." I conceive that it was the same love of strong light and shade which made them design their early mouldings in such deep rounds and hollows, which caused them to undercut their foliage to such a degree, as sometimes nearly to separate the moulding from the ground upon which it was placed. This ground was almost universally a hollow: in the first instance it was a straight surface, as may be seen by referring to early examples of the dog-tooth: at length the taste for deep cutting and deep shadow formed it into a hollow. That it was not upon any principle of

preserving the contour of these hollows, may be seen in a hollow around the same door, to which I have before referred, at Westminster, where the ornament is attached to it—and is entitled, in every respect, to be termed an enriched hollow moulding. Surely this is carving on a moulding. There are, too, hundreds of such examples of ornamental mouldings, and it was only when the ornament was large or of a particularly light character, that it was in any part detached. In the Perpendicular it is oftenest found attached. In the battlement or crenellated ornament, which is so frequently found in woodwork of the fifteenth century, we have a principle which is precisely the same as the formation of dentils in classic architecture: a portion is cut out at regular intervals. This is a common principle in the formation of many Gothic enriched mouldings.

In the arch of the west doorway at Ely Cathedral, and given at plate 73, vol. i., "Gothic Ornaments," is a roll and fillet with foliage carved upon it, and that which springs from its sides extends across two hollows, one on each side of the roll and fillet. This last example, however, is an uncommon feature. It therefore does not appear to me to have ever been a principle among the mediæval architects, "to carefully avoid disturbing the surface contour of their mouldings," although it may be observed that they do not always retain the same forms when carved as when plain: this is contrary to what is the case in the classic.

JAMES K. COLLING.

THE NEW BASILICA, ST. PAOLO, IN ROME.

We quoted last week some observations on the church of St. Paolo, now building in Rome. Since then, one of our own correspondents has forwarded to us the following particulars:—The original church was burned down about twenty-seven years ago, and the new structure has been in hand ever since. Signors Belli and Poletti are the architects. It is built in the form of a Latin cross, and will be a very fine work. Unluckily, it is placed in a very damp and unhealthy situation. We have only had a little rain for two days and one night, and yet the damp has in places run up the walls for 4 or 5 feet. The transept has fluted columns of pavonazetta marble close to the walls, which are faced with slabs of veined marble. Above the columns is a sort of double cornice, over which is a frieze composed of large circles of mosaic, each the gigantic portrait of a pope, but being placed at such a height they do not appear much larger than life. These mosaics are being made in the government factory: there are to be 230, I think they said: each measures at least 4 feet in diameter, takes twelve months to complete, and is worth about 200*l*. Over this frieze are pilasters of imitation pavonazetta, and slabs of imitation marble for the walls, but good imitations, and in keeping with the lower part. The ceiling, unfortunately, is flat, which rather spoils the effect, and there is a very singular thing about it: the north-east corner is, or appears to be, considerably lower than the rest, though we were standing nearer to it, and, according to the rule of perspective, it should have seemed higher. It is very deeply carved in square and oblong compartments, and ornamented with flowers, fruit, &c., and is only white and gold. A lofty arch—the old one, I believe,—covered with antique and brightly coloured mosaic, and supported on two magnificent columns, with white marble Ionic capitals, the shafts of which are of one block of Simpron granite, about 30 feet high—opens into the nave (or is to do so when the hoarding is taken down). The nave has a centre and two side aisles, and has consequently four rows of columns—twenty, and two pilasters, in each row: these columns are also granite, 32 Roman palms high, with Corinthian capitals, and bases of Carrara marble (the side columns are smaller). A line of small arches connects these columns at the top: above is a cornice, and over that the frieze of popes, as in the transept. Mehemet Ali made the late Pope a present of some very beautiful Oriental alabaster, which

is being worked into four columns, also 32 palms high, to enclose the old baldacchino, which was but slightly injured by the fire. There are four immense pilasters of it to ornament the principal doorway, and two smaller columns, with pilasters, for the chapel in which Tenerani's statue of the late Pope is to be placed.

MEMS. ON THE NEW GLASGOW 'BUSES.

THESE are considerably roomier than the metropolitan ones, and are drawn by three horses abreast, separated by two poles. About a third, in centre, of the roof, is raised, so that you can walk upright in the central gangway. The sides of this raised portion are louvred, in bays; consequently the occasion for the windows being made to open is done away with: sash-margins are thus rendered unnecessary; and the plate-glass occupies the whole space between the uprights, giving the vehicle a light and elegant appearance. Along at the bottom of the louvres, each side, is a brass hand-rail, by which you guide yourself, instead of making free with the knees of gentle and simple, on your way in and out. The back end of the raised portion projects, with a hollowed slope, so as to form a little pent-house, which the conductor can take the benefit of in wet weather: the other end has a similar termination behind the driver's seat. The communication between conductor and driver is by means of a fixed clock-bell behind the driver's feet, which gives one good stroke on the conductor pulling a trigger. The fare is twopence, which will take you as far as from Charing-cross to the Bank. A Glasgow omnibus proprietor lately stated in a court there that London omnibuses pay no regard to the rule of the road—a most palpable error: where would he find that rule better observed, whether in riding or walking, than in London; and what would Fleet-street and such thoroughfares be, if it were not most strictly complied with by the drivers of wheeled vehicles of every description?

JAS. WYLSON.

TONE OF ARCHITECTURAL WRITERS.

My name being mentioned by Mr. Garbett in his last letter to your periodical, I wish, without entering into a defence of the "Pestilential Renaissance," to observe—that if he desires men to attend calmly and seriously to arguments, or assertions rather, in favour of any theory—he should adopt a more rational, quiet, and considerate mode of advocating it.

Renaissance will not lose its charms because Mr. Ruskin denounces it as "pestilent," nor will the Pantheon cease to affect all minds capable of being affected, because Mr. Garbett pronounces it "a monument of mental impotence below that of the rudest tribe that carves calabashes." The tone of dictation which marks Mr. Ruskin's works, and now apparently Mr. Garbett's, can only injure whatever is good in them; and, until a calmer and more diffident spirit inspires their sentences, I, for one, even had I the power, would certainly decline a controversy on any subject, as I think this imperious, dogmatic style of writing, an impediment to the discovery of actual truths.

J. B. W.

IRISH LEAD MINES.—The lead mines of Coolarra, county of Monaghan, have been let to a mining company from Cornwall, at a royalty of one-fifteenth, and are said to be a very profitable speculation.

SEWERS.—WITH A DIFFERENCE.—The following were the tenders for sewers at Anerley, for the National Freehold Land Society: Mr. G. Elkington, architect:—

Dethick	£1,600
Hill	3,251
Taylor and Porter ...	3,132
Brown	3,122
Smith	2,989
Murray	2,979
Sidwell	2,935
Tarrant	2,896
Becks	2,773
Ashton	2,704
Taylor and Son	2,350

OPEN PARAPETS FROM NORMANDY.

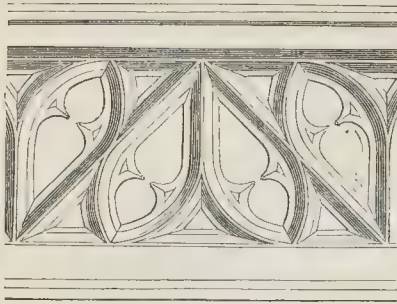


FIG. 1.

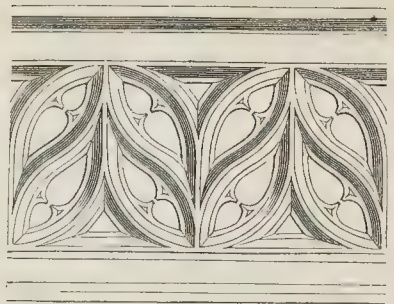


FIG. 2.

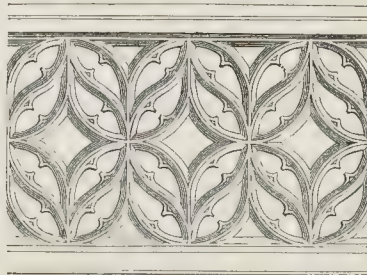


FIG. 3.

OPEN PARAPETS FROM NORMANDY.

THE accompanying specimens of open parapets are from churches in Normandy. Nos. 1 and 2 are from the Cathedral of Evreux, and No. 3 from S. Sauveur. No. 1 belong to the second or Rayonnant period, and are much inferior in elegance of design to the others, which are of the third or Flamboyant period. This remark is applicable to all French tracery: in fact, in this respect, the Rayonnant and Flamboyant periods of French architecture are perfectly analogous to the geometrical and flowing divisions of the middle-pointed period of English architecture.

J. G. H.

A QUERY FOR THE ROYAL COMMISSIONERS.

To stand or not to stand? that is the question:
Whether 'tis nobler, as a worthy monument
To the art, the science, and the peace of nations
To preserve the Crystal Palace where it is,
Or exert a power against the world's desire,
And, by destroying, end it?

J. H.

THE Rev. Dr. Croly, of Walbrook, in the course of an eloquent sermon delivered the day after the Exhibition closed to the public, said:—

"The Great Industrial Exhibition is now come to a natural end; but the structure stands till next year. The public feeling would see its demolition with reluctance. Why should it not receive a still more elevating exhibition? We are about to build a National Gallery at the cost of, perhaps, a hundred thousand pounds. Why should not this structure be the substitute? I would go further, and ask, why should it not be offered to our artists, who now complain of want of space in the yearly Exhibition? Why should it not be offered to the fine arts of all the world? Why should not England summon the painters, sculptors, and architects of Europe, and of the earth, to send their works to this structure? A slight share in the revenue of that display would bring together all the *chefs d'œuvre* of the globe. This use of the

structure would have the eminent advantages of rendering London the metropolis of the universal arts, of giving the finest embellishment to the capital, of enriching the public taste, of softening the feelings of strangers, and above all of giving the civilised world a genial, a vivid, and permanent interest in the peace of England."

"It is remarkable," said the Rev. gentleman, in another part of his discourse, "that the mechanical arts seem capable of perpetual advance, while the works of intellectual elegance, elevation, and loveliness, arrive at a sudden limit, and stand there fixed for ages. The world, in three thousand years, has seen no superior to Homer. Demosthenes is still the prince of orators. The Parthenon is still the sublime of architecture. The sculpture of Greece is still the wonder, the envy, and the imitation of mankind. In modern art Raphael is still supreme—the head of that brilliant multitude whose rising flashed new light on Italy and Europe."

'Hesperus, that led
The starry host, rose brightest.'

These men were rare, because intellectual delight is not a necessity of man. They have had their race, and a noble one; they have shown us of what beauty, power, and delight the human mind is capable. They are like beacons on the promontory, cheering the mariner's night by their lonely splendour, and even throwing light on the perils of his course, yet which he never thinks of approaching. But the perpetual necessities of life demand more direct resources, more instant remedies, more continued and homelier helps on our rugged way. To provide man with better food, better dwellings, and better clothing is the palpable intention of that mighty Master whom we serve. 'The greatest happiness of the greatest number,' which in politics means only confusion, but in theology means Providence, is, beyond all question, the purpose of God. And for that purpose mechanical dexterity is destined to a constant, comprehensive, and accelerated progression. I have no doubt

whatever that mankind will yet see machinery relieving them from all the severe, dark, and disheartening labours which now degrade man himself into a machine; that posterity will at length hear no more of suffocation in mines, of the deleterious toil of the swamp, or of the perpetual fever that wastes man away in the foundry, in the poisoned air of the midnight factory, or in the unventilated hovels of cities; that machinery will have expunged from human recollection the thousand bitternesses of that unnatural and unhallowed toil which shrivels the cheek of beauty, and withers the arm of strength; which turns youth into decrepitude, makes life only a longer disease, and almost effaces the image of God from the mind of man."

THE LATE MR. SAMUEL BEAZLEY, ARCHITECT AND DRAMATIST.

THE death of Mr. Beazley, which occurred on the 12th of October, will be regretted by all who knew him. He was an extraordinary man, and has had an eventful life: the story of it fully written would form a singular volume. Mr. Beazley was born in Parliament-street, in 1786, and was in his 66th year when he died. On the day previously he had attended a meeting of the Committee of Renters at Drury-lane Theatre, apparently in the enjoyment of good health and spirits. After the meeting he went to his country residence, Tonbridge Castle, Kent, and on the following morning was seized with an apoplectic fit, from which he never recovered. He was interred in the burial-ground attached to the Old Church at Bermondsey. From his childhood his tastes were dramatic and artistic. When only twelve years old, we are told, at school at Acton, he wrote a farce, and put together the theatre in which it was acted. Since then he has written or arranged more than 100 dramatic pieces, two novels—"The Oxonians" and "The Rouge"—and a large number of detached articles. Amongst the former may be mentioned "Is he Jealous" (for the introduction of the late

Mr. Wrench), "Gretna Green," "The Boarding-House," "The Steward," "Old Customs," "Five Hours at Brighton" (the first of his pieces that was played), "The Lottery Ticket," "My Uncle," "Batchelors' Wives," "Hints to Husbands," "Fire and Water," and "The Bull's Head," also the English words for the operas of "Robert the Devil," "Queen of Cyprus," and "Sombambula." The latter opera, by the way, was written mostly by the bedside of Madame Malibran, in the mornings, to adapt the words to her pronunciation.

As an architect, also, Mr Beazley's practice has been great in connection with the stage, having built more theatres probably than any other modern practitioner. Amongst them are the St. James's Theatre, the Lyceum, the City of London, the Birmingham, and two in Dublin. He gave drawings also for one in the Brazils (similar to St. James's), and one in Belgium—thirteen or fourteen in all. The interior of Drury-lane Theatre, the external colonnade there, and the Strand front of the Adelphi Theatre are also by him. His other works were numerous, and include Studley Castle, the seat of Sir Francis Goodricke; a castle in Inverness, some additions to the University of Bonn, the works on the South-Eastern Railway, especially at London-bridge, the Warden's Hotel, and the Pilot House, Dover (of which we gave a view some time ago), the stations on the North Kent line, and the new town at Ashford.

In the early part of his life, the subject of this notice served as a volunteer in the Peninsula, where his adventures were of a very singular character. On one occasion, for example, he awoke and found himself in the dead-house at Lisbon, laid out for burial. To facilitate the escape of the Duchess d'Angoulême, he was sixty hours in the saddle, and crossed the Pyrenees at the head of her horses, with sometimes a bayonet at his breast. He had never visited Italy.

In conversation, Mr. Beazley was singularly sparkling and amusing; his wit was both refined and ready. We cannot attempt to justify this character by examples, for such matters are seldom chronicled, and when they are, usually lose much of the point which the moment and the manner give them. A friend once took him into his wine cellar, and pointed out, amongst its contents, some brandy as having been his poor father's. "Spirit of my sainted sire," breathed Beazley. A new staircase at Sir Henry Meux's (pronounced Mure), he would call *Gradus ad Parnassum*—stairs to the muses. And when, walking in a client's park, the lady of the domain expressed her wonder that the rooks were so seldom quiet, he hazarded the opinion that it was because they had *caws* for conversation.

His amiability endeared him to all who knew him, and his industry must have been great, notwithstanding a mode of life which led many to regard him simply as a man of pleasure.

ELECTION OF SURVEYOR, UNDER THE PUBLIC HEALTH ACT, AT KINGSTON-UPON-HULL.

It may be in the recollection of many of your readers that parties were invited by advertisement in your columns to send in their testimonials of qualification for the several officers to be appointed under the provisions of the Public Health Act for Hull; Saturday, the 18th inst. at noon, being the time limited for so doing, and the following Monday being the day appointed for the town council, as the local board of health, to enter upon the elections. The proceedings on that occasion, so far as the election of a surveyor was concerned, for which I was a candidate, were thus reported to me on the following day:—

"I attended at the meeting: there were fifty-five applicants, comprising some names of note, and in consequence of the weight of business before the meeting they came to the strange resolution of reading only the applicants' letters, not their credentials; which perhaps was not so absurd as it appeared, inasmuch as every man had no doubt predetermined for whom he should vote. The party elected

is the person who has recently surveyed for one of the extinct local boards."

Now I feel confident there is not one member of that body but would scout with indignation the supposition, that were he in want of a clerk he would be at the cost of advertising, and then, for mere form's sake, be at the trouble of glancing over the various applications such advertisement would bring, whilst he had all the while determined to take his neighbour's son: I say, not a single member of that board would, in his individual character, commit such an act of folly by himself, or of duplicity by others; and yet, from some unaccountable cause, the same men, acting collectively, will commit the most unwarrantable and unjustifiable acts. Why the Hull Board of Health should have advertised for a surveyor, with a predetermination in favour of one party, is most surprising (and more especially through such a medium as *THE BUILDER*, which, from its circulation amongst professional and scientific men, was sure to bring a host of applicants), for they cannot be ignorant that the law requires no such means to be employed: it simply states that certain officers must be elected, without in any way prescribing how they shall be found. The board, therefore, if they wished to elect a townsman, fitting or not fitting, had a perfect right to do so, without making any appeal to the public; but they had not a right, by advertisement, to put fifty-five professional gentlemen to the trouble of sending their testimonials to be treated with the contempt they met with; and it is to be hoped that no fifty-five engineers will be duped a second time by any such allurements, but will first take the precaution to be assured that open and honourable competition is intended.

In a communication to the writer, dated 19th October, 1848, the General Board of Health thus express themselves:—"The Board have been made deeply sensible, from the very fact of their existence, and by the extensive failures, and the worse than waste of public money in works of town drainage that have been planned and carried out by engineers and architects of even very high professional standing and general ability, that the qualifications requisite for laying out new drainage areas, for conducting works of house and land drainage, and water-supply, and the application of refuse as manure, are very special, and demand a particular kind of scientific knowledge and practical ability." Whether the existing works at Hull bear testimony to having been planned and executed with that ability for the purpose which at the present day is deemed essential to success, I know not: if they do, then by all means let credit be given where due; and I, for one, would be the last to seek to supplant an efficient public officer. No! Let authorities in such cases act openly and honestly, and elect, at once, to the new offices under the Act, their tried and faithful servants, in the full assurance that in so doing they are acting with strict regard to rectitude both towards individuals and the community over whose affairs they preside; and let them no longer impose upon the public, and mock a host of expectant applicants, by unnecessary and uncalled-for advertisements.

A CANDIDATE.

ROARING CHIMNEYS.

CAN you give me any advice in the following case?

My health is becoming injured from disturbed rest at night, in consequence of the roaring of my bed-room chimney, when there is even the least wind: in a gale of wind it is like the loudest thunder. The fire draws remarkably well, and never smokes in any change of wind. My house is situated about a quarter of a mile from a river to the N.E., and the ground rises very gradually from it past the house, and for a mile beyond to the S.W. Either from the situation of the house or the build of the chimneys, every one on the first floor roars.

A. S.

* * Many cases of this kind have come under our notice, in all of which we have invariably found the chimney-pots to have been

formed of metal, or some thin material the vibration of which caused by the current of air passing on it, produced the noise complained of. The locomotive steam whistle is a striking illustration of this effect. If the chimney-pots of our correspondent are of thin material, we should recommend that they be either carried up to the top in brickwork, or thick cement pots substituted.

ANCIENT ADVICE TO PORTRAIT PAINTERS.

OBSERVING, in your paper of the 11th ult., an article on "Sculpture Competition," and again, on the 24th, "Advice to ye Young Student in Architecture," I beg to hand you an extract from an old work, which, I presume, is the same referred to by your correspondent of the 11th. It speaks of the sister art, painting, and is headed—

"SERIES, No. 3, OR

Admonition to ye novices in ye cunning art of painting of ye portraiture, albeit, 'tis a gostly but over English fashion, to have ye family of ye old and ye young hung up around thy hall, like as, in ye good old tymes, ye goode old kynges were wont to hang up ye people.

Imprimis.—Be ye sitter ye lady or ye gentleman of goodyly wealth, but of low degree, place ye primo, divers jewels of no common sort in great profusion, with ye sightly tyme piece for ye lady, glittering with unheard of precious stones.—Ye thus show much mighty wealth and gain a speedy reputation for thy pains.—Of ye face, mind ye but little that belongs to ye customer, and thereunto let thy thoughts run only to ye Apollo of Belvedere and ye Venus of Medeci, as ye case may be.

Secondo.—Let ye perspective run as ye customer may desire, for be it, they have a perspective of their own, and like as I admonished ye architecturas (in my secundo discourse) for ye faithful regard of ye brilliant colours, so do I say to ye cunning painters, let ye portraits glow like unto ye setting sun, and ye dresses like unto ye many colored rainbow.

Terzo.—Make well apparent in ye background ye costly columns of ye mansion, with ye park and pretty deer skipping in ye sunlight. Suit ye picture with a mighty costly and overwrought frame of gilded wood. Albeit thy work be careful in ye painstaking, thy border will be ye most admired.

Discourse ye 4th may treat of ye taste of ye travelling gentlemen who have seen ye goodyly sights of ye ancient city of Rome, and are made thereby ready handed and cunning judgers of all ye arts."

E. G. P.

RHYMING NOTES OF AN ARCHÆOLOGICAL MEETING.

THE Architectural and Archæological Society of Liverpool made their annual excursion this year to Shrewsbury: last year they visited Chester. The following lines were written, and are supposed to have been recited, on the occasion of this year's excursion:—

Again we meet! a year has fled
Since we have met before;
And Time has o'er our lifeway spread
His woof of peace and sorrow:
This passing hour itself will bear
Trace of our purpose high;
And kindly thought and greeting share
With hoar antiquity.

Last year we met at Deon fair,
The legioned city, West Chester,—
Where the dark Dee rolls by:
The city with the perfect wall,
Camp of the Roman and the Gaul,
And home of chivalry.

Our orisons at matins made
Within St. Werburgh's* holy shade—
Where erst our fathers' fathers prayed;
The anthem, wrought with chastened feeling,
"Through full-voiced choir and organ pealing,"
Did round the shell ring arches roll,
Dissolved the bonds of self-control,
And stirred the inner depths of soul.
There studied we the relics fair,
Which time from past to present bare,
To teach us that our sires were men.

* St. Werburgh's Abbey, now the Cathedral of Chester, in which the members of the two societies met at morning prayers.

There studious thought and pious feeling,
O'er callous hearts blest influence stealing,
Contrast the careless now with then;
Show how great minds, in faith, begun
Great works, bequeathed from sire to son,
The earnest deeds of earnest men;
Show how, as age to age succeeded,
Those works towards excellence proceeded;
Though oft unfinished, striving ever
To reach a grace and worth, that never
Smiled on earth before;
And ne'er can smile on earth until
Religion purify the will,
As in the days of yore.

Within that city's ancient bound
We, from co-workers, welcome found;
A younger sister* there had grown
To strength and usefulness, and shown
Way for the elder sister's route;
Repaying thus, with service rendered,
For counsel and assistance tendered,
When first appeared the thriving school.
All active friends to name at length
Would task too much the poet's strength;
But special mention must be made
Of Ayrtoun and of Canon Slade;
Of him, with kindly, thoughtful will,
The Vicar of St. Mary's Hill;
And him, the Rector of St. John,
Whose rich and welcome mid-day treat,
Showed that the knights of days long gone,
In him had found a chaplain meet!
But days of joy too brief last,
The winged moments swiftly past:
The winged birds will stay their flight,
But time stayed not and brought on night:
Our hasty partings soon were made,
Solemn adieus were lightly said;
And, trusting we should meet again,
We straight rejoined the rolling train.

Again we meet! the flying year
Revolves its round, and we are here!
Within the elder† city's bound
A temporary rest we've found.
Again we trace the studious mind,
And in the antique relics find
Traces again of earnest thought,
Which earnest deeds again have wrought.
And to the heart of him who's seeking,
The voices of the dead are speaking,
In accents solemn and inspiring,
Urging devotion most untiring,
To reach the goal of excellence;
That men of feeble deeds may cast
That sacred light, which, in the past,
Redeemed their works from all pretence,
And gave a charm unknown to sin.

Again we meet! a feast we've found,
And healths and jokes have circled round,
From hearts with generous feelings stored;
And songs and speeches have expressed
The thoughts which rise in every breast;
And all are jocund, all are gay,
As thus we keep our holiday;
Save he, who to the past belongs,
Who cracks no jokes, who sings no songs,
A silent guest at social board!
The shade of him, ‡ no longer here,
Withdrawn from earth within the year:
Not that our joy he'd disallow,
Nor honest mirth with terror cower;
But chaste, with a solemn fear,
The blithest hours permitted here;
That light with shade may mingled be,
And tempered into harmony
With every pleasure of human joy:
And thus our pleasures strength attain,
As golden tissues toughness gain,
By mixture with a fit alloy.

Our meeting's o'er! yet not in vain
May we still hope to meet again;
Either within some ancient bound,
Or faithful, with the faithful found!

SOMERSETSHIRE ARCHAEOLOGICAL SOCIETY.—The first *conversazione* of this society was held on the 15th inst., when Mr. C. E. Giles read a treatise on domestic architecture. Some discussion took place relative to the adoption of colour for exterior decoration of domestic buildings; Mr. Batten urging that Italy, or any other climate more sunny than England, was far more advantageous for the display of colour than the humid climate of this country: Mr. Giles, on the opposite ground, contending that, in this cold and dull climate, colour would be highly beneficial to our buildings, as giving us warmth and tone when but little may exist in the atmosphere. A paper was also read by Mr. Giles on the inscriptions of church bells.

* The Historic Society of Chester.
† Shrewsbury.—"And British siders gave the town a name."—*Leland*.
‡ The late treasurer of the Liverpool society.

Books.

The Rambler in Worcestershire; or, Stray Notes on Churches and Congregations. By JOHN NOAKE, Author of "Worcester in Olden Times," &c. Longman and Co., London; and the Author, Worcester, 1851.

THIS may be called vol. ii. of the author's "Stray Notes," as he published a similar volume about three years since; but each is complete in itself, and separately purchasable: in fact, it appears that the previous volume went rapidly off, and is now not to be had. This due appreciation of the author's labours seems to have induced him not only to go on, with spirit, but to expend a good deal of additional labour on his present production, which is full of pleasant archaeological gossip, with a temperate spice of pepper and salt on the oddities and other notabilities connected with the various churches, parishes, towns, and villages, of which it treats. The description of ecclesiastical buildings, monuments, &c. is interesting, as well as some of it curious and amusing. There is occasionally a little merited and wholesome sarcasm, such as the following about the old church of Abberley:—

"The original northern entrance, an early Norman doorway, is still remaining, though partly blocked up, and converted into a window; and this side of the nave is propped up, externally, by buttresses erected about a century and a half ago. The old Norman masons, however, might have laughed to scorn the anxiety of these modern builders, seeing that the buttresses are now crumbling to dust, while the venerable wall which they were intended to support stands firm and unquivering after the storms of seven centuries."

The heyday of high pews has gone by; but we would nevertheless advise our lady readers—for we have not a few, even besides those really learned archaeologists to whom we are not addressing ourselves—to consider and make as widely known as possible amongst "the angelic train" the little bit of gossip, on the origin of high pews, which we quote for their benefit, lest some new Bishop Burnet arise and "restore" them:—

"The origin of high pews is said to have been in consequence of Bishop Burnet having complained that the ladies of Princess Anne's establishment did not look at him while preaching his *thundering long sermons*, as Queen Anne called them, but were looking at other objects. He, therefore, after much remonstrance on this impropriety, prevailed on Queen Anne to order all the pews in St. James's chapel to be raised so high that the *fair delinquents could see nothing but himself* when he was in the pulpit! The princess laughed at the complaint; but she complied when she was told that the interests of the church were in danger. The whim of Bishop Burnet was imitated in many places which had not been pewed before."

The Steam Engine, Steam Navigation, Roads and Railways, Explained and Illustrated. By DIONYSIUS LARDNER, D.C.L., formerly Professor of Natural Philosophy and Astronomy in University College, London. Eighth edition, revised and improved, with numerous Illustrations. Taylor, Walton, and Maberly, Paternoster-row, &c. 1851.

In the successive editions through which this standard work has passed, it has undergone such modifications as the progressive improvement and extension of steam power rendered necessary. In its present form it is intended to convey to the general reader that degree of information respecting steam power and its principal applications, which well-informed persons desire to possess. It is written in language divested of mathematical and mechanical technicalities, so that the details of the machinery, and the physical principles on which they depend, will be generally intelligible. The second and third parts are for the most part new. In the third chapter of the second part will be found a review of the progress of Steam Navigation, from its first establishment in 1812 to the present day.

In this chapter Dr. Lardner enters into a detailed refutation of the oft-repeated assertion that he had pronounced the Atlantic steam voyage an impossibility. From these details, which include quotations from the *Times*, the *Edinburgh Review*, &c., it appears that what the Doctor really maintained was, that it would be a commercial impossibility, without government aid, an assertion which, he points out, has been completely justified by the upshot, the first eight steamers laid on having proved disastrous losses to their owners; the Cunard line which succeeded them being aided by a Government subsidy of no less than 145,000*l.* sterling per annum; and the American being also aided by the United States Government.

Miscellaneous.

MESSRS. GREEN'S POTTERY IN THE GREAT EXHIBITION.—Messrs. Stephen Green and Co. of Lambeth, have asked us, as we have given the names of other manufacturers of the same kind of articles as their own to whom medals were awarded (class xxvii.), to mention that a medal was adjudged to them also, but that it came through another jury (xxv.). This we willingly do, because we happen to know that jury xxvii. unanimously voted Messrs. Green a medal for their excellent manufacture, which appeared in that class, and that it was withdrawn simply because a medal had been voted in another class. Many persons have received medals for matters intimately connected with architecture, engineering, and building, whose names do not appear in the classes we published. It would be invidious to select, and the whole would occupy too much of our space. In the *London Gazette* of October 17, will be found a correct list of all the medal-holders, names of the jurors, and copies of the various instructions which were issued to them. The reports of the various jurors are now, to a great extent, in type.

THE ICE DESTROYER.—The ice was closing rapidly round us from every direction: immediate action was imperatively necessary; the future success of the expedition depended in a great measure on our energies. To saw was useless—a mere waste of time: we had, therefore, no alternative left but to force our way through "necks of heavy ice," by giving them the "stem;" consequently steam was "got up," and at it we went "full speed." Stem on she goes: the shock is terrific; every plank and timber trembles: the *stubborn element* bends and cracks, but does not break. "Turn astern"—try it again. Look out! She comes—with additional force—stand clear—hurrah! The ice breaks, a piece 40 feet square is adrift—hook on the grapple—take a turn "in-board," "turn astern." Astern she goes, clearing her own way. This manœuvre was repeated over and over again, until the noble craft seemed no longer a piece of mechanism, but a "thing of life;"—some ferocious animal bounding at and crushing an opposing barrier. Hoary-headed experience—those who had grown grey in Arctic service—stood gaping with astonishment at the "ice-destroyer," as she dashed through a floe 6 feet thick, as if it were a sheet of glass. Now she makes a desperate and final effort: the barrier breaks—she is through—she is free! and the silent shore of Melville Bay echoes the astounding cheers of a hundred seamen as she darts with lightning speed towards her consort the "old Assistance."—*Journal of a Seaman—in Morning Herald.*

NEW HYDRO-PNEUMATIC WHEEL.—A Canada correspondent of the *Mining Journal* describes a new description of water-wheel, worked by the weight of water and atmospheric pressure. The wheel is placed in an air-tight box, and the floats or boxes acted upon by the fall of water in the usual way, but at each revolution the water is discharged in a stream down an air tube, causing a vacuum, and the pressure of the air at 15 lbs. on the square inch propels the wheel, in addition to the falling stream. The saving is said to be great, but from this crude description we must confess we cannot clearly understand the principle.

THE IRON TRADE.—The apprehension of a complete paralysis of the iron work trade in Newport, in consequence of the stoppage of the Monmouth and Glamorgan Bank, is dreaded, and the mischief is said to be already felt. The Cwn Brane iron works had drawn 250,000L out of the bank; the Blaenarfon and other works, 150,000L. The liabilities are said to be about three-quarters of a million; the cash in hand not two thousand! The proprietary had branches at Abergavenny, Tredegar, Pontypool, Monmouth, and Chepstow. We hear, from good authority, says the *Cambrian*, that Mr. Stephenson, as chief engineer of the Alexandria and Cairo Railway, has just concluded two contracts with our ironmasters—one with Sir J. Guest, Bart., for 5,000 tons of rail, at 57. per ton; and another with Alderman Thompson, for the same amount of rails, at 51. 2s. 6d. per ton. Other orders to a large amount are rumoured to have been received by the other principal ironmasters of the district. The Cleveland iron district, according to *Herapath*, covers an area of several thousand acres, lying between Guisborough and Stokesley, in the county of York. The stone contains from 30 to 40 per cent. of iron, and the seam is from 12 to 20 feet thick, lying from 1 to 20 feet below the surface, and is estimated to produce 40,000 tons per acre. The supply will, therefore, be unlimited, and can be raised for a long time at a cost not exceeding 6d. per ton. 50,000 tons have been already smelted in Northumberland, producing 33 per cent., and a contract was recently made by the two proprietors to supply an iron work with 200,000 tons per annum for seven years at 8s. 3d. per ton, delivered at Middlesbrough, which on a low estimate will yield a profit of 200,000L. It is contemplated to erect ironworks on the property already secured in connection with the rail, and to concentrate the latest improvements, thus to produce iron in quantity at about 8s. per ton below present rate.

ELECTRO-TELEGRAPHIC PROGRESS.—A telegraphic congress lately assembled at Vienna to draw up measures for facilitating telegraphic communications between different countries. It proposes to establish a union between different states; to have translators employed, so as to transmit all despatches without delay; to have a uniform tariff; to pay their receipts into a common fund, and to divide them afterwards between the states, in proportion to the length of their telegraphic lines, &c. The new arrangements are, it is said, to come into operation on 1st January next; and, if France shall accede to them, it will be possible to send a despatch in a very few minutes from Trieste to Calais or Ostend. Already, says the *Athenæum*, we have chronicled the completion of the line from Ostend to Trieste, a line of more than 2,000 miles, crossing rivers, wastes, lakes, and Alps in its way, and, we believe, only twice interrupted, by the Rhine, at Cologne, and by the Elbe, at Dresden, in the whole distance. The foreign journals now inform us that the system is spreading rapidly in the east of Europe. By the close of this year there will be three great lines of telegraph in operation in the interior of Hungary:—one from Pesth to Szolnok, along the new railway; one from Czeged to Szegedin; the third from Czeged to Arad. These wires will connect together more than twenty towns of more or less manufacturing importance. The Turkish Government, we learn, has determined to introduce the telegraph system into that country. The electric wire becomes every day a more absolute social necessity in Europe.

ADORNMENT OF ROADS.—**POPULARS.**—The *Staats Anzeiger* contains a curious edict from the Department of Public Works, in Prussia, by virtue of which all the *allées* of poplars along the public roads are gradually to be removed, and replaced by trees of another kind. The reason alleged is the damage the poplars do to the neighbouring fields. Where cultivation is high and the population numerous, fruit trees are to be planted along the roads; but in ordinary cases oak is the wood selected; next, the chestnut, the plane, and the linden. In damp and moory places the alder and the ash are recommended. The conversion is to

be made in two periods, partly to avoid throwing on the market too great a quantity of poplar wood at once, and depressing the price, already very moderate, that species being in no great repute, and partly from an artistic regard to the appearance of the highways, or the *Ästhetische Gesichtspunkt der change*. This part of the Prussian decree, says the *Times* further, might be recommended to the special attention of the Commissioners of Woods and Forests. If many complaints are made that the change will spoil the prospect (for even an alley of poplars has its value on a level) the improvement is not to be pressed. The decree is accompanied by a diagram, showing the present condition of the avenues, and how they will look when changed.

BRAMLEY FELL STONE.—We have received a letter from a gentleman who says he is the proprietor of the original Bramley Fell quarries, complaining of our remark that of late years the original Bramley Fell quarry has been nearly exhausted, and asserting that so far from being exhausted it is "capable of supplying twenty thousand feet per month." The correctness of our remark is confirmed by the report of the Building Stone Commissioners in 1839, where, under the head of Bramley Fell (old quarry), they say, "this quarry is nearly exhausted: the stone is now difficult and expensive to obtain, in consequence of the great thickness of head." That the author of the letter, which is dated from Bramley Fall, near Leeds, may be quarrying a stone called Bramley Fall stone is very possible; but that this is the real Bramley Fell so constantly specified by the late Mr. Rennie and Mr. Telford, and so well known for its extraordinary strength and durability, we have yet to learn.

CHEAP HYDROGENOUS LIGHT.—We some time ago noticed a French invention whereby an abundance of hydrogen gas, nearly pure, was said to be got by decomposing steam in retorts charged with wood charcoal intensely heated, and made fit for illumination, after the absorption of its carbonic acid in lime, by merely passing it through platinum wire gauze over the ordinary argand burner, the platinum being scarcely, if at all, oxidizable, and therefore said to be subject to little or no waste though used for some years. It is said that the patent for this invention is in successful operation in Paris, and that gas is thus produced at 1-16th the average cost of coal gas. Any ordinary gas work, it is said, may be easily made to produce it, the platinum cages of course being applied to every burner. The purity and the heat thus attainable would render such an invention, if otherwise of practical importance, useful for other purposes besides mere illumination. It is said to be in use by silverplate workers at Paris.

LIGHTHOUSES.—In order to give a telegraphic character to our various lighthouses, Mr. George Wells, of the Admiralty, proposes to cut four or more circular apertures in all the present structures, just below the lantern, and fit the openings with glazed sashes of ground plate glass, painted so as to leave the initial of the particular lighthouse bold and distinct. The length of the letter being three times the size of the light of the lantern, it is considered that it would be more clearly visible, and leave no doubt as to what the lighthouse is, and where situated. New lighthouses, it is thought, should not be carried to the present altitude, as the nearer the light is level to the eye the less probability would exist as to any mistake in the distance of it.

PLATE GLASS MARBLES.—The medal awarded at the International Exhibition to Messrs. R. W. Swinburne and Co., of South Shields, according to a local paper, is incorrectly stated as for flint glass, whereas the article exhibited was opaque plate glass in imitation of marbles. A prize medal only was granted, although it was considered by the maker to be an original invention and manufacture. The reason adduced for not giving a council medal is that a similar invention has been realised in the Royal Plate Glass Works carried on by the Russian Government at St. Petersburg. The article there manufactured, however, is said to have merely resembled a plain slate.

THE READING SURVEY.—We have received several letters from correspondents complaining, as did one which we printed last week, of injustice done them by the Local Board of Health; and it would appear from these, as well as from a printed communication to the ratepayers of a like description signed "Geo. Easton, jun.," that this board has at least acted unwisely, if not unfairly, towards the competitors, and unjustly towards the ratepayers.

GLASGOW ARCHITECTURAL ASSOCIATION.—We mentioned last week the foundation of this society. We are informed that it has the countenance of the leading architects in Glasgow, of whom the following have spontaneously offered to present premiums to the successful exhibitors in the competitions of the session. For a design for a Presbyterian Church, *not* in the Gothic style: premium by Mr. Charles Wilson. For the best perspective outline hand drawing of Saint George's Church, Buchanan-street: premium by Mr. J. T. Rothead. And for a design for a villa, cost not to exceed 1,000L: premium, a gold medal, by Mr. James Smith.

LIVERPOOL ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—The second meeting of the present session of this society was held on Wednesday in last week, at the Royal Institution, the president, Mr. J. A. Picton, F.S.A., in the chair. Mr. Samuel Huggins read a paper on "Fine Art Criticism." A discussion took place on the various points embraced by the paper.

ANOTHER INTERNATIONAL EXHIBITION.—It is said that the Austrian Government has determined to have a general Industrial Exhibition of the works of all nations at Vienna in 1853.

A CAIRO KEY.—M. de Nerval, a recent French traveller in Egypt, thus describes the key of a house which he took, during his residence in Cairo. It was a piece of wood "like a baker's tally, at one end of which five or six nails were driven in as if at random; but there was no random in the matter. This strange key is introduced into a hole in the door: the nails correspond with little holes, invisible from without, pass through them, and raise a wooden bolt."

COTTINGHAM'S MUSEUM.—The sale will begin on Monday. We repeat the expression of our hope that some of the specimens will be obtained for the contemplated schools for workmen. They might be bought by individuals, and lent to the committee when organized.

TENDERS

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TO CORRESPONDENTS.

"A. P.," "T. H. L.," "G. M. H.," "A Band of Brothers" (stick to one another and defy the world), "X." (we do not know any circulating architectural library), "H. T. B.," "H. and R." (under our mark), "F." (ditto), "F. G." (ditto), "C. K.," "C. C.," "J. H.," "J. H. C.," "B. W.," "J. D. P.," "J. L.," "E. W." (we cannot comply), "G. and Co.," "M. P.," "L. L.," "W. D.," "J. P. St. A.," "J. N. W.," "G. A.," "E. R.," "A Surveyor," "A Grain for Reading," "Mr. C." (we shall be glad to hear), "Pollution Problem" (next week), "J. K.," "Hungerford-bridge" (the centre span is 678 feet, the total length 1,342 feet. An account will be found in our Vol. III. pp. 189, 209), "J. H. P.," "E. W. T.," "One who Walks," "H. G.," "J. P. S.," "Felix," "C. K.," "G. M." (we have no information beyond what has appeared in our columns).

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor." All other communications should be addressed to the Editors, and not to the Publisher.

"Books and Addresses."—We have no time to point out books or find addresses.

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No. CCCCLVII.

SATURDAY, NOVEMBER 8, 1851.



OME of our readers express an anxious desire to know what has really been done by the Board of Health towards the prevention of intramural interments, and the provision of proper places of burial for the metropolis. A reference to the Minutes of the Board will enable us in some degree to answer the inquiry. The answer will not be satisfactory, and the Board, we have no doubt, feel this as acutely as any public complainant can.

Immediately after the Royal Assent had been given to the Metropolitan Interment Act, we find the Board (August, 1850) in treaty for the purchase of the Abbey Wood Estate, near Erith, and considering the best mode of forming cemeteries, plans for reception houses, and designs for appropriate art-decorations. They very soon, too, came to the determination to buy up all the existing cemeteries, and valuations were made and negotiations carried on with this end in view. The idea that their object in purchasing was to make use of the cemeteries as general burial-grounds for the metropolis has excited, we may here stop to mention, some alarms. One correspondent of a morning contemporary, writing with reference to the West London Cemetery, says,—

“The conversion of the Brompton Cemetery, which lies in the centre of Kensington, Brompton, Chelsea, and Parsons-green—one of the most crowded suburbs of London, and in a locality which is being rapidly built upon, will justly entitle the Board of Health to be called the Board of Death; and it is to be hoped that the inhabitants of those four suburbs will at once adopt measures with the Lords of the Treasury, to avert the abomination of making Brompton Cemetery a common grave-pit for a large portion of the annual mortality of the metropolis. The recent Extramural Burial Act was passed for the express purpose of getting rid of interring the dead either in or near London; and with the convenience of cheap and rapid conveyance, a distant Metropolitan Cemetery, or rather Necropolis, upon a grand and comprehensive scale, is a thing equally called for by health, by economy, and by decency.

Public attention being no longer engrossed by the Great Exhibition of the Industry of all Nations, so important a matter as a befitting Last Home for the reception of the dead, of all ranks, classes, and denominations of the two and a half million inhabitants of this vast metropolis, ought to engage the best regards of Her Majesty's responsible advisers; and certainly the Lords of the Treasury will deserve the severest public censure if they sanction so intolerable a nuisance as Brompton Cemetery must become, if some 15,000, 20,000, or 25,000 corpses are deposited yearly within its walls, enclosing as it does only 38 acres of ground.”

It will be seen, however, from the following extract from the Minutes, that this was not by any means the intention of the Board. They say that,—

“Considering the general nature of the subsoil and sites of these cemeteries, the extent to which they are at present occupied, the unsuitable nature of the edifices erected in them for the celebration of religious rites, the inferior character of the surface and monumental decoration, the great expense which would be incurred in adapting them to the purposes of a proper system of sepulture, the existing cemeteries are not calculated to realize the intentions of the Legislature and of the public with

respect to the necessity of providing suitable places for metropolitan interment; the Board therefore considered that these cemeteries can only be recommended for purchase in order to be temporarily used during the interval which must elapse before suitable provision can be made by the Board for carrying fully out the intentions of the Metropolitan Interment Act, and that then they should be permanently closed.”

Elsewhere they say,—

“Of the eight existing cemeteries, five consist almost entirely of a stiff retentive clay soil, quite unsuitable for the purposes of interment. This soil could only be rendered fit for interment at a cost between two and three times as great as would be requisite for the purchase of new sites where the soil is unobjectionable. Of the remaining three cemeteries, the soil of one is so porous and dry as necessarily to impede decay; of another, the soil could not be used without an expensive process of drainage, and out of the whole eight there is only one the soil of which can be considered in its present state as fit for interment.

In all the cemeteries the chapel accommodation is wholly inadequate for the suitable performance of religious rites, while six out of the eight must be considered as urban rather than suburban in position, inasmuch as they are either in immediate contiguity to densely peopled neighbourhoods, or the population close to their walls is increasing so rapidly that in a few years the vicinity will be too populous to admit of the continuance of interments in them with safety to the public health. The two remaining cemeteries, although at a greater distance from London, have, nevertheless, an increasing population close to them.”

For these reasons the Board arrived at the conclusion that none of the present cemeteries could ever be used permanently as places of burial, and they came to the opinion that the whole of the cemeteries should be purchased at once.*

The permission of the Lords of the Treasury being sought to open a treaty for the purchase of all these cemeteries, a long correspondence ensued, in the progress of which the Lords of the Treasury advised that negotiations should be opened with one or two companies only. To this course the Board objected, maintaining, amongst other grounds, that if they were to compete with the cemetery companies, as the latter are free from all sanitary regulations, the Board would compete at a disadvantage, and that some of the worst existing evils would be maintained. “Moreover, if the Board were at once to adopt their lordships' suggestion, and to purchase ground with a view to carry out the requirements of the Act, independently of the cemeteries still remaining open, the Board could not immediately take steps for the practice of interment in them: a considerable time would necessarily elapse in negotiating for the purchase of the ground, and in preparing it when obtained in a becoming manner for

* These were the reasons which influenced this determination.

“1. In order that each cemetery, according to its situation and condition, may be made immediately available for the gradual introduction of the change in the practice of interment, the temporary use of the present cemeteries, pending the preparation of new and permanent ones, being the best preparation for the general use of others which it is hoped will be better adapted for the purpose of sepulture.”

“2. In order that the convenience of the populations in the immediate neighbourhood of the several cemeteries may be consulted, so that an opportunity may be afforded for the freest selection of any one of them. It will, it is apprehended, be found extremely difficult to deal with any one separately from the whole, because people will make their own choice of the place of burial, with which choice it will be as impracticable as undesirable to interfere. Many of the residents in the east will desire interment in the west. But if a western cemetery alone were opened, or if any one district alone were closed, without preparation for interment in other districts, it may be expected that the undertakers for the district within which the cemetery was closed would make effort to divert the burials from the new cemetery, and crowd them into the churchyards of the districts remaining unclosed. In this manner the existing evils of overcrowding in the other districts would be increased.”

national sepulture. In the meantime the necessities of the public health may require the intramural burial grounds to be closed: the burials which now take place in the metropolitan graveyards would then necessarily take place in the cemeteries, and while the additional profits which would thus accrue to the cemeteries would be urged as an additional claim for compensation, the public would be placed entirely at the mercy of the companies, both as to their charges and their mode of burial, while many persons who feel a strong objection to burial in cemeteries conducted by trading companies, would by this mode of proceeding be compelled to have recourse to them.”

They thought that the saving which might be effected in burials by carrying out the prescribed scheme of sepulture, as a whole, would be adequate to meet the required expenditure, and to allow of a considerable reduction of existing charges. Ultimately the Treasury gave a general authority to proceed with the purchase of the cemeteries, under the powers of the Metropolitan Interment Act, recommending that the Board should endeavour, in the first instance, to acquire one or two of the cemeteries which might be most readily purchased. Arrangements were accordingly made for effecting, by arbitration, the purchase of the West London Cemetery, at Brompton, and the Nunhead Cemetery. To this we will return, but confine ourselves for a few moments to the Minutes.

The extent of the Abbey Wood Estate is 433 acres, and the price asked was 40,000*l.*, or about 93*l.* per acre. This the Board were prepared to give, and sought the sanction of the Treasury, stating their belief that they would have no difficulty in borrowing the requisite funds, at 4½ per cent., from the Guardian Assurance Office. The Treasury assented to the purchase and the loan, but the negotiation for the latter was brought to an abrupt termination, owing to the prevalence of a legal objection on the part of the law advisers of the company to the securities provided for lenders under the Metropolitan Interment Act. The objection was this:—It was said, that whilst the Public Health Act, sect. 4, and the Metropolitan Interment Act, sect. 4, provide that the corporate character of the Board of Health shall be continued only “for five years next after the passing of the Public Health Act, 1848, and thenceforth until the end of the then next session of Parliament,” no provision has been made as to the mode in which the engagements and liabilities of the Board are to be met after the expiration of that period.

There was a second objection, to this effect:—“That, as the law now stands, there is nothing to prevent the formation of new cemetery companies beyond the metropolitan district to compete with the Board, and that as such companies would be free from the heavy charges imposed on the Board for compensations, &c., the Board would be unable to support the competition. This objection goes to the root of all the calculations upon which the Board rest their estimates of a revenue, and can be removed by nothing else but relieving the Board from the possibility of competition.”

An endeavour to obtain the money from the Exchange Assurance Company failed on the same grounds: the Treasury declined to make advances; and directed the Board to put an

end to the negotiation for the Abbey Wood Estate, and to report to the Treasury whether or not it was possible to terminate also the proceedings for the acquisition of the Nunhead and Brompton Cemeteries. The Board of Health replied, that they had directed their solicitor, Mr. Ellis, to take the necessary measures to end the negotiation for the purchase of the land at Erith, and to report the state of the proceedings as to the two cemeteries; and here the accessible Minutes end, leaving the burial question, which so much concerns the public health, in a distressingly unsatisfactory condition.

We will make but one more reference to the Minutes, and then pass on to the result of the arbitrations. Under the date, Sept. 30, we find the following entry:—

“Read, a letter from Dr. Emil Braun, offering to establish an office in London for the deposit and preparation of monumental decorations adapted to the use of the cemeteries of the Board, in consideration of the Board agreeing to recognize such an office as the only one specially charged by them with the business of providing the monumental embellishments in question.

Ordered, that the assistant secretary send a letter to Dr. Braun, stating that they are disposed to regard Dr. Braun's suggestions with favour, but that they are not sufficiently advanced in their preliminary arrangements to be able to give a positive answer upon so important a subject, especially in the absence of some of the members of the Board; that, according to their present impression, some such arrangement as that proposed by Dr. Braun is not only feasible but highly desirable, and that they will not fail to keep in view Dr. Braun's suggestions until the proper time shall come for examining them more closely.”

We quote this that we may express a hope that the Board, when they again have to consider these matters, will not allow themselves to be led into any such arrangement.

Now, as to the purchase of the Brompton and Nunhead Cemeteries. The proceedings have been pending some time chiefly in sittings before the arbitrators, Mr. Rawlinson, the engineer in behalf of the General Board of Health; and Mr. Alderman Farebrother, on behalf of the Nunhead Cemetery Company; and Mr. Hardwick, the architect, on behalf of the company owning the Brompton Cemetery. Mr. B. Peacock, Q.C., acted as umpire in both cases. The case in behalf of the General Board of Health was conducted by Sir F. Thesiger, that in behalf of the Nunhead Cemetery Company by Mr. Crowder, and that in behalf of the Brompton Company by Sir Fitzroy Kelly.

Mr. J. W. Higgins and Mr. G. Godwin were engaged as surveyors by the Board of Health in addition to their own officers, Mr. H. Austin, Mr. Cresy, and others. Sir Joseph Paxton, Dr. Sutherland, Mr. Holland, and other medical men were also in attendance on the same side, but Sir Frederick Thesiger called no witnesses, but rested his case on the evidence elicited in the course of the cross-examination, that the companies, though established many years, paid even now only small dividends; and maintained that the real test of the value of the works proposed to be taken, and the compensation to be given, was not what they had cost, but what they would sell for in the market; in short, the sale price of the shares up to the time when it was proposed to discontinue the practice of intramural interment, and before the Act was passed.

Mr. Bunning, Mr. Lee, Mr. Shaw, Mr. Hammond, and others were called on the part of the companies. The sum claimed by the Nunhead Cemetery Company was 91,000*l.*, and by the Brompton Company about 135,000*l.*, as nearly as we could collect from the evidence. This sum in the latter case was made up of the total amounts expended (stated at 93,177*l.*). Interest at 4 per cent. on this from the time of expenditure (deducting moneys received during the period), 10 per cent. on the 93,177*l.* for forced sale and a certain sum for expenses incurred in “establishing the business.”

The umpire has awarded as compensation for the Brompton Cemetery, 74,921*l.* 14*s.*; for the Nunhead Cemetery, 42,153*l.* 13*s.* The award would seem to be made on the principle that it is not the amount which may have been expended, whether wastefully or otherwise, which is to form a basis for compensation, but the actual worth of the property, as shown by the dividend and the prices of shares at the time.

A respectable provincial paper (the *Bridge-water Times*) speaks of this award as “a gross iniquitous job which the Government is perpetrating,” “an immoral transaction,” “a gross outrage of common honesty,” and “a gross tyranny upon the rights and property of her Majesty's subjects.” This, however, it will be seen, is altogether erroneous and foolish. The Government have nothing whatever to do with it. The award is the act of the arbitrator, and the arbitrator was appointed by the two parties jointly, and made by them a judge in equity. Whether he is right or wrong in his decision is another matter, and one into which we do not intend here to enter. Our object in the present article has been to make the public acquainted, in brief, with the proceedings of the Board, and to let them know the small progress made up to this time in the much-called-for reform of our deadly grave-yard system, to the evils of which unfortunately men of all classes seem wilfully to shut their eyes, excepting when some unusual disease is afflicting the land. The thousands who die annually, here and there, before their time, do not make noise enough to rouse them. Something must forthwith be done: while departments squabble the evil grows.

Here we have an important Act brought in by the Government, in compliance with the demands of the people, and passed by the largest majorities of the session, rendered nugatory by the want of co-operation, on the part of other governing bodies, with the special agency created to see it carried out. There would seem to be a desire in several departments of the Government to thwart in detail measures which the Government, as a whole, takes credit for. “Such a course,” as Lord Ebrington said in his speech last session, on the Metropolitan Sewers' Bill, “is neither consistent, nor creditable, nor satisfactory; and the sooner a distinct understanding is come to with them as to their real views and intentions with regard to sanitary subjects, the better it will be for all parties.”

ST. PANCRAS ALMSHOUSES COMPETITION.—With reference to our notice of the drawings sent in, in competition for the St. Pancras Alms-houses, we are informed that the committee decided on Friday last, Oct. 31, to adopt the design sent in by Mr. J. K. Colling-

ARCHITECTURUS TO HIS SON.

SEVEN OTHER LAMPS OF ARCHITECTURE.

My son, I am afraid lest you should despise your father because he is old: rather prefer to suspect yourself because you are young. When I was a boy my compeers and I held the old staggers of that day to be very weak in their ways, and not half so knowing in the world as we: some of us lived to think otherwise, and that without being ourselves old.

I know not how it is, but among all young men of my acquaintance the young architects appear to display by far the largest amount of self-confidence with anything rather than the largest amount of knowledge to support it. To go no further for an instance: my son himself, in the third year of his articles, believes beyond a doubt that his skill in all important things is probably tenfold his father's. It reminds me of old times, my boy,—old times long ago, before I essayed to set the Thames on fire—and failed. But in my young days we had one advantage which you have not: there was none of a now universal system which inflates the young man's mind with conceit, tantalises him with delusive hopes, rids him of his money, misemploys his time, and does much other harm to all, and very little good or none to any.

And now that I think again, no doubt in this very system, that of what is called “competition,” an ingenious man might readily find the clue to the curious fact which I have mentioned—the large pretensions and small possessions of our rising generation. It is so singular a thing among the singular things of the world for the opportunity to be given to the youngest and least experienced, if he have the moral courage, to enter into open, public, and recognised rivalry with the best and oldest of the day: it is a position so unique among the practical regulations of business, that one can readily look for important consequences, and not feel surprised if they should be very important indeed. But if I think of it I may have more to say of this under the seventh lamp.

For there are seven lamps of architecture. There are seven great questions with the architect; seven departments in his subject; seven heads of his discourse with the world; seven things to look to; seven subjects for his thought; seven trees to eat of; seven books to read; seven paths to take in one; seven stars to guide his way; seven lamps, in short, or seven of anything else.

I do not disdain the seven lamps of another; but neither will I have another disdain mine. I call them lamps for a reason: a poet has coined the phrase, and in its dreamy application it has become fixed, as an index to some uncertain but important question, that there is in architecture seven great points—seven things of study—seven faculties in the architect—seven essentials in his art. If so, I say they are these:—

1. The lamp of Art;
2. The lamp of Delineation;
3. The lamp of Science;
4. The lamp of Building;
5. The lamp of Learning;
6. The lamp of Teaching;
7. The lamp of making a Living.

I mean to lay before your mind in brief manner, but if I can forcibly, the whole province of your mission, and these are its seven grand mysteries: perfect in all these, you are a perfect master. You have in the question of art that poetic fancy and power of beautiful design by which you claim to be an artist. In the question of Delineation you have that power of ready hand without which an architect is dumb. In the question of Science you have that knowledge and skill by which you construct with judgment. In the question of Building you have all the practical knowledges for the economics of your subject, the arrangement of your plan, the determination of your craft-works, and the supervision of your workmen. In the questions of Learning and Teaching you have the taking up and the laying down of your part in the procession of your art—a sacred trust in the brotherhood that you should leave the world better than you found it. And in the last question of

making a living you have the important consideration of the hire of which the labourer must make himself worthy—the provision of the *sine qua non* of life.

In other words, the practical architect must be well grounded in seven separate things:—

1. Artistic design;
2. Deliberative language;
3. Scientific construction;
4. Practical housebuilding;
5. The attainment of his power;
6. The transmission of his power;
7. The transaction of his business.

"Nothing can be attained without labour," is a proverb; and depend upon it that in respect of architecture, the proverb is most eminently true. Young men can as readily put on the experience of age by an action of the hand, as attain to the skill of knowledge without the diligent and painful search. Genius, you may tell me, is naturally impatient,—it overleaps obstacles, and sets difficulties at defiance, and a great deal more; but this is a mistake,—it is not genius, but the reverse: it is the erratic mind that is impatient,—the inexperienced mind that affects to overleap obstacles,—the presumptuous mind that thinks to set difficulties at defiance. When your old father was a schoolboy, long ago, he had two companions widely different. The one was a genius of this order, the other a plodding dunce: the one was ever foremost, the other ever last: the one was all a glow, the other dead as a stone: the one skipped lightly in advance like the morning, the other hung heavily in the rear, like night: the one skimmed the surface gaily in the sun, the other waded wearily in the depth: the one had a path of honours, the other a path of toil. But it was a short time only, and the positions were effectually reversed. The one had been content with sipping the sweets, and fluttered off like the butterfly: the other gathered the store of the bee: the winter found the one an empty prey, but the other filled with abundance. My son, I will not say of you that the one is your parallel, or the other; but keep this in your mind, and tell your friends of it,—that if Achilles trifles by the way, the tortoise may soon reach the goal.

We examine, then, first,

THE LAMP OF ART.

The architect is an artist. If he were not so the house-builder would be his better. The Greeks of old, and their Roman successors,—the monk master-masons of mediæval Christendom,—Palladio and Wren and Soane (to go no further for examples), were more than craftsmen—they claim kindred with Phidias, Raffæle, Reynolds. Whatever the Royal Academy may decide to do another year with their octagon-room, whether to half fill it again with the architecture of the nation, or thrust that architecture entirely out, there is and must be for ever an analogy between their Eastlake, Lee, Landseer, Baily, Gibson, and our Barry, Cockerell, Pugin, Scott, which there is not and never can be between such and Brunel, Stephenson, or Locke, any more than if we were to add Cubitt and Peto to the number, or even throw in for make-weight Sir Joseph Paxton and Sir Charles Fox. The architect is a poet,—it may be in heavy language somewhat, and sometimes in small degree,—but he is a poet,—and you must never forget it, but cling to it with fervency as you value your mission.

The principle of fine art is the principle of artificial beauty: its province is the universal beautiful; its object to create beauty. A work of fine-art is a production of artificial beauty, and no more: without beauty there is no *fine art*, and without artificialness there is no *art* of course. That which displays beauty as the work of the intentional endeavour of the designer is the fine-art work of that designer. There is no accident in fine art: it is the intention which gives the title. The intention springs from the fancy, and the fancy from the construction of the mind; and thus it is that art is heaven-born and unteachable, for to imagine can never be taught.

The fine-art of the architect,—that which, having not another name, while all other asso-

ciated matters have, may best be designated as architecture proper—lies in the artificial beauty of building. The architect needs not build, but he designs the building; his object (as an artist) being to produce therein architectural beauty.

Architecture may not be so subtle and popular an art as painting, sculpture, music, or poetry, but it is in some respects a grander art than all. Where is there a picture like Salisbury, or a statue like St. Paul's? Where is there a poem like poor Elmes's Hall, or music like the sweet play of Barry's fairy palace sparkling in the sun? Where is there a painting like Carnac or Apollinopolis, or sculpture like the old Colosseum,—poetry like the glorious Parthenon, or a song like the gem of Lyciotes? Look up, my son, and let your soul stand still and contemplate the artist's mission: that which is of the earth is not *all earth*; and next to Howard in the pestilence, and Kosciuszko in the field, give the place to Da Vinci in the arms of Francis, or poor mad Barry in his poverty, or mighty Wren in the white hair of ninety winters, standing, as if in the heaven, on the summit of his stupendous dome! Many a time, I will confess, have I almost despaired of architecture: many a time, when the yoke of the earthy business pressed heavily upon my soul, have I wished in my anger that I were even a stucco image-maker rather than so dreary a thing as a house-builder and contriver of drains: even now do I deplore the seeming impossibility of emancipating from the craftwork of the artisan, at least in some degree, the art-work of the poet; and as you pass through life you will deplore this too; but he who keeps his eye steadily fixed upon a grand aim must never flinch at difficulties, and he who has the heaven-born mission of the artist in this earthy world, must never droop because of such a thing as earthiness, wherein we have but the universal bane which equally the pious and the poetic soul have to learn to bear with, and despise, and overcome. If there were a Hades of great men—of those to whose hands the mission of the beautiful, and good, and true has been committed throughout the procession of the ages—Homer and Milton; Socrates, Bacon, and Newton; the royal David; the apostolic Paul; and Melancthon, the gentle and just; Cincinnatus and Washington; Michelangelo and Thorwaldsen, would never despise Vitruvius because he looked to baliste, catapultæ, and scorpions; or Jones because he was conductor of the masquerade; or many a friend whom I could name, who turns aside in his careworn way, and stops the current of his anxious thought on tiresome clients, disputed contracts, defective brickwork, or inferior deals, to enjoy one more admiring gaze upon the glories of a cathedral, or to take a peep of pleasure at the humble grace of some doorway in the street. But more of this, perhaps, under the seventh lamp: meanwhile we turn to other matter.

In the practical doings of the architect, the fine-art by no means stands alone; and even in theoretical definition the question of art is by no means independent of other questions which I have named. Before the lamp of Art can shine, the lamp of Science, for one thing, must give its light, even if the influence of building, humble as it is, could be dispensed with. In fact, constructive science and house-building knowledge are the basis of the art, and no man ought to dispute it; for which reason he who would know architecture-art must know *beforehand* science and building, and this not as any question of business, but as a question of art alone. The oversight of this material point leads to innumerable shortcomings, errors, bewilderments. No amount of practical knowledge or scientific skill can ever make a house-builder an artist, just as a worldful of philology and language could never make a poet; but without such knowledge and skill the best art-mind can never operate,—just as without speech the mind of Homer himself must continue mute. This is a fact, for those who will tell you that the painter makes the best architect: they might with equal justice affirm that the poet makes the best painter. Yes, indeed,

there is more truth on his side who pretends that the engineer will make the best architect, for it is much more likely that the engineer should happen to possess the taste of the artist, than that the painter should happen to know the sciences and crafts of the builder.

The fine-art of the architect being the production of artificial beauty in building, the basis of building must form of necessity the foundation for such art. The architect is, in short, the builder gifted with artistic skill. He must be builder first. The student ought to begin with building; not that he ought to begin at the bench, as not a few will affirm,—planning a few battens badly, and making a box or so, are nothing of what I mean,—but he ought to keep clearly before his mind as the first point the questions of construction and the economics of building, without which mere style-study is foundationless and unpractical. Many of our young men leave their pupillage, I regret to say, and some of them even commence practice as they think, with very little but a smattering of the five orders or the three periods, such as a *dilettante* or a clergyman might have, scarcely enough for small criticism, and certainly insufficient for even the pretension to serious business. Inflated with a self-opinion which appears peculiar to the class, and of which, as I have said, I have not yet discovered the reason (except it be in competition),—too proud to stoop to the drudgery of dry details of business,—resolved to be mighty (for the present fashion) in the concoction of competition designs for churches,—they chide the tardy progress of time, fret for their freedom from enthralling indentures, and pray for whisks and their majority; if even, in their precocity, they care for such,—like young eagles chained, as they are. Knowing nothing of the boundless wilderness of knowledge, in which they must yet come to search laboriously,—content to know their three periods, and to despise everything else,—they plunge into life with not a single lamp of all the seven to light their ridiculous way, and are fortunate, indeed, if, little by little, as accident favours, they acquire, within ten years of struggling incapacity, that primary knowledge which, at the proper time, would have cost them scarcely an endeavour to learn.

Now, to keep myself within the current of my argument, I must explain that, although the remarks which I have now made (and with but too much truth, as you know), apply to the question of business as a whole, I apply them at present only to the question of art, and to the fact that he who suffers himself to despise or neglect practical matters for (as he thinks) the ascendancy of art, really deprives his art of that on which it must stand—that which *must* be its very foundation. Not knowing much of such affairs, I have, however, heard that in the competitions for the medals of the Institute, the most elaborate and grandiose projects are built up and solemnly presented in all the seriousness and earnest endeavour of the most careful drawing, with such a want of the commonest knowledge of these fundamental things that, even making allowance for them as tentatives of youth, the judges can only set them aside as unworthy. This is not *architecture*: architectural forms and standard fragments thrown together thus unpractically produce no art. Architecture must have the building prepared before hand, not afterwards. Architecture must have science as its core, over which to spread its spirit as a transparent veil: it will not do to fashion the appearance merely, and leave the building to the builder's wits. Probably these Academy studies are grounded on the prevalent idea that, so long as cradling, lath and plaster, and canvas and paper, can be fairly done, no visionary thing need fail. But this is not architecture, and if you would be an architect keep clear of it,—it is the Castle of Indolence of the vain mind. Rather than such unsubstantial finery, choose, my son, the crudest, and, if you will, the rudest, simplicity, if it be but masculine and honest truth.

To comprehend the idea fully of how architecture-art forms itself of necessity on science and building, consider the manner in which

the art naturally springs up and grows among the productions of the progress of the mind. The origin of architecture is in the simple circumstance that the beautiful, as a universal object of intellectual endeavour, becomes introduced in one thing after another of human work, and, in its proper turn, in building. Theories of the origin of architecture in some occult cause for a stone temple being fashioned like a wooden hut,—or in some mysterious development of religious feeling in cromlechs,—or in some romantic imitation of basket-work in the basilica,—or in a miraculous plan for Solomon's Temple sent down from heaven, with the five blessed orders all fairly set out by the archangel, as in later days by the mantuamaker upon the petticoat of the court lady of Queen Anne,—or in an equally miraculous conception of heaven-ordained symbolism whereby the church fabric no less than the church catechism becomes a source of instruction and comfort in the faith,—theories like these may do very well for such persons as can credit them, but for you and your friends take the plain and manifest truth, however vulgar and impoverished, for it will go the farthest. In every quarter of the globe, and in every age, we can more or less trace this simple fact, that the human mind, slowly and feebly opening into the common cement of intellect, displays with its desire for progress in other things a similar desire for beauty. The naked savage in every case begins to manifest a taste for elegance and ornament: his notions of these may, it is true, be very primitive; but how could they be otherwise? At the same time that he acquires the art of forming a canoe, building a hut, making a bow and arrows, snaring the creatures of the plain, conquering the beasts of prey, capturing the elk, the ostrich, or the bull, clothing himself in skins, cooking his food, expressing the complications of his thoughts in words, curing his diseases, worshipping his gods, he begins to ornament his person with paint, to plait his hair, to cover his sweat face with tattoo, to hang rings from his nose, to make a glorious cap of feathers, to carve his bow or his pipe, to sing his song of war or love, to embellish his discourse, to delineate symbols and forms, to sculpture his idols, to beautify his house. What is there in architecture that it should have a different rise from that of other arts and objects of endeavour? Everything grows up alike, first the blade, then the ear, then the full corn in the ear.

The fine art of architecture is of two elements, constructive beauty and ornament. It would be perhaps impossible to mark the exact line which separates these where they meet in practice, but in theory they are essentially distinct,—the beautification of the mere principles of structure on the one hand, and on the other the subsequent extrinsic decoration with ornament. And, therefore, of necessity, the first step is to throw grace of form (so to speak) into the otherwise previously determined design of structure, and the previously known system of science, and the next step to fashion ornaments, to adorn and embellish in detail. Here, then, are the lamps of Building and Science previously burning, and how can you light the lamp of Art without their flame? It is also from this point that all the systems of the styles must spring: these are but the diverse developments of the same theme in diverse circumstances. There can be no caprice in style,—it is not open to a man to choose—as we attempt to do too much—I will have such a style. The style is the natural result, the offspring, of the proper plan and the available material: you may choose your style without limit, if you may choose this proper plan and this material; but if these are given in perfect theory your style is, to a greater extent than you may think, given also. To depart from this is to attempt Art in defiance of Science and Building, and the result can only be visionary and vain—disguise, mockery, and sham.

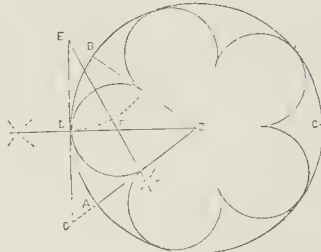
What need I say more to you on art? I think of only one thing: all the association in the world can never make the divine the earthly, or art any manner thing. For all that

I have said, architecture proper as a fine art need not, in the first place, be put in any confusion with science or building in the elements and essences; and in the second place, it has no association at all with the craftswork and artisanship of these inferior things: it ranks with painting and sculpture, music the enrapturing, and poetry the divine. It is the creation of the beautiful,—the pursuit of the spirit which pervaded heaven before the earth was,—and it is to be classed with the search for the profound and true, and the following of the noble and the good. This is no redomontade: it may not be a businesslike principle for a man to ponder over at his desk, but it is, I maintain, a principle of art and poetry for a quiet hour of reverie—that reverie of the relaxed soul when the vision is the true reflection rather than the false of the mirror of Nature. My son, be a man of business for the day, but in the still evening, or the wakeful night, a Sabbath-hour of reverie is balm to the chafed limbs and refreshment to the weary spirit.

THE FOLIATION PROBLEM.

It is not necessary to use natural sines, or anything beyond natural sense, to solve the very simple problem to which "T." has applied his trigonometry; and which, being one of the most constant occurrence in the prevailing fashion of stone tailoring (or structure disguising) ought certainly to be met by all practisers of that noble art, in some more "simple and ready method" than the very barbarous one of "trials," or the tremendous heavy artillery which "T." brings to bear on it.

Let ABC be the circle to be foliated, Z its centre, ABZ the sector that will contain one foil. Bisect it by the line ZD, and erect DE, a perpendicular to this (or tangent to the circle). Continue ZB to meet DE at E. Bisect the angle ZED by the line EF, crossing ZD at F, which is the centre of the required foil.*



The demonstration is too simple to be worth transcribing. On referring to his Euclid's Elements (which are also the architect's indispensable elements, whether in Gothic or any other style) the reader will find it under the problem, "to inscribe a circle in a given triangle," to which this case of course reduces itself, the circle of the foil being required to touch all three sides of the isosceles triangle ZEG.

It should hardly be necessary to add that the circle operated on in this manner must be neither the innermost nor outermost of those constituting the ring of moulding, but only that exact circle, real or imaginary, which (to borrow an expression from the machinists) I may call the pitch-line of the foliation, viz., that which touches those circles, in each foil, which touch each other. In the methodised and invariable mode of clubbed foiling (as Professor Willis calls it) used in all Europe during the decline of Gothic art, and never before, the pitch-line is always an imaginary one, on the surface of the innermost moulding (or foil-hollow), and distant from the intrados by half the width of one of the clubbed points. Thus, if the points are to be half an inch wide, the circle ABC above must have its radius a quarter of an inch greater than that which the intrados would have if not foiled, and the

intrados of each foil will have its radius a quarter of an inch less than F.D.

I believe, by the bye, you will find no instance, either in tracery or foliation, of the division of a circle into nine parts (the number in "T.'s" diagram) because, the whole Gothic system being purely geometrical, and never necessitating, as "T." supposes, any recourse to algebra (which in those days had not come north of the Alhambra; and besides common algebra is unable to effect anything which Euclid's geometry cannot), the Gothic artists ignored all division by "trials" or other barbarous and inexact methods. Now a circle cannot be divided geometrically (nor exactly by any means) into 7, 9, 11, or 13 sectors. If Mr. Barry, however, wished to show the progress of geometry between the building of Westminster Abbey and Westminster Palace, he might do so by erecting a rose or marigold of seventeen divisions, which the German geometer, Gauss, has lately shown to be possible by graphic construction. But, then, to show that it was fairly and legitimately done,—a piece of science and not of mere "industry,"—it would have to be so connected with the enclosed or surrounding tracery, as to develop or prove its derivation from the quantities $\sqrt{2}$ and $\sqrt{3}$, the factors whose combinations alone occur in Gauss's remarkable formula expressing the exact value of $\sin \frac{36^\circ}{2}$. This would require some study. I have not yet found an instance in which the far simpler connection of the pentagon and square (or of $\sin 36^\circ$ with $\sqrt{2}$ and $\sqrt{3}$) is displayed, but have little doubt there are instances, if not in the continental Gothic, at least in the Arab or Arab-Gothic buildings. Had Wren lived in the Gothic times, he would have left us some such combination exhibited either in tracery or in the plans of some more magical Walbrook or Bow; and I have no doubt El Geber has left it somewhere.

E. L. G.

THE CLASSIFICATION OF MEDIEVAL ARCHITECTURE.

I HAVE just read Mr. Parker's letter in THE BUILDER, of October 18th. As I have no inclination to enter into a general discussion with him, I will confine myself, in this letter, to one or two points which I ought not, perhaps, to leave unnoticed. Any one who is acquainted with the Church of the Holy Sepulchre, or has seen Professor Willis's admirable description of it, must be aware that it consists principally of two portions, namely, first, the rotunda, or circular building surrounding the Holy Sepulchre itself, and built by the Emperor Constantine Monomachus at the commencement of the 11th century; and second, the choir, erected by the Crusaders on the east side of this rotunda, between the years 1100 and 1187: nor can there be any doubt, either that the arches of the former building (before the fire of 1808) were circular, or of the latter, pointed. I need scarcely add that it is the former building, and not the latter, which has served as the model according to which so many buildings of similar form have been erected in different parts of Christendom.

When, therefore, your correspondent, "F. S. A.," spoke of Earl Simon's having taken the Church at Jerusalem as his "model" for the church, which he asserts he constructed at Northampton, on his return, before A.D. 1127, and proceeded to account for the pointed arches in the latter by alleging the fact that "they are found in his model," I have no doubt that your readers would conclude, as I did, that "F. S. A." alluded to the arches of the rotunda; and I accordingly denied that they were pointed. It appears, however, as now explained by Mr. Parker, that "F. S. A." meant to refer to the pointed arches of the choir, which, nevertheless, were not in his model, and would have us believe that these arches, or rather their form, was imported from Perigord to the Holy Land, and transplanted thence to Northampton; and also that the Crusader's Choir was so far advanced before Earl Simon left the Holy Land, so as to enable him after his return to complete his church at Northampton

* Four other correspondents will find in this communication reason for not inserting their's.—Ed.

before A.D. 1127, taking the rotunda as his model for the plan of his church, but the choir for the form of his arches.

I do not care to discuss here the value of this speculation, but think it right to place it distinctly before your readers, and to dissipate the doubt which the remarks of his last letter were calculated to throw upon my assertion, his own meaning, and the actual state of the case.

Of the interest which attaches to the churches in the south and west of France, to which Mr. Parker alludes, there can be no doubt; but when he speaks of them as having been found by him, he ought to have been candid enough to explain that the attention of archaeologists has already been called to these churches in a paper which I read at the meeting of the Archaeological Institute at Winchester in 184—, on the Early History of the Pointed Arch, an abstract of which subsequently appeared in the *Athenæum*, on which occasion upwards of forty engravings of drawings of my own of the very buildings he mentions, namely, St. Front, at Périgueux, the Cloister of Moissac, and many others of similar character and equal interest, made in 1835, were distributed to the members, and doubtless therefore to Mr. Parker. Any illustrated work which Mr. Parker may have in hand on this subject will be looked for with much interest by me: that it will tend to confirm the principal fact which I pointed out in that paper, and on other occasions, but which "F. S. A." appears disposed to contest—namely, that the Pointed Arch was first used extensively in Arches of Construction before it was adopted in Arches of Decoration,—I have no doubt.

Undoubtedly Mr. Parker is correct in asserting that he who crosses the Channel in search of foreign churches, must leave the Seven English Periods behind; and further, I admit that he who is content with roughly classing the whole of our English buildings under four heads, may readily find sufficiently broad characteristics to enable him to do the same on the Continent; but I contend that any one who contents himself with such a classification will not only never arrive at a true knowledge of the real progress of architecture, either in this country or abroad, but will be liable at the very outset to be continually misled: and no building is better adapted to illustrate the truth of this assertion, and the advantages of the more detailed system which I propose, than the one which Mr. Parker has selected to disprove them. He has supposed a student who has made himself master of the characteristics of English Architecture, as given in the "Seven Periods," to enter the Cathedral of Notre Dame, and he has made him declare on viewing the windows of the clerestory and side aisles, that the entire building belonged to the "Geometrical Period." Now I maintain that he would do no such thing. Let us suppose him in the choir, and about to commence the study of a single compartment in the manner pointed out in Chap. III. of "The Seven Periods." He would first pronounce the windows to be "Geometrical,"—those of the clerestory belonging to the earliest, and those below to the latter part of the period: but on viewing the triforium and ground story, he would perceive no traces of Geometrical work; he would find the mouldings of the arches and form of the capitals, the carved work, and all other details to correspond very closely with those of the choir of Canterbury Cathedral, and to exhibit all the characteristics of the latter part of the "Transitional Period;" and he would accordingly be disposed to place at least a century between the earliest and the latest portions of this work. Now let us, on the other hand, consider in what terms the tyro who has studied architecture according to the system of Mr. Rickman would describe the same building. First of all he would find in the windows a strong resemblance to those of the Chapter-house of Salisbury Cathedral, and would therefore call them, according to his text-book (Rickman, 5th edit. p. 92), "Early English;" and, secondly, if we suppose him equally to detect the similarity between the detail of the choir of Notre Dame and that of the choir of Canter-

bury, he would upon the same authority (Rickman, 5th edit. p. 98) pronounce the remainder of the work to be also "Early English." The result, then, of the two students would be as follows:—whilst the former would declare that an entire period—the "Lancet Period"—had intervened between the first works—those of the "Transitional Period"—and the last works—of the "Geometrical Period,"—the latter would declare that the whole building belonged to one style, namely, the "Early English Style;" the actual fact being that the choir was completed by Bishop Maurice Sully, who died A.D. 1196, and that the side aisle chapels, containing the windows in question, were founded by Bishop Matifus de Bucy, who died A.D. 1323.* I leave this short illustration, without further comment, to the consideration of those interested in the matter.

Mr. Parker has made two assertions in his letter in reference to the "Parallels," which I owe it to those who possess the work not to leave unnoticed. The first is, that many of the restorations in that work are conjectural; and the second, that it is difficult to distinguish between that which is restored and that which actually exists. As regards the latter assertion, all who have examined the work, even superficially, will at once perceive that the perspective views represent the buildings as they exist at present, and the elevations and sections, their original condition. In reference to the former assertion I must state that, with one exception, no elevation has been restored upon conjecture, but, after the actual existing remains: the exception occurs in the longitudinal section of Guisborough Abbey Church, in which the tracery of the destroyed clerestory windows is supplied from windows of similar size and date from Ripon Cathedral, and the tracery of the triforium arcade from barely sufficient data, obtained in the ruins: yet, strangely enough, this triforium arcade is one of the many portions of the Parallels which Mr. Parker has selected for the purpose of illustrating his new edition of Rickman.

A final word on this controversy, which is now, it is to be hoped, drawing to a close. Having proposed to myself to write the History of English Architecture, I have surely the right, as a preliminary step, to prescribe the terms in which I will write that history as set forth in the little work which has been the cause of this correspondence; and surely that right was somewhat rudely and unjustifiably attacked in the first letter of "F. S. A." If, in repelling that attack, I have used somewhat strong terms, I will take this opportunity, now that there can be no longer any doubt as to the identity of your correspondent "F. S. A.," and now that Mr. Parker has come forward in *THE BUILDER*, in his own proper person, of testifying to the service Mr. Parker has rendered to the study of Church Architecture, by the numerous illustrations of the subject which he has published; and although I adhere to my opinion that the mode in which many of these illustrations were acquired is somewhat illegitimate, and although I also believe that many of the dates attached to these illustrations, as published in the last edition of the "Glossary," are erroneous, and the arrangement of the plates unfortunate, and likely to lead to confusion, I am yet ready to admit that these drawbacks may perhaps be said to be more than compensated for by the number and excellence of their illustrations, and the encouragement which Mr. Parker has afforded to a school of art, which promises to be so useful to the archaeologist, and which, but for him, would probably not have reached the degree of excellence which it has at present attained, namely, the art of engraving architectural details on wood.

E. SHARPE.

THE GREAT GLOBE, LEICESTER-SQUARE.—The premium of 50*l.* offered by Mr. Wyld, for the best design and model for galleries and staircases has been awarded to Messrs. Aickin and Capes, of Islington. Between twenty and thirty designs were sent in.

* *Fide* an interesting account of Notre Dame, by Viollet le Duc, in the *Ecclesiologist* of August 1850.

NOTES IN THE PROVINCES.

Marazion, Cornwall.—A school-room for boys, with a master's dwelling-house, built at the sole expense of Lady Mary Cole, as a memorial of her husband, Sir Christopher Cole, R.N., K.C.B., has lately been opened for the instruction of the boys of this town, of which Sir C. Cole was a native. The school-room is 36 feet long by 18 wide, and accommodates 100 scholars; class-room, 12 feet by 12; parlour, 12 feet by 12; kitchen, 12 feet by 12; with washhouse, three bed-rooms, court-yard, and other offices. The walls are built of Elvin, in random courses, with granite dressings. The cost has been about 800*l.* The builders were Messrs. May, of Devonport; and the architect, Mr. J. P. St. Aubyn, of London.

Cardiff.—A new town-hall is progressing here. The façade, or front, next to St. Mary-street will, we are told, be in the Italian style of architecture, and will consist of columns on moulded bases and pedestals, with carved caps surmounted by cornices, carved wreaths, and vases; while the several entrances (to be approached by separate flights of steps), window openings, &c. &c., will be ornamented by moulded impostes, architraves, projecting key stones, moulded strings, and balustrades; and the angles of the building rusticated. The lower story of the building is executed in Newbridge-stone, and the upper portion in Caen stone. The hall will be 50 feet by 36 feet. On the left of this hall will be the police-court, with magistrates' rooms and offices, and on the right apartments and offices for the court-keeper—large sunk room for the warming apparatus, and the grand staircase leading to the assembly-room above. This room will be upwards of 70 feet in length, 36 feet in breadth, and nearly 25 feet in height. It will have scagliola columns, with moulded caps and bases on pedestals, moulded panels, with enriched flowers in the ceiling, and panelling to the walls and doors. The length of the whole is 117 feet. Harris and David, of Cardiff, are the contractors; and Messrs. Jones and Johnson, the architects.

Moulsham (Chelmsford).—The church of St. John, Moulsham, has been re-opened. The old church has been preserved as the nave. The material of the new portions is white brick, to accord with the old. The style of the whole is Early English. Transepts with a chancel have been added, and, for certain local reasons, according to the *Chelmsford Chronicle*, aisles to the north and south chancel. Subsequently a vestry was added to the south chancel aisle, and by these means a gain of nearly 450 seats has been obtained at a cost of less than one-half that of the original church. The south transept is appropriated for the use of the national school children. The chancel has choir seats and arches open on each side to the aisles. The Lord's table is raised on steps: over is a triplet window formed internally under one arch, which has been filled with stained glass, together with the Vesica window in the gable, by Mr. Hudson, of Pentonville. The fittings and arrangements of the new part are simple: the seats are all low, and without doors: the aisles are divided from the chancel by carved screens. The doorways, windows, and all the carved or moulded work are Coombe Down or Somersetshire stone: the floors are laid with tiles. Mr. Clarke was the architect, and the works have been carried out by Mr. George Myers, of London. The original scheme embraced a new tower and spire, with other alterations of the tower part of the church, but these are postponed.

Bideford.—The new town-hall of Bideford, according to the *Taunton Courier*, was opened on Monday, in week before last. The new building is erected on the site of the former town-hall, with the additional area of the open space between it and Bridge-street. The style is that of the Early Tudor period. The principal fronts are against Bridge-street on the north, and Allhalland-street on the west; the former about 47 feet, and the latter 45 feet in length. The ground-floor contains a council-chamber, engine-house, entrance-lobby, station-

house, and four cells for prisoners ventilated by means of air chimneys. The hall over occupies the whole length of the building from east to west, and is 29 feet 6 inches wide in the clear of the walls, and 23 feet 6 inches high. The ceiling, which is slightly raised in the centre, is divided into compartments by longitudinal and transverse ribs, forming the braces and ties of the roof, which are moulded, and stained and varnished: the latter spring from carved stone corbels built into the walls: circular bosses, perforated for ventilation, are fixed at the intersection of the ribs throughout the centre of the ceiling. The hall is lighted by four windows on the north side, each window containing four lights with foliated heads, two windows of a somewhat plainer description on the south side, and a window of large dimensions at the west end. All the glazing is in lead work, of a geometrical design, in accordance with the style of the building. The principal elevation against Bridge-street is uniform, with an embattled parapet, and buttresses dividing the length into four bays. At the north-west angle an octagonal staircase and bell-turret, with an open lantern, rises to the height of 50 feet. The west front is more varied in design than the other, and presents a gable surmounted by an octagonal finial and copper gilt vane of antique fashion, which terminates the main roof over the hall. This end contains a large window with an embattled transom, and a large doorway underneath, with a four-centred arch. The stone employed in the basement has been obtained from Dean Forest: the walls above are built with bricks of bright colour, pointed with cement of a dark neutral blue; and the dressings, windows, and mouldings generally of the upper part are executed in stone obtained from the quarries of Mr. Sumson, at Coombe Down, near Bath. The work has been carried out by the contractor, Mr. E. M. White, from the designs and under the inspection of Mr. R. D. Gould, of Barnstaple, architect. The total cost of the work, including a chandelier, suspended in the hall, and other fittings, will be under 1,400*l.*, exclusive of the value of the materials arising from the old building.

Oldham.—It has at length been decided that the money subscribed at Oldham to erect a testimonial to the memory of the late Sir Robert Peel shall be devoted to the erection of public baths. It is supposed, however, that the sum subscribed, 1,111*l.*, will scarcely be sufficient, and an appeal is to be made for additional subscriptions.

Bradford.—The *Leeds Intelligencer* gives the following as the general proportions of the Church of St. Andrew at Lister Hills, noticed in our last number. Nave, length, 76 feet; breadth, 22 feet: north aisle, length, 88 feet; breadth, 14½ feet: south aisle, length, 76 feet; breadth, 14½ feet: chancel, length, 36 feet; breadth, 19 feet: tower, east to west, 13 feet; north to south, 16 feet: vestry, east to west, 9 feet; north to south, 12 feet: porch, east to west, 8 feet; north to south, 9 feet: tower and spire, height, 128 feet: extreme length of church, 112 feet; breadth, 51 feet. Messrs. Mallinson and Healey were the architects.

Cork.—The foundation-stone of the Church of St. Vincent de Paul, to be erected at Ardfallen, Sundays Well, was laid on Friday in week before last. The site is said to be one of the most picturesque in the vicinity of the city. The structure will be in the Early Gothic style. The side front will look upon the river. The entrance will look to the west, and the chancel to the east. It is intended that the general appearance of the church shall resemble very considerably that of Salisbury Cathedral. The extreme length, including nave and aisle, will be 60 feet. A tower and spire will rise to the height of 200 feet. There will be several lancet windows. The chancel window will consist of five lancet lights, the centre of which will be about 30 feet high and about 3 feet in width. The height from the floor to the top of the clear story will be 50 feet, and the height to the top of the aisle about 22 feet. For some time it is not contemplated to proceed with the building of the tower and spire.

The architect of the building is Mr. Benson, under whose superintendence also the works at the North Chapel are proceeding. Messrs. Murphy and Walsh are the contractors.

Miscellaneous.—The new west bridge of Galway, over the Corrib, has been keyed. Mr. Nugent, the contractor, and Mr. S. U. Roberts, the district engineer, and others, were present. It is proposed to erect a corn exchange at Kilmarnock. A public hall is also considered a desideratum. Active steps are being taken towards the erection of a new public hall at Banbury. Gas works are in progress of erection at Corsham, by Mr. Cole, builder. Further powers are to be applied for by the Swansea Water Works Company next session of Parliament. St. Alban's Church has been extensively repaired, and was to be re-opened on Monday last. The tower of All Saints Church, Dorchester, will shortly have reached its intended height.

BUILDING IN SCOTLAND.

The great majority of houses in Scotland are built on the system of "flats," or, as we should term them, "chambers." In Glasgow the houses are usually built in this way, in four stories and basement. For instance, in a locality where the middle classes live, the usual frontage is 60 feet, depth 40 feet, with a small yard, or, as they call it, "green," and wash-house, both of which are common to the inhabitants of all the floors. The walls are two feet thick all the height: the front is of polished or rubbed sandstone, the rest of the outer wall of rubble work: the former costs about 17*l.* per rood of 36 cubic yards: the latter costs 7*l.* per rood: the windows are dressed much the same as ours are. The stone is brought from a quarry about 4 miles distant. The partition walls are all of brick. Most of their slates are brought from the Highlands, are only 10 inches by 8 inches, and cost about as much as the Welsh slates do here. A good deal of Welsh slate is also used there. The foundations are formed of blocks of stone 3 feet long, laid cross ways, and on this another, narrower, like our brick footings; concrete not being used except on bad ground.

Before the sleepers are laid, to stop all damp from rising, about 2 inches in depth of asphalte are spread over the ground. We ought to do the same here.

It is important to prevent all sound from floor to floor, they being occupied by different families: for this purpose the joists are boarded from one to the other, about 6 inches from the top side: a layer of mortar 1 inch in thickness is then spread over the boards: over the mortar dry smith's ashes are spread to within half an inch of the top of the joists. The joists, from basement to attic, are 10 inches by 2½ inches.

Carpenters in Glasgow, first-rate hands they are too (pray, read this, you men who turned out at Mr. Myers' the other day for so small a matter), receive 20*s.* weekly wages, masons 22*s.* Their hours are from six to six, having an hour at nine to breakfast, and an hour at two o'clock for dinner. Living is as dear there as here. A builder there opened his eyes a little widely when I told him that our carpenters have 30*s.*, and masons the same or more.

The basement of the house is used as coal cellars.

The frontage being 60 feet, the entrance is by one door in the centre, leading to the common staircase, which is always stone, and lighted from the roof. Each floor is usually divided into two tenements, each tenement having a private entrance into a lobby or passage from the landing.

This plan of occupying houses possesses many advantages over our own, not the least of which is the facility it gives to people of moderate means to live in a good neighbourhood at a low rent.

One great want is perceptible in Glasgow, and most northern towns,—a want of taste in the outward adornment of the houses: there are very few nice balconies with flowers, plate-glass windows, or pretty verandahs: the house is built, and so it stands for ages without one

brush of paint or colour of any kind (but for the sashes and frames), so that in time the houses get a sombre appearance: this is felt less in Edinburgh where there are no manufactories.

Edinburgh is a magnificent city, and when I thought how much of its grandeur is owing entirely to situation, I sighed when I thought also of Trafalgar-square and the National Gallery.

Within the last few years the archaeologists have discovered that a small building in Edinburgh Castle which had been used as a powder magazine, was really a chapel, formerly known as St. Margaret's Chapel. They have succeeded in restoring it to its former use as a chapel. It is a diminutive place—about 14 feet by 9 feet, but interesting from its age—nearly 800 years.

Any one on the castle, looking at the numerous palatial buildings devoted to education, and called there "hospitals," will cease to wonder that the Scotch are usually so well educated.

I counted *ten stories* in one dwelling-house in the old town: some have, I believe, as many as twelve or fourteen stories. There does not seem to be much building going on in Edinburgh; but Glasgow and Belfast both seem rapidly increasing. By the by, I counted *nine* large iron steamers building on the banks of the Clyde the other day.

What shall I say of Dublin? It is a noble city, in a fine situation, with many really good buildings, with a park that surpasses Hyde-park in every respect; but there seems something wanting—a want of life—a mixture of grandeur and decay. Will Irishmen forgive me for saying that it reminded me of a shabby-genteel man, too poor to keep up appearances properly, and yet too proud to work.

J. P. W.

THE QUESTION OF A GOTHIC DOME, AND HOW IT WAS TREATED.

I AM ready to admit that the subject of inquiry started by your correspondent "K." is in itself somewhat interesting; but his mode of treatment appears to be open to certain comments, and his assertions to not a little stricture. It is a matter of astonishment to the dispassionate critic, to observe with what evident pleasure personal imputations are now so often introduced in our discussions. Mr. K., modern Greek as he doubtless delights to style himself, cannot propose a Gothic dome as a subject for inquiry without occupying at least half his article by an attack on professional Gothicists, and archæological and romantic amateurs. I make bold to say, that his remarks on this head betray a want of information as to that mediæval spirit he so much detests.

Why any professional man should look so jealously on the amateur as your correspondent does, it is very hard to understand. I should have thought that architects experienced at least a feeling of kindness—I will not say gratitude—towards those who devote so much time in bringing architecture favourably before the public eye,—who, deriving no professional profit from their knowledge, so use it as to lead to increased honour and advantage to the architects—the K's—so they be only able to answer increased public expectations. It is surprising that Mr. K. should assert that the mediæval remains have no such claim on the sympathies of the refined poet or profound scholar as have the classic, and that from classic remains all that is excellent in modern taste and learning first arose. Quite the reverse. The greatest works of the modern world originated in a feeling directly opposed to the classic. Certainly Gothic architecture did not arise from classic remains; neither did modern music, modern painting, nor modern literature, including the Spanish, English, and German dramas. The whole range of beautiful arts which arose from the operation of Christianity on a mind essentially different in its characteristics to that of Greece, did not spring from classic remains. Of course, the effect of Christianity upon European arts and civilization, and the whole age of chivalry adorned with the works of a

Tasso, an Ariosto, and a Spenser, celebrated also of late in the immortal works of Scott,—of course, these things have no interest for the profound scholar and refined poet; and that is the exact reason why so many refined poets and scholars have devoted their lives to them; why Alison, Siemendi, and Schlegel thought them worth writing about; and why some of the brightest intellects of our day are devoted to their elucidation. Let me recommend your correspondent to abandon his untenable ground; nor let his love for Solons and Stagyrites lead him to forget the existence of History. His boasted contrast is none at all, in the fair sense. Why, can he find no one, amidst thousands of illustrious men of the middle ages, better than a pig-headed baron, to compare with the astute Pericles? And why is a "prejudice" for classic any better than a "prejudice" for the opposite, especially as the latter is natural to us, and the former only acquired.

In my opinion, St. Paul's, dome and all, is not so much a head, of our "gay young palace," nor can we exactly say where to put the rival dome upon the latter if we would: the dome, such as we understand it to mean, is not a classic feature. Italian architecture is not purely classic, and the dome is one of those features which show how this mode of art was affected by the opposite tendency to the Greek. The dome is aspiring, elevating; it arises from the operation of the same spirit as does the Gothic architecture. In rearing the dome, the mind of the artist struggles to get away from the horizontal body lying below, and to express its more sublime ideas.

In Oriental art—in Constantinople—the dome figures very importantly, and we know there is great affinity between the Oriental and the Gothic. There is every reason, then, to believe the dome natural enough to Gothic art; and to suppose that it could be harmoniously designed, without paying any attention to that abuse, "of nine out of ten of us" where—your correspondent occupies a long paragraph. Indeed, abuse is becoming so common, that there is often more than enough to balance the information contained in some communications.

The church of Santa Maria del Fiore at Florence has much of the Gothic spirit in it; and possesses that celebrated dome which has immortalised the name of Brunelleschi. I feel half inclined to call attention to this dome, as an excellent model for a Gothic one; and besides, we know it is real, and has no sham interior, like St. Paul's.

The Florentine dome is certainly half Gothic in spirit, probably more Gothic than any other, and is a marvel of constructive skill. It is therefore well worthy of the careful consideration of those who would design a Gothic dome.

H. T. B.

As the question of the introduction of an entirely new feature in a style is a subject of some importance, perhaps I may be allowed to make a few remarks on the query started by a correspondent in your last—"Why may we not have a Gothic dome?" The writer seemed fully prepared for the smile of incredulity with which such a question would probably be greeted, as well as for the pity to be accorded him by the "devotees of medievalism." Now, without any claim to, or desire for, such a designation, I must yet be permitted to differ from his opinions. And first, passing over the question of precedent-worship in the Greek and Roman school of the last generation, and in that of the present medieval school, on the supposition, for the sake of argument, that their blind allegiance to precedent is alike, we must pause at the notion that the present system shows less of common manliness than that of the "now old fashioned, but always elegant, elevating, and poetic formalism" of the other; and that "the modern Goth is less excusable than the modern Greek, in so far that there can never be set up for the medieval remains any thing like that claim upon the sympathies of the refined poet or profound scholar, which could never be denied to the relics of an age from whose ruins all that is excellent in modern taste and learning first arose." Now, I would

suggest that the class of persons here alluded to form but a small portion of those for whom architecture is intended, and even among them still fewer would, I think, be found so wrapped up in the mantle of antiquity as to be indifferent to the claims of their own race and country. I can find no reason why our forefathers and their works should have less of our sympathy than those of another totally different people, however excellent. Should men of the Teutonic blood and their deeds be less interesting to us than those of the Greek? The excellence of the two races lies in different ways, being affected by national character, climate, and, above all, by religious belief: we can never forget that we are northern and Christians. We may reverence a Solon or Socrates, but not the less a saintly bishop: we may admire a Pericles the Grand, as well as a knightly baron, the very personification of the noble spirit of chivalry; or delight in the breathing marbles of Attica and Augustan Rome, and not less in the expressive effigy of the northern saint or crusader: we may, in fine, admire, as it were at a distance, the matchless works of another race, another climate, and of a creed essentially earthly, though in its most beautiful guise; but must we not at the same time both admire and love those of our own northern ancestors, unmistakeably telling of their faith as of ours,—one not earthly, but heavenly? But to come to the dome,—and to the fundamental principles of the style to which it is proposed to be applied. The leading feature of the Gothic style, both in theory and actually, is undeniably that of verticality—unrest: everything must subserve to this: arches, buttresses, pinnacles, the sky line of the roof as a contrast, the tapering spire and pinnacled tower—all aspire: immobility is its very antithesis. All round-arched or trabeated styles, on the contrary, more or less unmistakeably tell of rest: horizontality is the general effect: the opposite of their teaching is aspiration. Now, admitting this, can a dome be made to aspire? is it of its nature? What is the effect of St. Paul's? Grandeur, dignity, and beauty, I grant it, but not aspiration; the reverse: it crowns all: in it everything centres immovably,—it is the summit of all,—the whole structure, as it were, rests on it: acuation is indeed its principle—but that of the round arch,—and this expresses repose quite as much as the principle of trabeation. The dome cannot exist as a crowning member without thus absorbing all into itself. An octagonal dome would be more in accordance if possible with Gothic principles, but I cannot but think that it thus loses much of its simplicity and grandeur, as well as that marvellous play of light on a cylindrical surface, without expressing verticality much more than the other, or forfeiting its claim to be the crown of all around. "K." lays the foundation of his Gothic dome by supposing the peristyle formed of piers and arches, and the addition of pinnacles and buttresses all as contributing to the verticality. Now, if, as I have supposed, the glory of the dome consists in its absorbing everything, and forbidding to look beyond itself, then horizontality is its expression; and consequently arches (pointed), buttresses, and pinnacles but mar that effect: to that the question is simply this,—What is the expression of a dome? "K." proceeds all along on the supposition that the principle of verticality is essential to it. To my own mind I must say that it affords any other idea than that of the aspiring or vertical. Should, then, the expected smile of incredulity come from those who think with me as to the expression of the dome, it will arise not from the fact that precedent does not afford an example, but from the conviction that dignified and beautiful as is the feature proposed to be introduced, it is yet of its very essence opposed to the leading characteristics of pointed architecture.—R.

Your correspondent "K." has handled this subject with ability; but I need hardly remind you that the entire design he propounds at the close of his communication (arcuated peristyle, pinnacles and all) has been already realized in the construction of the Cathedral Church at Pisa.

W. Y.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Vienna Art-Union.—The Austrian association exhibited the art-works destined for the distribution of prizes to take place on the 31st of October. The selection is considered a good one, although not quite one of perfect impartiality. 135 works have been purchased at an expense of 22,398 florins. Landscape oil paintings form the greater part, amongst which Aschenbach's Swedish scenery is most appreciated.

Berlin.—Lepsius on Egypt.—At the late meeting of the Royal Society at Berlin, the above *avant* read a memoir on the first god-circle (*götter-kreis*) of the Egyptians. In contradiction to Herodotus, Professor L. places Osiris in the first circle of divinities, in accordance with the opinion of Manetho. The development of the Osiris worship out of the pure pantheistic belief of the sun-worship, its ulterior development into Ammon-worship, the revolutionary reformation of the fourth Amenophis, and the final reversion towards a transcendental sun-worship were most accurately and graphically delineated by M. Lepsius. He concluded by proving how these philosophical systems came to naught in the reign of subsequent foreign conquerors and kings.

New Art Works.—M. Decker, the eminent Berlin publisher, has been travelling of late over Germany for the sake of forming engagements with engravers relating to his intended publication of *Kaulbach's* frescoes in the new Berlin Museum. First-rate talent has been engaged for this national work amongst the engravers of Dresden, Munich, Nürnberg, &c. It will appear in largest folio, and many of the plates will be in colour.—The French Government have assigned a sum of 300,000 francs towards the publication of the Assyrian antiquities collected by Botta and other French travellers, and which, under Louis Philippe, were kept in the collars of the Louvre. Notwithstanding this large grant, the publisher has been allowed to charge for one copy any sum not exceeding 1,200 francs. The French *savants* are in hope that such a large series of Assyrian cuneiform characters as will be copied in the *Antiquités* will probably contribute towards their ultimate deciphering, which, as they are literal and not symbolic or hieroglyphic characters, may be accomplished ere long.

Rome.—The Museo Lateranense founded by Gregory XVI. is progressing, and increasing satisfactorily. In the splendid spaces of the Aula, which had been constructed under Sixtus V. out of the old patriarchal palace, many ancient inscriptions, columns, fragments, and cippi are now deposited. Besides many Roman and old Christian sarcophagi, the statue of Antonius from the villa of Adrian near Tivoli, the antislave Neptune, the Dancing Faun, the bust of Sophocles from Terracina are to be seen; moreover, a specimen, perhaps unique in its way, the statue of a slave, which, rarely *ebouché*, has been dug up in some foundations near the Collegio Germanico. Amongst the latest acquisitions are eight statues of superior workmanship, found in the Augustum of the Municipium of Cæne, representing members of the family of Octavian. These constant *trouvailles* on classic ground show that, much as has been hitherto discovered, much is yet to be found.

Late Art Discoveries on the Rhine.—The chief altar-piece of the Cologne Cathedral is one of great renown, and it has been always regretted that no more works of the same great master were in existence. A picture, however, has been discovered, of late, in the episcopal seminary of that city, which, from its character and expression, as well as the particular management of the drapery, points to a work of that great master. The picture represents the Virgin in life size, dressed in a red cloak, holding in her right arm the infant Christ covered with a veil: at her feet kneels the foundress of the picture in a peculiar sort of costume. The canvass is well preserved, save the background and parts of the head, which have been slightly *retouché*, but admit of an easy restoration.

ULM CATHEDRAL.

For this cathedral, which ranks amongst the finest in Germany, the city is indebted to the zeal of its inhabitants, who, from their own resources, without aid from prince or ecclesiastic, raised this noble monument to testify to their regard and reverence for religion.

The work was commenced A.D. 1377, towards the end of the reign of the Emperor Charles IV., a year memorable for the return of the pontifical see to Rome from Avignon, after an absence of 72 years. During the stormy reign of Wenceslaus, the son and successor of Charles, and the confusion and anarchy of ecclesiastical dissension, when Europe was torn by the factions of rival popes; under the more vigorous rule of the Emperor Sigismund, and the consolidation of the papal power under Pope Martin V., A.D. 1417, through the influence of the Council of Constance, quickly succeeded by the turbulent times of the early Reformers and the perplexities of the threatened Ottoman inundation; the cathedral, at the end of 100 years, in the reign of the emperor Frederick III. of Austria, approached the state of completion in which it now remains; and it is somewhat remarkable that in its regularity of execution it should in itself record so little of the stormy times which gave it birth.

The total length of the building is about 415 English feet, that is, 100 feet less than Canterbury cathedral, and 130 feet less than Winchester cathedral, but nearly corresponding to the length of Durham or Chichester cathedral. Whilst, however, the total dimension of the English works includes chapels and similar adjuncts of considerable extent, but small elevation, the cathedral of Ulm, surpassing the loftiest of them in altitude, is of one height throughout. In plan it consists of a choir about 100 feet long, with aisles, terminated eastward by an apse of three faces; a nave of nine bays, with double aisles on both sides, making a total width of 166 feet; and a tower opening to the west end of the nave.

The lofty windows of the choir contain much of ancient painted glass, with some of modern date. The stalls remain perfect, and are rich with tabernacle and quaint carving of excellent workmanship. A metal screen, painted and gilt, divides the choir from the nave. The nave, though beautiful in most respects, is the least satisfactory portion of the church, from the bare and unfinished appearance of the vaulting, which, differing in character from the rest of the work, would appear to belong to the latest period. The nave arcades have very sharp pointed and well moulded arches, with a fine range of clerestory windows above. The double aisles, perhaps the most beautiful part of the interior, are divided by a range of lofty cylindrical columns, rising to the height of the slender shafts attached to the nave piers, and sharing with them the support of the vaulting. The tower, though incomplete, is of considerable altitude: the west entrance of great beauty. The drawing of the original design (still in existence) shows a traceried spire, which would have risen to the height of 490 feet. The spire was abandoned in consequence of a serious settlement in the foundation of the tower, which threatened its destruction even before its completion.

The interior is exceedingly grand; but in the absence of stained glass in the nave, the light from the numerous large traceried windows is excessive. The exterior is impaired by the appearance of the brick facing to the plain surfaces, and also from the erection of small shops and stores between the boldly projecting buttresses.

Independent of the interest arising from the perfect execution, up to a certain point, of the original design, and its excellent preservation, both as to fabric and fittings, the cathedral contains many points of peculiar interest; and it would appear that its perfect state is due in some degree to its devotion since the Reformation to the Protestant form of worship.

The view is sketched from near the south-west angle of the building, looking diagonally across the nave and aisles, and shows the main

features of those parts. A liberty has been taken in omitting the plain deal seats which fill the body of the church. G. M. H.

GOTHIC ORNAMENTATION.
ENRICHED MOULDINGS.

WITH regard to the controversy upon the subject of enriched Gothic mouldings in your journal, I am desirous of adding a few words in confirmation of the remarks of "W. H. B." In the first place I do not consider the principle advanced by Mr. Little to be correct, namely, "that the architects of the Middle Ages discarded the use of carving on mouldings, as practised in classic architecture," and "that in all instances of enriched mouldings, the carving was applied on the mouldings, giving them a different contour, but preserving *in situ* their original forms." In addition to the English examples named, I can mention the Early Gothic doorways of the west front of Rouen Cathedral, which are on either side of the magnificent Flamboyant central portal—works of the most "severe and massive" character, in which nearly all the mouldings are decorated with sculptured foliage, having the contour hollow and similar to that of the mouldings. These include both the neckings of the columns and the impost mouldings. The same thing I have found upon the western doorway of the church at Lisieux, in Normandy, a work of the "richer and more refined" Early Gothic, and in numerous other instances upon the neckings and abaci of columns particularly; so that I believe the custom to be almost universal in the remarkably beautiful Gothic of Northern France, which so nearly resembles our own.

Again, in the Venetian Gothic such mouldings are to be continually found, as upon the neckings and abaci of the columns of the west front of St. Mark's. But these examples, including some of the most exquisite of Gothic details, may surely serve to show that the principle indicated is not at variance with Gothic architecture. Nor do I see the utility of endeavouring by any such theories to enhance the merit of the mediæval architects, who had in all things some better principle to guide them than the perverse one of striving to be as unlike the Romans as possible. We have been told before that the poor deluded men fancied they were following Vitruvius and his cramped rules, while they were building their glorious and unequal Cathedrals throughout the length and breadth of Northern Europe. JOHN P. SEDDON.

RAILWAY JOTTINGS.

A new town at Ashford.—The South-Eastern Company have erected a new town at Ashford—new from beginning to end—from site to latest improvements. This town when finished will be a second Wolverton or New Swindon, consisting of terraces of cottage houses with open pieces of grass land in front for recreation, baths, and washhouses for residents; and gas works now in course of erection. It is also intended to erect a new church. New Ashford, and the extensive railway works adjoining it, are built on a piece of land little better than a waste four years since. The new town is at a distance of about a mile from the centre of the old town.

Railway Mechanics' Institute at Stratford.—The workmen connected with the Eastern Counties' works at Stratford are about forming a mechanics' institute. The directors, it is said, have promised to aid the project by a donation of money and books. The institute will be open to others by small quarterly subscriptions.

Economization of Fuel, &c.—We understand that a patent has been obtained by some gentlemen in this city for an invention by which a new motive power is produced, which, it is said, will operate so as to reduce the consumption of fuel in railway engines one-half or more, and, with other important improvements, will effect a large saving in the construction of the engines.—*Exeter Flying Post.*

Chairs.—Thomas Hill, of Glasgow, has recently enrolled a patent for an improved mode of

forming wrought-iron rail-chairs, from a plate of wrought iron, by machinery, which punches up lips therefrom of a proper form, to embrace and secure the rail. The description of chairs thus formed, the patentee divides into several classes: firstly, that in which the lips of the chair are presented sideways to the rail. Secondly, that in which the lips of the chair are presented edgewise to the rail. Thirdly, that in which one or more of the lips are presented edgewise and the others sideways to the rail.

The Boyne Viaduct.—The works of this great bridge, according to the *Drogheda Argus*, are going forward with rapidity. The masonry has been commenced upon the south side of the river, immediately under the bank adjoining the terminus of the Dublin and Drogheda Railway. The foundations are here permanently laid on the solid rock. Two "Gantry cranes," made at the iron works of Greendon and Company, Drogheda, have been erected for the purpose of lifting and removing stones from any part of the quarry adjoining, and laying them down in a convenient situation for the stonemasons to dress. By means of this crane also large stones—several tons weight—are brought any distance where the ways are laid, and placed on a truck to be conveyed along a line of railway to where the masons may make use of them. A large number of men are employed in quarrying stones, and in cutting and dressing them. A quarry of black stone turned up in the immediate vicinity of the bridge. Large blocks of limestone are brought from a quarry near Skerries. Numbers of these stones are already dressed and marked, ready for the masons to use, and are intended to form the abutments of the arch of the great bridge. The driving of piles in the bed of the river is continued. Although the principal part of the work, as yet, may be said to lie at the south side, the works on the north side are also extensive. A large embankment has been made, which afforded employment to a considerable number of navigators. The bridges at Newfoundwell are in course of erection, as will soon also those over the road to the Chord, and that to cross the Strand-road, as well as the other mason works to connect the great arch, or centre one, under which the loftiest trading vessel that enters the harbour is to sail without striking or lowering her topmasts. At a rough estimate, there are 500 men employed by Mr. Evans, the contractor.

"THE PEOPLE'S CARRIAGE."—There is every appearance and probability that "the people"—the multitude—will now be permanently provided with their "carriage." Penny omnibuses are already "all the rage" in the metropolis, as at Liverpool, and we rejoice to hear that on one route, namely, along Oxford-street, they have already destroyed the old fourpenny monopoly, and are likely to spread far more generally than we had even intended them to do. They are now combined, it is true, with the second fare for longer distances, and it is said that they have already been found to be so profitable that they are to be "laid on" in every direction. It is probable, however, that we shall ultimately have a first and second class omnibus; for we understand that the working classes, unless when in holiday attire, dislike to enter omnibuses occupied by people better dressed at the moment than themselves, and it is but fair that they should have a work-day-class carriage of their own. The new association which we lately announced is not the only one in the field. A very hopeful one has since been projected, in 100,000 shares of 5l. each, of a capital of 500,000l., to establish new and superior vehicles, as we suggested, on every route throughout the metropolis and its suburbs, at rates of 2d. the minimum, with 1d. for every mile beyond two, for which the first 2d. may be said to be charged. The only questionable point perhaps is, that no passenger is to be taken up at his own door or on the road, offices being to be opened for tickets to prevent the company from being plundered by their own servants. Why the public should pay for this by additional trouble we cannot see. Some other means ought to be resorted to.



INTERIOR OF ULM CATHEDRAL.

THE SUBMARINE TELEGRAPH.

THE achievement at length, by Messrs. Brett and their coadjutors, of the submarine telegraph across the British Channel, induces me to step forward to claim for myself the merit (if any be attached to it) of being the first originator of the idea of a submarine electro-magnetic telegraph,—an idea which flashed across my mind on reading the account of Professor Wheatstone's success in his first experiments on the electric wires between Paddington and Slough; and after digesting and mentally maturing a project, which had for its object the like effect by submarine agency, I submitted it for the consideration of the Lords of the Admiralty, and for which I had the honour to receive their lordships' thanks (conveyed in a letter from their secretary, dated 5th August, 1844, with an acknowledgment of the receipt of my "Suggestions on the subject of effecting a communication with distant parts of the globe by means of electricity"); "but their lordships declined entertaining the idea, as ineligible" (meaning, as I conjectured, that they deemed it totally impracticable. Indeed, such "a fanciful, absurd, idea," as it was then designated, was ridiculed by many as being altogether Utopian, but I am thankful to Providence that I have lived long enough to see my "Utopian absurd project" partially carried out, and, to a certain extent, actually realized;—I say to a certain extent, for my project embraced the probability of its eventual extension to India through the Mediterranean and Isthmus of Suez, down the Red Sea, across to Bombay, and, after circumscripting the Indian Peninsula, extending the wires on to China, which I made the terminus of my "Utopian project," leaving it to a future generation to carry the wires down to Australia, and from Ceylon across to the Cape of Good Hope; trusting, however, to the possibility of the wires being ultimately taken across the Atlantic to America, though with but slight expectation that any one of them *in esse* would live to see this latter effected. Still, however, such an achievement was not utterly improbable. But certainly, as regarded a telegraphic communication with India, I considered that as coming within the range of rational probabilities; for although the expense of such a gigantic undertaking must of necessity be vast in the extreme, yet what is there which cannot be achieved by the united means of Government and the East India Company, both mutually and reciprocally interested in its accomplishment, and as affording, too, a return of a small per-centage on the outlay produced by an interchange of communication in a manner which I then pointed out, somewhat similar to the plan since adopted by the present Electric Telegraph Company.

D. WARREN.

THE LATE W. WYON, R.A.

ENGLAND has lost her chief medal-die engraver by the death of Mr. William Wyon, which took place on the 29th of October. Mr. Wyon, who possessed a delicate constitution, was deprived of the use of his left side by a paralytic attack while at Brighton, from which he never rallied: he gradually sank, and expired in about a month afterwards: he had gone to the coast for the improvement of his health, which for some few years past had been impaired.

Mr. Wyon was born in 1795, at Birmingham, and was apprenticed to his father, an eminent engraver, in 1809. When he was a young boy he met with a copy of Flaxman's "Dante" at a gentleman's house. Of Flaxman he knew nothing, but he was so enraptured with his works that he begged permission to study them, which being granted, he copied many if not most of the outlines. This showed no common discernment in a boy to whom good art was quite a stranger before he met with these works. He always attributed to this his advancement in art, and called Flaxman his real instructor. He owed something to his cousin, the younger Thomas Wyon, a genius, who was chief engraver to the Mint, and died at the early age

of twenty-five. Marchant, the gem engraver, was also useful to him about this time.

In 1813, according to a sketch in the *Literary Gazette*, which we use to piece out our own knowledge of the subject of this notice, he received the gold medal of the Society of Arts for his die of the Head of Ceres, which the Society purchased and used as their Gold Agricultural Prize; and he received another gold medal from the same Society for his group of Victory in a Marine Car attended by Tritons. In 1815 he again visited London, to assist his uncle in engraving the public seals; and in the following year, he was, upon the judgment of Sir Thomas Lawrence, elected as second engraver of the Mint, being only in the twentieth year of his age. In 1821 he married the late Mrs. Wyon, whose death in 1851 (February 14th) was severely felt by him.

In 1824 Mr. Wyon entered upon the duties of chief engraver of the Mint, but did not receive his official appointment until 1828. From that time until the present, all the coinage of this country and of the colonies has been executed by him, or under his superintendence. He made also numerous designs: amongst these, a figure of Neptune, for the reverse of the ten-pound piece of the naval sovereign, William IV., was highly approved by the Master of the Mint, though it was never executed. A figure of Uua, as the reverse of the five-pound piece of her Majesty, the mediæval crown-piece of her Majesty, and nine different patterns for the florin, were also designed.

In 1835 he was invited to Lisbon to make a medallic portrait of Queen Donna Maria, and he received a commission to engrave dies for a series of coins of her most faithful Majesty. In 1831 he was elected an associate; and, in 1836, a member of the Royal Academy; and many commissions were entrusted to him by the Royal Academy, by foreign academies, by the governments of England and of Portugal, and by the public.

Amongst his chief works may be mentioned the Brodie Medal, the Soane Medal, the Chantrey Medal (for the Art-Union of London), the medal commemorating the Queen's visit to the City, Prince Albert's Medal, the Royal Humane Society's Medal, the Liverpool Shipwreck Society's Medal, Lloyd's Medal, and all the war medals which have been conferred for a series of years; for instance, those for India—Cabul, Jellalabad, &c.; the Sutlej medals—Sobraon, Aliwal, &c.; the Panjab medals—Chillianwallah, &c.; the retrospective medals for former Indian victories—Awa, Bhurtpoor, &c. (these two last mentioned, Retrospective and Panjab, are not yet issued); the army or Peninsular medals, the navy medals, and a number of others. Nor must we omit, as amongst the most important medals he ever made, the obverses of the Exhibition medals, bearing the portraits of the Queen and Prince. Subsequently he did the exhibitors' and service medals, his last works, which are not yet issued, but were in active progress.

In earlier life the conductor of this journal, when halting in the choice of a profession, went into Mr. Wyon's studio preparatory to being articulated to him, but ultimately adopted architecture as his pursuit. From that time to the present we have enjoyed the pleasure of his acquaintance, and bear sincere testimony to his amiability and kindness. He will be succeeded at the Mint, we may suppose, by his son, Mr. Leonard Wyon, who has well profited by his father's instruction.

IMPROVEMENT OF GREENWICH PARK.

The committee appointed at the late vestry have met to consider the present state of the park. They determined to present a memorial to the Commissioners of Woods and Forests, calling their attention to the fact that a large portion of the park had been enclosed and added to the garden of the ranger. It was also resolved to urge that an ornamental fountain should be placed in the centre of the reservoir; that the gate at the foot of Maze-hill, which has been closed many years, should be thrown open; and also that a carriage-road should be formed from Blackheath to the gate at St. Mary's Church.

ARCHITECTS AND BUILDERS.

THE Bristol Society of Architects have made the following bye-laws and regulations with respect to

"TRADE COMPETITIONS—ARRANGEMENTS WITH BUILDERS, &c."

1. If an architect takes off quantities from his own plans, they shall be subject to additions and deductions in case of error: it shall not, however, be compulsory for builders to take such quantities. Any one preferring to take off his own quantities may do so without prejudice to his interests; and for this purpose a reasonable time is to be allowed.

2. If any builders require the quantities to be taken off for them, they shall have the option of naming a surveyor for that purpose, he being an associate of this society, and approved of by the architect.

3. In private competitions the names of the builders applied to shall be exhibited in the architect's office, or at the place where the plans lie for inspection. In public competitions, a paper shall be provided to register the name and address of each person competing, such paper being open to the inspection of all competitors.

4. Tenders shall be opened, where practicable, in the presence of the employer and the builders; the amounts of the tenders to be shown to the competing builders, if they so request.

5. When general tenders are applied for, no separate tenders are to be admitted, and *vice versa*.

6. No builder or surveyor shall be allowed, under any pretence, to make copies or tracings of the drawings, without the written consent of the architect; and any drawings which may be furnished to a builder for the execution of his work shall be considered as the copyright of the architect furnishing them, and be returned to him at the completion of the building. They must not be copied or traced for any purpose whatsoever without first obtaining the express written consent of the architect. Any violation of this condition will render the person liable to immediate expulsion from this society, and forfeit the good opinion of all fellows.

7. Works shall be measured up within three months from the time of completion of the works contracted for, unless otherwise stipulated in the specification.

8. In the event of any private local competition, none but associates of this society shall be applied to for tenders, unless by the request of the employer.

9. The names of all candidates for admission as associates shall, in the first place, be submitted to a committee of associates, for the purpose of eliciting their opinion as to the respectability of the said candidate, such opinion to be given in writing, signed by the chairman of the associates. The fellows shall not, however, be bound to adopt the recommendation or suggestion of the committee of associates, should their own opinion be contrary.

10. No fellow of this society shall undertake the execution of any work, by contract or otherwise, or in any manner interfere with the province of the builder, unless such work be intended for his own private use.

11. No associate of this society shall be allowed to prepare plans or designs for any building, but shall in all cases recommend the employment of an architect. In the event of the employer refusing to call in the assistance of an architect, the builder shall submit a sketch of the proposed erection for revision to some architect, a fellow of this society, and shall pay such sum as the council shall fix and determine, unless a special agreement be made at the time between the builder and the architect so applied to.

12. No fellow or graduate of this society shall accept, or knowingly permit any person employed by him to accept any pecuniary or other remuneration or acknowledgment from any builder or tradesman whose works he may have been employed to superintend.

GOVERNMENT SCHOOL OF MINES.—Sir Henry De la Beche inaugurated the lecture sessions in the theatre of the new building in Piccadilly, on Thursday, and was listened to by a distinguished audience. Dr. Lyon Playfair, Professor E. Forbes, and the other professors, will commence their courses this week.

OPENING THE WEST FRONT OF ST. PAUL'S.—We are glad to observe that Mr. Barber is still determined to carry out our suggestion, and to that end has just given notice of a motion in council for renewing the application to the dean and chapter for the removal of the iron railing and the opening of the area into the public way.

CEILING FORMERLY IN COUNCIL CHAMBER AT CROSBY HALL.



SALE OF THE COTTINGHAM MUSEUM.

THE sale of this collection, by Messrs. Foster and Son, was commenced on Monday, Nov. 3, and will be continued during the eleven following days, Saturdays and Sundays excepted. We give the prices fetched by a few of the early lots.

Lot 1. The bust of Shakspeare from the monument at Stratford-upon-Avon, sold to Mr. Lacy, it is believed for the New York Museum, now forming.—5*l*.

The enamelled fire-dogs, once belonging to Sir Thos. Moore, were bought by Mr. Rogers for 10*l*. 10*s*.; as also were the two groups from a crucifixion, from St. Sebald's Church, Nuremberg, for 8*l*. 8*s*.

A curious carved cradle (of which we give a cut), some of the early carvings in wood, the portrait of Queen Elizabeth, on panel, were bought by Mr. Henry Bohn.

The ebony table, from Nonsuch Palace (lot 73), brought 18*l*. 18*s*.: sold to Mr. Dobbinson.

The figures prepared for the altar screen of Magdalen College were all sold at prices from 4*l*. to 5*l*. 10*s*. each. The Flemish altar screen (lot 295), once in the possession of Philippe Egalité, was knocked down, after a very spirited competition, to Mr. Woolley, of Camp-

den House, Kensington, for the sum of 72 guineas.

The chasse or reliquary of the seventeenth century (lot 299), was bought by the Rev. Dr. Bloxam, the bursar of Magdalen College, Oxford, for the sum of 13*l*. 2*s*. 6*d*.

Mr. Henry Bohn also bought lot 332—a panel of the Royal arms, an original work, bearing date 1549, with initials of the artist, for the sum of 16*l*. 5*s*.

The African girl's head, in marble, brought from Pompeii, after much competition, was obtained by Mr. Lacy, for the museum forming in America, for 18½ guineas.

Mr. Walesby, of 5, Waterloo-place, Pall-mall, purchased the next lot, the head of Socrates, a unique gem, for 11 guineas: this gentleman has also secured the ancient Crosby Hall ceiling (lot 291), of which we give an engraving, the Chaucer monument (lot 404), and several other valuable and interesting lots.

The cinerary urn (lot 373) was purchased by Mr. Purnell; and the marble torso of a Venus, from the late Mr. Adams's collection, with several other lots, by the Rev. M. H. Bloxam, of Rugby, the author of the well-known works on architecture.

The monumental effigies; the painted glass, containing much that is most valuable for study;

some cabinets; the large collection of miscellaneous oak carvings; the metal work, including an elegant lantern; and some 800 or 900 lots of architectural details, figures, and casts, form the items for the five days next week.

We give an engraving of a figure of St. Anne teaching the Virgin, and one of a fine Branch of brass, of time of Henry V., the latter not yet sold.

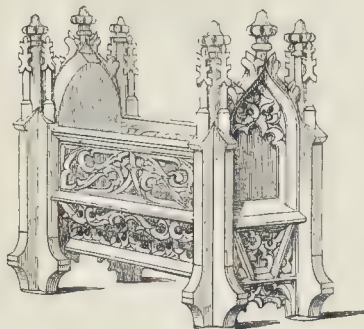
It is matter of regret that the members of the architectural profession have not yet availed themselves so extensively as they ought to have done of the opportunity of acquiring specimens relating to their art. Nor have representatives of any of the schools of design been present hitherto.

INCREASED PRODUCE OF GAS FROM COAL.

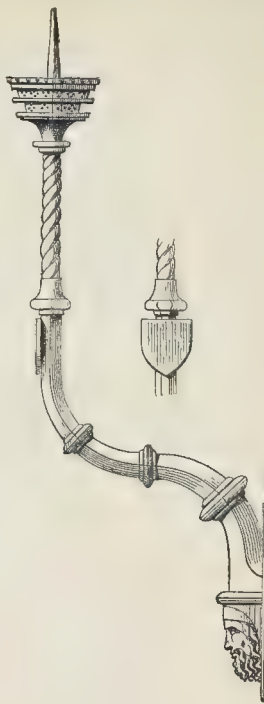
WE hear that the Metropolitan Chartered Gas Company have arranged with Messrs. Barlow and Gore, the patentees of a new invention, whereby 15,000 cubic feet of gas will be produced from a ton of Newcastle coal, in place of 8,000 or 9,000; and 75,000 from the same quantity of Cannel coal! Our repeated predictions on this point are certain to be eventually realised, whatever be the merits of this new invention.



FIGURE OF ST. ANNE TEACHING THE VIRGIN.



CARVED CRADLE, END OF FIFTEENTH CENTURY.



BRANCH FOR CANDLE, TIME OF HENRY V.

THE OMNIBUS MOVEMENT.

As concerning the million, this mode of locomotion has found an echo in *THE BUILDER*, and as to the structure of the reformed rotary engines called "Buses," there cannot be a better vehicle of intelligence.

During the summer every description of carriage with four wheels was called into requisition—spring waggons, vans, and, in short, every species of conveyance to which a pair of horses could be attached found full employment at a profitable recompense.

The fares were raised from 3d. to 4d. for short stages; and now that the crowds have returned to their counties and nations, the same rate of charge is exacted*, leaving us, as to accommodation no better off for the model designs shown in the Exposition, and 25 per cent. worse off by the enhanced cost.

All Parisians who used these public carriages remarked on the great inferiority of arrangement with us in allowing the passengers to enter "helter skelter," and take places as if by a scramble, instead of each person occupying Nos. 1, 2, 3, &c., in regular sequence; then, again, the want of arm-rests, to divide the seats, and save the occupants from unequal pressure; the want of altitude and restricted width; but, above all, the imperfect ventilation.

Perhaps the French omnibuses in general are not, as to external show, in any degree superior to Hackneys, Mile-ends, or Mother Red-caps; and are even below the standard of Atlases, Waterloos, and cream Bromptons; yet for comfort and orderly regulation they are far superior.

Enter a fourpenny 'bus (if you can) when there are ten *insides*—you mount the step, catch the doopost or holder (if there is one)—you squeeze on between two pairs of knees, and *straightway* the machine gives a jerk—you are

precipitated on the second pair of occupants—an elderly lady and fat gentleman—for an impassable lock of serried marrowbones forbids progress, until a pull-up and halt restore your equilibrium, and the repercussion forces your head (or new hat) against the roof: then some one more courteous edges towards his neighbour—you drop down, and wedge into close order.

When seated, a novice in town is unconscious of the exact termini on a route where there are no definite stations: he looks for the table of fares which, according to Act of Parliament, should indicate the amount: he can see none; for the inside panel of the door is concealed by the compacted members and the drapery of the first pair (there it is that the tariff is judiciously placed "*à l'abris*"), whilst Moses and Son, Nicoll, Hyams, and Standard Sherry, occupy the more prominent exposition at the extreme end, the only discernible portion of the interior, save the roof!

The regulation of order in taking seats would cure much of the first inconvenience; a clearly lettered tablet affixed in full view at the central end of the carriage the second; whilst a simple arm or division between each seat would materially add to the comfort and safety (as to pocket) of the passengers.

Lately some few good 'buses have been set up in town, but none of them lofty nor wide enough: from the floor to the roof should be at least six feet four inches, as an erect position much facilitates the passage to the end seats: between the seats should be at least two feet three inches, for unless the sitters withdraw their knees (turning aside on tiptoe) a lady of delicate limb cannot pass without violence, if not bruises, and a stout woman with profuse garments runs great hazard of lacerated trimmings.

The omnibus from Glasgow, exhibited in the Crystal Palace, is decidedly the best model that has yet appeared: the only fault that could be objected to it is, that no pair of

horses could be adequate to the draught of twenty-six persons.*

The vehicle is certainly the lightest in construction as yet made, and is said to be of great strength, and mayhap is intended for three or more horses: it is, however, certain that no pair of horses should have to drag above twenty persons, or one ton and a quarter, which, with a light 'bus of 15 cwt., would make 2 tons.

It is a question whether the excessive number of passengers can pay in the long run, seeing that more frequently there are some vacancies, and that for the occasional overloading the proprietor loses in horseflesh more than the surplus fares.

Like all exactions, the increased fares will be brought down in spite of coalition: the penny 'buses, like penny steamers, when first started, were supposed to be impracticable. The issue may, in like manner, prove that the immensely increased traffic for short distances will continue their advantage to the poorer citizens of London: in fact, it is to them a boon of inestimable value. A mile for a penny—it is no more than the scale of charge on the long routes; but how many will take half-a-mile in rain, or heat, or fatigue? To-day I entered one at Regent-circus, stopped, transacted business at New Oxford-street, and again to Gray's-inn, making in all 2d. It has been said the company is not genteel. I saw no difference in dress or demeanour, save that all seemed gratified at the economical arrangement.

The multitude will appreciate and drop into cheap conveyances. Nothing but the half-penny boat is objected to on that score (not being aristocratic), and that I believe principally because the port of destination is the slum and slime of Buckingham-wharf.

Let proprietors not fear being too cheap: let them improve the structure of their vehicles: as yet competition is open, and

* A return, we observe, has been made to the 3d. fare since this was written.

* It is designed, we believe, for three abreast.

almost unrestricted by laws. The laws we have are not enforced or evaded; but still "*Laus Deo pro omnibus.*" A hint might be taken from railroad carriages, which rise in the centre of the roof, for ventilation and height.

Q.

PUBLIC COMPETITIONS.

HULL—DURHAM.

Is it not surely high time for both engineers and architects to enter their decided and unanimous protest against the disgraceful local favouritism continually manifested in what are most falsely designated public competitions?

The letter of a "Candidate," in last week's *BUILDER*, comes most opportunely in aid of the remarks by another, though brief, correspondent, respecting the mapping survey of Reading.

But one gross and scarcely credible point in the Hull sanitary surveyorship demands that the public attention be more specifically drawn to it. What, friend editor, would a physician or surgeon, entering the field on a vacancy at an hospital, infirmary, or asylum, say, if the governors or committee merely read the formal application for the vacant appointment, and on the plea of unusual pressure from the number of candidates, *buried* their testimonials, as in this redoubtable case of the surveyorship for Wilberforce's memorable town of Kingston-upon-Hull?

The insult, as well as injustice, thus inflicted upon fifty-four unsuccessful competitors, "comprising," as the "Candidate" states, "some names of note," is truly beyond all endurance. Well, indeed, may thy shrewd correspondent put the opposite case of a merchant or tradesman perpetrating the reckless folly of advertising for a clerk, when he had in his own mind "predetermined to take his neighbour's son!" Although myself a member of another profession (an architect), it so happens that for a much esteemed and talented friend, I have, in three instances, made some efforts indirectly to serve him. It was in the case of similar appointments for the surveyorship of Norwich, Sunderland and Gateshead. But the utmost I attempted to do was to solicit the parties to whom I wrote, to *endeavour to see that fair play was used*; and that every candidate had that position in the deciding committee's judgment to which their testimonials entitled them. And here let me remark, that in an open competition, the official parties, with whom rests the ultimate election, must, as regards all *stranger* applicants, be entirely governed by the apparent truthfulness of those very "credentials," which, in the case of Hull, were entirely swamped and thrown aside as so much waste paper.

My previous knowledge of kindred movements on the part of municipal and other public bodies in regard to the selection of designs for churches, town halls, and other structures, brings to recollection one memorable example of local favouritism and its final results. An edifice, stipulated by the printed instructions to competing architects to cost 18,000*l.* and no more, was duly erected in a midland town of some importance. The firm of which I was then and years after a partner (though resigning the active pursuit of the profession in 1834) were amongst the competitors, and received the second prize.

The building was erected, and cost 25,000*l.* The committee refused to extend their payments beyond the original 18,000*l.*, and the architects, unable to obtain tenders within that amount, became wound up with the contractors, and, shortly after the completion of the building, were in the *Gazette*!

There are persons, probably, who will reason that, in this instance, the architects were wholly to blame. Not entirely so: the drawings and the material were well known to many of the influential inhabitants, and our unhesitating opinion was again and again openly expressed, that such a building in such a material could never be executed for the required sum. The building committee persisted, and, Shylock-like, demanding the strict fulfilment of their bond, both architects and sureties were finally ruined!

But to come more closely to our present subject, a letter is now before me from a highly respectable friend in the county of Durham, stating, that in the case of the Sunderland surveyorship, one of three candidates, from whom the last choice was to be made, had obtained a majority, but the parties voting for the remaining two, united in favour of the local candidate of these two, and thereby, of course, defeated his friend's majority!

Further comment is needless. I repeat, it is high time that some decided effort be made to put an end to this gross insult to the respective professions, under the pretence of public competition. Thy friend, E. S. R.

Books.

A Popular Account of Discoveries at Nineveh. By AUSTIN HENRY LAYARD, Esq., D.C.L. Abridged by him from his larger work; with numerous woodcuts. Murray, Albemarle-street. 1851.

THIS is a new volume of Murray's "Reading for the Rail." Although purchaseable for a crown piece, and printed in a clear and good-sized type, we seem rather to be reading the original itself than a mere abridgement, in its pages, everything popularly interesting being preserved, while the second part of the original work has been omitted, the author having introduced into the narrative itself the principal biblical and historical illustrations, thus rendering the whole complete, though at a cost so trifling.

Dr. Layard, writing in September last, says, in his preface, that he is still inclined to believe that all the ruins explored represent the site of ancient Nineveh, and, whilst still assigning the later monuments to the kings mentioned in Scripture, Shalmaneser, Sennacherib, and Esarhadon, he is convinced that a considerable period elapsed between their foundation and the erection of the older palaces of Nimroud. The results of the attempts to decipher the inscriptions were then, as he adds, still too uncertain to authorise the use of any actual names for the earlier kings mentioned in them.

While alluding to this subject of relative antiquity, it strikes us as worth while to quote a remark of the author, which will be found on page 350 of this abridgement, to the effect that "as in Egypt, the more ancient monuments show the purest taste and the highest knowledge of art, and we have that phenomenon which is to be remarked in the history of all nations, ancient or modern, of a gradual decline of art after a state of comparative perfection." Schlegel, in his "Philosophy of History," long ago pointed out the very same singular fact, so inconsistent with the ordinary idea of extreme antiquity, and the advancement of man out of that extreme antiquity from a savage state to a civilized. Dr. Layard appears to have added another proof to the truth of Schlegel's remark,—to the truth, shall we say, of Schlegel's idea that even the most extreme antiquity, in its traces of a high but declining art and luxury, denotes the prevalence of some still more perfect and exalted state of mankind, in still more extreme antiquity, of which we have no record at all in archaeological remains? Perhaps the only conceivable idea of it to be traced in any record may be involved in the question,—What sort of state of society, or of mankind, could that have been in which "the angels of God" associated with "the daughters of men"? It is at least a curious circumstance, that in those times of extreme antiquity of which we have any archaeological record, the supernatural is always singularly mixed up with the natural—gods with men. In the very case before us, Dr. Layard is of opinion that the singular palaces which he has excavated were of a sort of temple-palaces, whose presiding genius was a priest as well as king, and he is even represented on the sculptures as ministered to by angels. One of our own writers in *THE BUILDER*, some time since, we remember, speaking of the glorious statuary and architecture of ancient Greece, enthusiastically declared that they were not the works of men but

of demi-gods. He was doubtless only demi-serious in saying so; but the archaeological discoveries of the last half hundred years are at all events leading us to trace the human race backwards through the mists of ages, not into states of "primitive simplicity" and rudimentary and savage imperfection; but, on the contrary, into states of comparative perfection, themselves a mere declining remnant of still more ancient and exalted states of which we have no record whatever, unless it be in that oldest as well as most precious of books, the Bible.

The contents of Dr. Layard's work are so well known, that we had not thought of giving any quotation from it, but there is one point, namely, the roofing of the palaces and the consequent lighting of its central chambers, as to which we may adduce the author's opinion, which is in accordance with that of Mr. Fergusson:—

"The mode of roofing the palaces and lighting the chambers, many of which were in the very centre of the building, with no other inlet for light but the door, is one of the most difficult questions in Assyrian architecture. I am inclined, on the whole, to concur with Mr. Fergusson in thinking that light was admitted through galleries or open rows of low pilasters above the alabaster slabs, and that wooden columns were sometimes used to support the roof in the larger halls. It is, however, remarkable that no remains whatever of columns have been discovered, nor are there any traces of them. Unless they were employed, the chambers exceeding a certain width must have been left open to the sky. There is no proof whatever of any of the rooms having been vaulted, although the Assyrians were well acquainted with the principle of the arch.

The chambers were paved with alabaster slabs, covered with inscriptions recording the name and genealogy of the king, and the chief events of his reign, or with baked bricks, or rather tiles, each also bearing a short inscription. The alabaster slabs were laid upon bitumen. The bricks or tiles generally in two layers, one above the other, with sand between and beneath them probably (like the bitumen) to exclude damp. Between the lions and bulls forming the entrances, was usually one large inscribed or ornamented slab. The drains discovered beneath almost every chamber in the older palace of Nimroud joined a large drain, probably running from under the great hall into the river, which originally flowed at the foot of the mound. The interior of the Assyrian palaces must have been as magnificent as imposing."

As to the lighting of the central chambers of the temple palaces, if these buildings really were temples as well as palaces, it might be asked whether they were not sacred enclosures, like the sanctum sanctorum of the Jewish Temples, *not lighted at all from without*. In the Egyptian temples, the priests, who were physicians of the body as well as of the soul, were said to have cured the people by taking them into the temple and throwing them into what has been called "the temple sleep"—most probably in dark, silent, and secret chambers—wherein "the god possessed"—the sleepers, who were said to be "changed into a divine personality" during the "invocations of the god"—prescribed the proper remedies for the diseased, delivering them as oracles, like those of Delphos, in whom "the god" was said to speak through the mouths of the "possessed." These prescriptions were said to have been inscribed or sculptured on the walls of the temples, and ascribed to *Asclepius* as "the god."

We do not offer this as our own opinion but simply as a remark which suggests itself.

A Technical Dictionary; or, a Dictionary explaining the Terms used in all Arts and Sciences. By GEORGE CRABB, Esq., M.A., author of "The Universal Technological Dictionary," &c. Maxwell, Lincoln's-inn. 1851.

So far as it goes this abridgement of Mr. Crabb's larger work will be found very useful; but we fear that the desire to produce a cheap volume has led to the exclusion of terms which ought to have been included in any dictionary pretending to explain "the terms used in all arts and sciences." E. g.: no such words as "clerestory," or "hagioscope," or even "squin," will here be found as architectural

terms: so, with chemical, there is no such term as "actinism" or "actinic," the want of which very terms, by the way, "in all the dictionaries," induced a lady reader of our own, some time ago, to ask an explanation, which we accordingly gave in *THE BUILDER*, and which certainly ought to be in all the dictionaries now published. The meaning of the term "magneto-electricity" is not given, although something is incidentally said about electro-magnetism. In short, we fear that this abridgement has been too severely restricted. Some of the matter which it does contain, too, bears the mark of the pruning-knife in defective sense. Among the wood-cuts we observe an illustration of the term "arch," in which Norman impostes are combined with a classic key-stone. As a mere abridgement, however, and hence necessarily imperfect and exposed to animadversion at all hands, this little volume contains much useful information not to be otherwise had for a few shillings.

Miscellaneous.

BEARD'S DAGUERRETYPES.—We have seen some beautiful specimens of a new invention announced by Mr. Beard as the enamelling of daguerreotypes. The object is to render the lights and shades permanent in place of more or less fading, in spite of "fixation," as they are said to have hitherto been. Time only can show, of course, whether a complete remedy has been found for this evil; but this we can forthwith say for Mr. Beard, that we believe he would put forth no announcement in the truth of which he himself does not fully believe, and that the probability is, therefore, that this enamelling will be found to render his daguerreotypes more permanent than they were. —From recent proceedings in the Academy of Sciences at Paris, reported in an American journal, we perceive that some of the experiments of M. St. Victor, as well as of M. Becquerel, in heliochromy or sun colouring, have been published. A silver plate, prepared with water acidulated with hydrochloric acid and the battery, gives, it is said, all the colours, by the action of light, but the ground of the plate is always black, and the fixation is a difficulty and a secret. It has also been found that all the substances which produce coloured flames will yield coloured images by means of light. It is a remarkable circumstance how essential the halogens, such as chlorine, bromine, &c., are to sun pictures. These agencies absorb the actinic or chemical principle from the solar ray, and differ much in this respect according as they are previously exposed to light or prepared in darkness like the daguerreotype plates themselves. Would not the idea of Goethe or of St. Pierre, as to the relation between colour and mere shade, shed some additional light on this interesting subject?

THE OLD PRIORY AT YARMOUTH.—The remains of the old Benedictine Priory, adjoining the church at Yarmouth, are about to be rescued from the ignoble purposes to which it has been devoted (stables, hay-lofts, &c.), and converted into National Schools for the north end of the town. The hall has already been cleared of the rafters and rubbish which formerly encumbered it, and a series of almost perfect arches have been disclosed, the stone doorways opened, and four large and lofty windows cleared of the bricks which had been inserted almost to the entire destruction of the tracery and mullions. The hall measures 50 feet by 30. It is proposed to erect a girls' and boys' school, with an infant school, at the west end, and residences for the masters and mistresses at the east end.

OSCILLATING ENGINES.—Messrs. James Wylie and Ephraim Morris, of New York, have invented an improvement in the reversing action of the simple and one-direction oscillating engine. By a peculiar arrangement of the exhaust and steam openings in the chest, a simple hollow slide-valve is made to shut off the steam, let it on, and also change the steam into the exhaust port, and vice versa. This same covered slide can be made to cut off by various devices.

OPENING OF BARROWS NEAR DRIFIELD.—Some more of the barrows on Lord Lonsborough's Kelleythorpe estate have been recently opened and a number of articles, including skeletons, bronze fibula and dagger, beads, urns, &c., found. In a large one of a conical shape, about two feet and a half below the surface, a kistvaen or vault was discovered, measuring between four and five feet in length, about three feet in breadth, and about two and a half feet in depth, and paved with stones at the bottom. The sides and ends are formed of slabs of red sandstone, and it was covered with a large block of it weighing upwards of a ton. It was flanked on three sides with similar slabs, two of which were standing on their edge upright. At the bottom of this rude depository of the dead lay a large skeleton, with the head towards the east and the legs drawn up. Near the knees was an urn of Etruscan vase-like appearance, carved all over with angular lines in rows running in opposite directions, an ornament peculiar to the ancient British period. The vault is considerably out of right angles at the corners, and though the slabs forming the sides and ends are pretty smooth, they do not bear the least marks of ever having had a tool applied to them, but are in the same state as when first hewn from the quarry. A curious consideration arises as to whence these huge stones have been brought, as there is not a quarry of similar stone within a distance of sixty or seventy miles, the nearest quarry producing such stone being at the Hambleton Hills.

DRY ROT—SNAILS.—Can any of your correspondents who are conversant with dry rot inform me whether stoving with sulphur the space under a floor infected with that disease would be effectual in stopping it. There is little doubt that the sulphuric acid evolved by the process would destroy the existing vegetation, but it is a question whether the impregnation of the timber with the acid would not, by promoting an acetic fermentation, induce a tendency to engender the disease afresh. The information is asked for with reference to a case where pains were taken to remove not only the disease but the cause of it, by forming ample space under the floors, ventilating shafts, &c., yet without thorough cure. Query, what means are employed in ships affected by it? In some pantries which are not plastered, huge horned snails leave their slimy track upon the walls, to the annoyance of the householders. Is there any possibility of keeping them at a distance, short of plastering the walls? Replies will oblige others besides your obedient—L. L.

MR. BRASSEY, THE RAILWAY CONTRACTOR.—There is something striking in the enormous undertakings of railway contractors; and a glance at those of Mr. Brassey seem enough to overwhelm one man. A thousand miles of railway is no small distance; many thousands of labourers is no trifling responsibility; nine millions of pounds on his own account, and nine millions more in conjunction with two others, is no small sum; yet in fifteen years has Mr. Brassey undertaken and succeeded in these things; and at the early age of forty-five is able to look back on a useful, laborious, and—if measured by deeds—a long life, spent in works which have contributed to the happiness of thousands. A prominent exception to this gentleman's general success, was in the fall of a viaduct built by him on the Rouen and Havre line, composed of twenty-seven arches, very nearly completed, and costing 30,000*l*. An accident like this would have quenched the zeal of most persons; but it proved a memorable illustration of the character of Mr. Brassey, and was a marked test of the man. Although there could be no moral claim, as, during its construction, he had repeatedly protested against the material, and though the lawyers expressly repudiated all legal responsibility, the fine and almost chivalric spirit of the "descendant of the Brasseys of Bulkeley" burst forth when he said, "he had contracted to make and maintain the road, and no law should prevent Thomas Brassey from being as good as his word." The engagement was made good; the viaduct was rebuilt; and the word which the contractor maintained,

involute is not inaptly typified by the stability of the work he reformed. The energy of this gentleman will be appreciated when it is known, that though sixteen million bricks were required to rebuild the viaduct, and though fourteen millions of these were made on the spot, the stupendous erection was finished in seven months.—*Frances' History of the English Railway.*

LOOK TO YOUR LADDERS.—At Nottingham, lately, Mr. Mason, joiner, builder, &c., was killed by the snapping of a very long ladder which had been in use for a number of years. He had mounted almost to the top, notwithstanding the warning from a bricklayer, who had refused to ascend it, that it was exceedingly unsafe; and another person was recklessly following; when the ladder broke in two pieces near the centre. The warnings of workmen in such cases ought never to be despised, as doubtless the *esprit du corps* will induce them to brave danger as long as any one safely can; and it is the duty of masters to test such apparatus occasionally for the sake of their workmen's lives at least, if not of their own, instead of virtually taunting them with cowardice by acting practically in the face of their warnings.

SIR WILLIAM CUBITT.—Not many years since he was in the employ of the Messrs. Ransome, of this town. The first steam-engine in Ipswich was erected by him; and the gas-works of the town were constructed under his direction. He invented the patent windmill sails, now almost universally adopted; and many an incorrigible rogue has done any thing but bless him for contriving the treadmills in our prisons. He was the engineer who was employed to erect the present Stoke Bridge, after the old structure had been swept away by the floods. Soon after the completion of this work, he left this town for the metropolis, but not until he had given evidence of the possession of a very high order of engineering talent. In London he had placed under his charge the task of removing Shakespeare's Cliffe, at Dover, and was subsequently chosen engineer of the South-Eastern line of railway. Having been elected a member of the Royal Society of Civil Engineers, he subsequently so distinguished himself as to be elected its president,—a position he still worthily fills.—*Ipswich Express.*

METROPOLITAN SEWERS COMMISSION.—On the 5th inst. the ordinary monthly court was held at Greek-street, when new works at Greenwich were ordered to be executed by Mr. W. Dethick, as the successful candidate out of six who had lodged tenders. As to the drainage of Lee, in Kent, and its vicinity, Captain Dawson spoke at some length, explaining delay, &c., and he gave notice of motion on next general Court-day for a return of all the works authorised by the Sewers' Commission for the Metropolitan Districts, and amounts paid for same since April, 1850; and for the rescinding of a special rate ordered to pay one-half the works in Dacre-street, Church-street, and Boome-street, the whole sum to be paid out of the district rates he proposed with reference thereto. Complaints of ditches at Camberwell, and the desirability of drainage at Rotherhithe and Stoke Newington were then considered, and a number of minor works disposed of, and the Court adjourned till Wednesday next.

METROPOLITAN SEWAGE MANURE COMPANY.—We regret to find it reported that this company has got into new difficulties, or rather has never got out of those old difficulties by which it appears to have been beset from the very commencement. We have almost never had any thing very favourable as to its proceedings to report; but we hope that the measures about to be taken for its extrication may lead to more favourable accounts of its future progress. A committee has been appointed for the purpose, who are to report to the shareholders in course of next month.

THE STRIKE.—We regret to say that Mr. Myers's men have not yet returned to their work. A public meeting was held by them on Thursday evening, too late for us to refer to the proceedings.

DECORATIONS—AMERICA.—The *New York Literary World* says,—"At the fair of the American Institute (which presents an improved appearance in the solid value of the articles and exclusion of the trumpery of some former years) there are several noticeable 'ameliorations' of the Fine Arts; among which we may notice some improved forms in glassware, the porcelain door furniture, the painting on china, and not least, some new terra cotta mouldings, in imitation of finely carved stonework. In weight and promised durability it appears quite successful, and we see not why it may not be readily introduced into our architectural decorations. There is good precedent for the use of such mouldings. The fine ceiling arabesque decorations of the Alhambra, it appears by a note of Washington Irving, in his volume with that title, is but a repetition of stucco mouldings.

NEW NATIONAL GALLERY.—The *Times* has given this question distinguished consideration in a leading article, advocating the sweeping away of Knightsbridge-barracks as a nuisance, and the erection of the proposed New National Gallery on its site. As to the desirability of removing these barracks, as an eyesore and nuisance, there can be no question, but we are forced to say we do not think even Knightsbridge far enough removed from the smoke and dust which, according to evidence, have injured the pictures.

NOTTINGHAM SCHOOL OF DESIGN.—On Monday week the students and friends of this institution held a *soirée* in the School-rooms, Beck-lane, to celebrate the appointment of Mr. Thomas Clark as head master. The mayor was in the chair. Mr. Clark met with a hearty welcome: and a resolution to support the school was unanimously passed by the meeting, which consisted of a good number of ladies and gentlemen, who appeared to take an active interest in its success.

TENDERS FOR BUILDING NEW SEWERS IN THE CITY.—Tenders have been received for the building of sewers in Little Bell-alley, and other places, in the wards of Coleman-street and Broad-street, and the successful candidate declared to be Mr. Thomas Crook, of Tower Royal, City, and of Hackney.

[ADVERTISEMENT.]

IRON BRIDGES AND PIERS.

DREDGE's taper balance, on tension, in small bridges, with the same weight of iron, is three times the strength of the common principle, and this advantage rapidly increases to ten, twenty, and forty times, and so on, as bridges are increased in span; and in point of safety and inflexibility, it is equally superior. Dredge's taper balance girder possesses the same relative advantages over the common girder bridge.—JAMES DREDGE, Bath.

TENDERS

For an additional villa at Sutton, for Mr. F. T. Thomas. Mr. F. Cross, architect.

E. B. Gammon	£1,473 0 0
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For finishing six small houses at Norwood. Mr. Eppy, architect.

Glenn	£2,370 0 0
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Taylor	1,750 0 0
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TO CORRESPONDENTS.

"*Drying Leather.*"—"Can any of your readers inform me what is the best method of drying leather to dried air? Leather is injured by heat, consequently the aim should be to obtain a strong draught of dried air (in a building with two perforated floors), at a temperature not exceeding 100 degrees."—J. M.

"D. W."—"Belief."—"Mac" (time enough when wanted). "P. H."—"S. H."—"Speculator" (the writer's intention is not clear). "E. S. R."—"A. E." (consult your architect). "W. M." (the hospital is for diseases of the chest). "E. J." (we cannot advise as to our correspondent's worth). "J. H. M."—"Dr. P."—"M. P."—"F. and Son."—"J. D. P." (shall appear; though we had prepared something on the subject). "J. B."—"Taunton."—"J. B. W."—"J. Y."—"C. F."—"D."—"G. C." (shall appear). "Q."—"J. K. C."—"Messrs. S."—"R. R."—"D. L."—"W. R."—"W. B."—"R. G."—"H. G."—"T. L." (first paper has been translated into French). "P. W."—"E. V. S."

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Date of Policy Insured.	Sum Insured.	Original Premium.	Bonuses added subsequently, to be further increased annually.
1806	£2,500	79 10 10	£1,225 2 6
1814	£1,000	39 19 9	£31 17
1818	£500	34 16 10	£14 15 10

EXAMPLES OF BONUSES ADDED TO OTHER POLICIES.

Policy No.	Date.	Sum Insured.	Bonuses added.	Total with additions to be further increased.
321	1807	£500	£48 13 4	£548 13 4
174	1810	£250	£130 2 4	£380 2 4
218	1820	£250	£158 7 8	£408 7 8

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Healthy persons whose age on becoming subscribers shall be— From 15 to 25 years, 2s. per week. " 25 to 35 years, 3s. " " 35 to 45 years, 4s. " " 45 to 55 years, 5s. " " 55 to 65 years, 6s. " " 65 to 75 years, 7s. " " 75 to 85 years, 8s. " " 85 to 95 years, 9s. " " 95 to 100 years, 10s. " " 100 to 110 years, 11s. " " 110 to 120 years, 12s. " " 120 to 130 years, 13s. " " 130 to 140 years, 14s. " " 140 to 150 years, 15s. " " 150 to 160 years, 16s. " " 160 to 170 years, 17s. " " 170 to 180 years, 18s. " " 180 to 190 years, 19s. " " 190 to 200 years, 20s. " " 200 to 210 years, 21s. " " 210 to 220 years, 22s. " " 220 to 230 years, 23s. " " 230 to 240 years, 24s. " " 240 to 250 years, 25s. " " 250 to 260 years, 26s. " " 260 to 270 years, 27s. " " 270 to 280 years, 28s. " " 280 to 290 years, 29s. " " 290 to 300 years, 30s. " " 300 to 310 years, 31s. " " 310 to 320 years, 32s. " " 320 to 330 years, 33s. " " 330 to 340 years, 34s. " " 340 to 350 years, 35s. " " 350 to 360 years, 36s. " " 360 to 370 years, 37s. " " 370 to 380 years, 38s. " " 380 to 390 years, 39s. " " 390 to 400 years, 40s. " " 400 to 410 years, 41s. " " 410 to 420 years, 42s. " " 420 to 430 years, 43s. " " 430 to 440 years, 44s. " " 440 to 450 years, 45s. " " 450 to 460 years, 46s. " " 460 to 470 years, 47s. " " 470 to 480 years, 48s. " " 480 to 490 years, 49s. " " 490 to 500 years, 50s. " " 500 to 510 years, 51s. " " 510 to 520 years, 52s. " " 520 to 530 years, 53s. " " 530 to 540 years, 54s. " " 540 to 550 years, 55s. " " 550 to 560 years, 56s. " " 560 to 570 years, 57s. " " 570 to 580 years, 58s. " " 580 to 590 years, 59s. " " 590 to 600 years, 60s. " " 600 to 610 years, 61s. " " 610 to 620 years, 62s. " " 620 to 630 years, 63s. " " 630 to 640 years, 64s. " " 640 to 650 years, 65s. " " 650 to 660 years, 66s. " " 660 to 670 years, 67s. " " 670 to 680 years, 68s. " " 680 to 690 years, 69s. " " 690 to 700 years, 70s. " " 700 to 710 years, 71s. " " 710 to 720 years, 72s. " " 720 to 730 years, 73s. " " 730 to 740 years, 74s. " " 740 to 750 years, 75s. " " 750 to 760 years, 76s. " " 760 to 770 years, 77s. " " 770 to 780 years, 78s. " " 780 to 790 years, 79s. " " 790 to 800 years, 80s. " " 800 to 810 years, 81s. " " 810 to 820 years, 82s. " " 820 to 830 years, 83s. " " 830 to 840 years, 84s. " " 840 to 850 years, 85s. " " 850 to 860 years, 86s. " " 860 to 870 years, 87s. " " 870 to 880 years, 88s. " " 880 to 890 years, 89s. " " 890 to 900 years, 90s. " " 900 to 910 years, 91s. " " 910 to 920 years, 92s. " " 920 to 930 years, 93s. " " 930 to 940 years, 94s. " " 940 to 950 years, 95s. " " 950 to 960 years, 96s. " " 960 to 970 years, 97s. " " 970 to 980 years, 98s. " " 980 to 990 years, 99s. " " 990 to 1000 years, 100s. " " 1000 to 1010 years, 101s. " " 1010 to 1020 years, 102s. " " 1020 to 1030 years, 103s. " " 1030 to 1040 years, 104s. " " 1040 to 1050 years, 105s. " " 1050 to 1060 years, 106s. " " 1060 to 1070 years, 107s. " " 1070 to 1080 years, 108s. " " 1080 to 1090 years, 109s. " " 1090 to 1100 years, 110s. " " 1100 to 1110 years, 111s. " " 1110 to 1120 years, 112s. " " 1120 to 1130 years, 113s. " " 1130 to 1140 years, 114s. " " 1140 to 1150 years, 115s. " " 1150 to 1160 years, 116s. " " 1160 to 1170 years, 117s. " " 1170 to 1180 years, 118s. " " 1180 to 1190 years, 119s. " " 1190 to 1200 years, 120s. " " 1200 to 1210 years, 121s. " " 1210 to 1220 years, 122s. " " 1220 to 1230 years, 123s. " " 1230 to 1240 years, 124s. " " 1240 to 1250 years, 125s. " " 1250 to 1260 years, 126s. " " 1260 to 1270 years, 127s. " " 1270 to 1280 years, 128s. " " 1280 to 1290 years, 129s. " " 1290 to 1300 years, 130s. " " 1300 to 1310 years, 131s. " " 1310 to 1320 years, 132s. " " 1320 to 1330 years, 133s. " " 1330 to 1340 years, 134s. " " 1340 to 1350 years, 135s. " " 1350 to 1360 years, 136s. " " 1360 to 1370 years, 137s. " " 1370 to 1380 years, 138s. " " 1380 to 1390 years, 139s. " " 1390 to 1400 years, 140s. " " 1400 to 1410 years, 141s. 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The Builder.

No. CCCCLVIII.

SATURDAY, NOVEMBER 15, 1851.



THE inhabitants of Portsmouth, grateful to Lord Frederick Fitzclarence for his efforts towards the improvement of the town, have determined to offer him a testimonial; and it is suggested that this shall take the shape of a statue, column, or fountain, erected on the spot where his Lordship's endeavours have been made. Let us caution them against the statue, if they wish to see Lord Frederick amongst them again, for the chances are that they will put up something which will drive him for ever from the spot. There is much wisdom in the objection to raising statues to a living man, not merely on the ground that you cannot tell what he may do before he dies to render such an undisguisable public testimony in his honour undesirable, but because of the difficulty which, from some cause or other, we find in putting up a statue satisfactory even to the individual honoured. And yet we have sculptors of great ability,—very great ability; but by some means or another our public statues are usually public failures. Either the right man is not chosen; or, being chosen, is not successful; or, being successful, has his work spoilt by position. Look at that monstrous eyesore, the "Duke," on the arch at Hyde-park Corner! A work with qualities, limited they may be, to command admiration; but so placed that only its weaknesses and defects can be observed. Here we have thirty thousand pounds' worth of skill and metal; *thirty thousand pounds' worth!* and yet Barry (we mean the clown), when he puts on a short cloak and cocked hat, and bestrides a little pony in the ring at Astley's, with his hand stuck out, is unable to produce a more ridiculous figure than this presents, when seen from the north or south, though he tries his hardest; and Barry is a great genius in his way, and a very funny fellow.

The Duke is very unlucky in his untrue effigies; notwithstanding Chantrey's fine work before the Royal Exchange: witness the tame, common statue of him set up at the Tower of London,—a statue guiltless of a thought, and effective only in exciting regret.

The statue of the Queen in the 'Change is not satisfactory; the pig-tailed George III. is not pleasant to rest upon; and George IV. in Trafalgar-square, one of our best, looks very much as if he were taking the old horse, which Chantrey made play many parts, to water.

But what shall we say of the statues which the people of Portsmouth already have, and owe, we believe, to the liberality of the nobleman they desire to honour? It was the recollection, indeed, of these that prompted our prefatory caution. When the statue of the Duke of Wellington was first erected there we drew attention to a startling piece of bad taste exhibited in it, and this was ultimately obliterated.*

* The Duke was represented trampling under foot the Gallio cock.

But there still stands the statue, and unluckily it is not "the statue that enchants the world." It is not merely indifferent or common, but it is positively bad—to the tutored eye painful,—and as art-culture spreads in Portsmouth so will the desire for the removal of that and its melancholy companion increase, until it culminate in their abasement. Some of our recent foreign visitors gazed on them wonderingly, and well they might.

The Rutland statue, we observe, is about to be erected; and here again, we have, unfortunately, a failure. Most of our readers will remember the strange, loose figure of the Duke in the Great Exhibition: it stood in the west nave. His Grace is made to appear positively intoxicated; and we may expect, if it be put up without alteration, to find the old proverb of "as drunk as a lord" giving place in Leicester to "as drunk as the Duke." It is really too serious a matter, however, to joke about. There appears to be a desire in Leicester to emulate the people of Chelmsford, who have put the statue of Tindal on the pump; but their decisions on this head we have not yet heard. After obtaining a statue for a place, the next important thing is to obtain a proper place for the statue.*

As we are speaking of sculptors, we may mention that Mr. Weekes has been elected an Associate of the Academy.† Mr. Behnes has just now completed a colossal bust of the Duke of Wellington for the King of Prussia. The statue of the late Lord George Bentinck has been placed upon the pedestal in Cavendish-square; but is at present covered up. The figure is of bronze, the pedestal red granite. The deceased statesman is represented in a surcoat, with a cloak upon his shoulders, and holds in his right hand raised to his breast a roll of paper. We may add to these sculptural notices that Mr. Wyatt's equestrian statues of the Queen and Prince Albert, which were at the Great Exhibition, have been obtained by the spirited proprietor of the Colosseum, and now stand at the entrance to that building.

An American correspondent of ours is very angry with the Royal Commissioners for not giving Mr. Power a council medal for his "Greek Slave;" but we are unable to participate in his anger, charming as the statue is. The Fine-Art Jury, No. XXX., have made some grievous mistakes; but we cannot put this amongst them.‡

The statue of William the Conqueror, which was raised last month in his birth-place,

* We hear from Leicester, by the way, that some fine Roman pavements have been discovered in an orchard close to the town. The pavements are but 1 to 2 feet below the surface, and the discoverers expected, when our informant wrote, to expose the entire ground plan of a villa.

† There were three other vacancies: these were filled by the election of Mr. Buxall, Mr. E. W. Cooke, and Mr. F. Stone.

‡ A German writer on art has the following novel remarks on the Greek Slave.—There can be no doubt that the American intended by his statue to aim a little blow at us Eastern Caucasians. A Greek slave, forsooth! why, a Circassian or Georgian would have done as well. Still, there is a certain delicate virginity expressed in this marble which is truly Greek; in a Circassian or Georgian, the whole gait would have been different. Leaving this political question out of the question, we say, that any great art-work ought to improve on and stand inquiry, reflection, thought, &c. Now, it strikes us, that the fetters which the Greek female wears could not be supposed to have been where they are now when she was dressed. Either she was unfettered when in her attire, or the shackles must have been first removed, and then put on again. What necessity or propriety there be to fetter a female, in fact, any person, when in a state of nudity, we are not well able to guess: there is something absolutely unwarrantable, gratuitous, and, we would in this case say, indecent, in such a procedure. It is a different case with Andromeda, or the like mythological personages, who are supposed to have been unattired, chained for some or other purpose. But, we repeat, it will always be a drawback on the American Venus of Medici, that her composure should have fettered her, thus put fetters on the feeling and thought-expansion of the beholder.

Falaise, in Normandy, has had much applause for eccentric beauty, and has gained for its author, M. Rochet, much reputation. The warrior-king uttering a furious shout, with his banner in his hand, is galloping to the attack. Horse and man are in violent action: repose, so necessary in monumental sculpture, is wholly wanting, and the mind seeks in vain a resting-place. It is, nevertheless, a fine work, displaying knowledge and originality.

O! pleasant Falaise, noted now, too, for thy rocks and night-caps,—well do we remember fruitful rambles in thy neighbourhood in early days, when leisure came often than now.

"Reclining on thy rocks, Falaise,
That front thy still majestic towers,
Ah me! what dreams of other days,
Shed glory on the passing hours!
The window'd keep, the yawning breach,
Moss-mantled vault and chiming bell,
Crenelle, crag, moat, and dungeon, each
Had some old feudal tale to tell."

The Castle magnificently placed; the window whence Robert of Normandy might first have seen the maid Arlette; the little uncomfortable chamber in which William may have been born; the old house in the market-place, inscribed *Maison de Guillaume le Grand Conquerant Richard. Donne à boire et à manger*;—all come vividly back to the memory.

What inference do we draw from what we have been saying? That to produce an unimpeachable statue demands abilities of the highest order, and that these abilities, when exhibited, should be duly honoured.

MINERAL PRODUCTS RELATING TO THE BUILDING ARTS IN CLASS I. OF THE GREAT EXHIBITION.*

No. 185 contained specimens of stone from the quarries of the Duke of Leeds at Anston, whence a large proportion of the stone used for the new Houses of Parliament has been procured. The commissioners in their report recommended the stone of Bolsover Moor, in Derbyshire, but it was soon found that the quarries there would not furnish a sufficient supply. In consequence of this the contractor resorted to Anston, about fourteen miles farther north, where the stone is of the same or perhaps a better quality, and the quarries are situate close to the Chesterfield Canal, which gives them the advantage of cheap water carriage all the way to London. The blocks exhibited by Mr. Grisell from Anston are favourable specimens of a light yellowish or ferruginous brown: the stone is capable of being sawn into slabs, and of being worked into heraldic and other ornaments and devices, the edges and angles being fine and perfect. The price of the Bolsover Moor stone is quoted by the commissioners at 2s. per foot in London, which seems exceedingly low, as this stone had to be carried eight miles by land; and 10d. per foot the price at the quarry

* See p. 685, ante. A correspondent from Liverpool, "J. A. P.," who comments on our description of the magnesian limestone as extending on the southern and western sides of the Lancashire coal-field, by Newton, Liverpool, Ormskirk, and Preston, has applied for strict and technical reading to a description which was intended merely as a general indication of the range of certain lower members of the new red sandstone, which usually contain beds of magnesian limestone. Phillips, in his "Geology," mentions the magnesian limestone as occurring near Manchester; and our correspondent himself describes it as occurring in detached masses on the eastern outcrop of the Lancashire coal measures. On Greengough's geological map, the same colouring as in the neighbourhood of Manchester is extended round the coal-field by all the places mentioned above. If our correspondent knows from actual acquaintance with the country on the southern and western sides of the coal district, that the magnesian limestone is not there worked for economic purposes, this is a proposition which we should have no great difficulty in admitting. Our correspondent need not tell him, however, that the magnesian limestone may be represented by yellow marls or by yellow arenaceous beds by no means suitable for the purposes to which magnesian limestone is usually applied. Our correspondent laments jokingly that his neighbours have been sending into Wales and Derbyshire for a supply of limestone in ignorance of the fact that it was lying at their own doors. It is probable, however, that even if beds of magnesian limestone should be met with in this district, it would only be in the shape of a very inferior building stone, and it would probably be unfit for burning into lime, either to make mortar or for agricultural purposes.

appears exceedingly small compared with the price of magnesian limestone at other quarries. If the Anston quarry price does not exceed that at Bolsover Moor, the stone can be delivered at less than 2s. per foot in London, as the circumstances of transport are much more favourable.

No. 187 contained a specimen of magnesian limestone from Mansfield Woodhouse quarries very much resembling the specimens before described. It also contains specimens of red and white sandstone quarried respectively at Lindley's Red and White Quarries, Mansfield. Both these quarries were particularly examined by the Royal Commission in 1839, and the stone resisted tolerably well the tests applied. The price of the stone is moderate at the quarries, each being about 8d. per foot, while the red stone would cost about 2s. 6d. per foot in London, and the white about 2s. 2d. The white appears to have stood the tests better than the red, showing only about half the amount of disintegration, absorbing less water, and requiring greater weights to crush and to produce fracture. It contains rather more silica than the red, more carbonate of magnesia, and less iron alumina. The red stone weighs 148 lbs. 10 oz., and was used in the construction of Belton House, the mansion of Lord Brownlow, near Grantham. The white stone is somewhat heavier, and was also used at Belton House, as well as in the Town Hall of Mansfield, Clumber Lodge, and Wollerton. The demand for magnesian limestone has lately been so great that the quarries of Mansfield Woodhouse have lately been re-opened after a lapse of some centuries, to supply stone for the new Houses of Parliament and other buildings.

No. 196 comprised specimens from the neighbourhood of Liverpool, also from Runcorn, Stourton, and other places in Cheshire. The varieties from Liverpool are a dun-coloured sandstone, with quartzose grains, coloured by peroxide of iron, from Brunswick-road, and a nearly similar block from Toxteth-park. These stones are locally used for building purposes. A yellow sandstone from Hardman-street, Liverpool. A light dun-coloured fine-grained sandstone from Runcorn; a yellowish cream-coloured sandstone from Runcorn. A similar stone from Flaybrigg-hill, Cheshire; a yellowish strong-grained sandstone from Bidston-hill, Cheshire; and a light cream-coloured grit from the quarries of Sir Massey Stanley, at Stourton, Cheshire. All the above are quartzose, with little or no mica. The Stourton stone is a remarkably clear-grained variety, and leads one to suppose that the grains of quartz had been well washed and cleaned before being deposited. At the same time the cement is strong and crystalline, so that the stone, besides having a very beautiful appearance in a building, is at the same time exceedingly durable. The stones exhibited under this number are specimens of those used for building purposes in Liverpool.

As the magnesian limestone occurs in the form of a conglomerate in the Bristol coal, there were many specimens of it from Chew Magna, New-cut, Bristol, St. John's Church, Clifton, Clevedon, Harptree, Hung Road, Cheddar, Markham Bottom, the Mendip Hills, &c. One or two of these are the ordinary dun-coloured new red sandstone, but the greater part of them are conglomerates of limestone and old red sandstone fragments imbedded in a magnesio-calcareous cement. The sections made by polishing are in some specimens very beautiful, but the polish is chiefly where the limestone fragments are cut through. Where the section passes through the sandstone the surface is quite earthy and gritty, nor does the surface of the cement take any polish. We are not aware that these conglomerates have ever been applied to any useful purposes, although some of the varieties are very ornamental.

LIAS LIMESTONES.

It will be unnecessary to describe the range of the lias formation in this country, as it follows almost everywhere the course of the new red sandstone resting on it, filling up the valleys of the new red sandstone, and forming with its harder and upper beds of lias

marlstone the first step or terrace of the oolitic range of hills which form so prominent a feature in all the English counties from Dorsetshire to the eastern moorlands of Yorkshire. The lias formation usually contains in its upper division argillaceous and alum shales, succeeded by calcareous and ferruginous sandstones, and this again by argillaceous carbonates of lime, alternating with softer beds of marl and marlstone. Although it contains some important mineral ingredients, as alum, iron ore, and septaria, which is burnt into Roman cement, the building stones which it supplies are not of great extent or value, and the specimens contained in the Exhibition are chiefly from the south-west of England. The white lias furnishes occasionally an ornamental variety of building-stone, and many of the bluish argillaceous beds are quarried and used locally for ordinary building purposes. Some of the beds, which are of a shaly or slaty structure, are used for steps and flooring, also for paving and stone seats. Some of the crystalline varieties which contain vegetable impressions like the detrital lias of Cotham, near Bristol, have been polished and used for chimney-pieces, but are now generally superseded by more ornamental marbles, while perhaps the most important use made of the argillo-calcareous beds is that of burning them into hydraulic lime, which is highly valued for submarine works, from its valuable property of hardening under water.

There were specimens of lias building-stone of a greyish blue colour from Lyme Regis (No. 193), from Curry Rivell, near Langport, and from Ilminster; also lias paving-stone from Keinton, Somersetshire, and from Long Sutton, near Langport, which last is said to be very durable. Besides these there were specimens of the white lias from Beer Crowcombe, and from Weston, near Bath, both of which are a very light cream colour, take a good polish, and would probably stand well for interior work. The Beer Crowcombe stone was examined by the Royal Commissioners in 1839, and reported as friable with only partial induration. Blocks may be procured 6 to 7 feet long and 2 feet thick, said to have been used in the neighbouring churches, in Saint Peter's Church, Exeter, in exposed parts, in Colyton Church, Charnmouth and Honiton Churches. Weight 131 lbs. 12 oz. per cubic foot.

There was a specimen from Keynsham (No. 29), being a blue lias used for making hydraulic lime, and weighing 169½ lbs. per cubic foot; also two specimens of white lias from Paulton and Radstock, in Somersetshire, each weighing about 132 lbs. and taking a very smooth and beautiful surface when polished. The same collection contained a specimen of landscape lias from Cotham, near Bristol, which spot being now covered with buildings will scarcely be worked in future.

BUILDING STONES OF THE OOLITES.

The oolitic range is one of great extent in this country, and consists of two principal masses; one of them occupying the district called the Eastern Moorlands of Yorkshire, and the high grounds adjacent, called the Hambleton and the Howardian Hills. The other mass is a long diagonal range of hills extending from the Humber through the counties of Lincoln, Leicester, Rutland, Northampton, Buckingham, Oxford, Gloucester, Wilts, Somerset, and Dorset, to the coast at Weymouth.

The composition of the oolitic rocks varies very much; and those of Yorkshire in particular are characterised in a very remarkable manner, which it will be unnecessary to notice here, as there are no specimens in the Exhibition from that part of the oolitic series. In fact, with the exception of specimens from Ancaster and the neighbourhood of Stamford, all the oolitic stones exhibited are from the great and lower oolites of Somersetshire, and the other western counties. The great oolite consists usually of a stratified mass of calcareous beds varying from 130 to more than 300 feet in thickness, most of them, and especially the central bed, possessing that oviform structure which arises from the aggregation of small round grains about the size of mustard

seeds. These grains are frequently small organic bodies coated with carbonate of lime, and united to each other by a calcareous cement. The beds have very thin partings of clay, and besides the principal thick indurated deposit termed the great oolite, there are other calcareous and calcareo-arenaceous beds termed Cornbrosh, Forest marble, &c., alternating with thick beds of clay. The colour of the best beds, which are called freestones and worked for building purposes, is generally whitish, with a shade of yellow or straw-colour. The inferior oolite in the neighbourhood of Bath, where it is, perhaps, better developed than in any other part of England, is separated from the great oolite by a mass of clay and fuller's earth about 140 feet in thickness, to which succeed beds of freestone about 30 feet thick, forming the inferior oolite, and generally being of good quality for building purposes. During the middle ages, when our architects were chiefly ecclesiastics, and before the introduction of Portland stone, those of the oolite formation shared with the freestones of Surrey the principal amount of favour. It is probable that attention was first directed from the beautiful oolites of Normandy, so well known in most of our old ecclesiastical buildings, to stones of a similar kind in our country capable of being sawn and carved into every variety of form. Hence the Bath quarries were called into requisition, and continued in favour till Sir Christopher Wren, in building St. Paul's Cathedral, introduced the Portland stone, which for some centuries enjoyed a decided pre-eminence. It seems now to be generally admitted that, with the exception of a very few beds, the oolites, although admirable for interiors and for carved work of every description where protected from the weather, are not well adapted for building exterior walls in this country, though the question of cost still enforces their use. The exceptions are perhaps the beds of the lower or inferior oolite, which are of a better kind; and some beds from the middle oolite near Bath. It has been usual in applying a popular designation to term many different varieties of oolite, indiscriminately, *Bath stone*,—a designation by which the real Bath stone has seriously suffered. For instance, the colleges and halls of Oxford, which are well known to be in a most deplorable state of dilapidation, from the decay of the stone, are frequently said to have been built of Bath stone, whereas they are built of Headington stone, a member of the upper oolite of a very inferior description. We have not noticed the upper oolitic beds at all, as we are not aware that they furnish any stone of real value for building purposes, although some of them—particularly the blue beds—burn into excellent lime. The selection of Bath stone requires very great care, as the variety in the different beds is very remarkable. The beds should be carefully tested, and a comparison made of their strength to resist disintegration; and it will also be found an excellent method to leave the blocks, after being quarried, a full winter in the quarry, in order that natural frosts may be experienced, and that the quarry-water, or natural moisture of the stone, may evaporate before the stone is placed in the building. Inferior stone, so treated, will frequently split in two, and shiver to a greater or less extent during the first winter, showing its unsuitability for a building stone. We contemplate making a personal examination and report on the Bath stones one of these days.

No. 179 contained a specimen of stone from the great oolite of Ancaster, in Lincolnshire. This is a light cream-coloured stone, remarkable for the fineness of its grain, and for the sharp arris it will carry when dressed. It contains 93 per cent. of carbonate of lime, and by disintegration of frost, loses one grain in 655; weight, 139 lbs. 4 oz. per cubic foot. Used in Woolaton Hall, Belvoir Castle, Belton House, and numerous churches and mansions in Lincolnshire. Price at quarry in random blocks, said to be 9d. per foot. Price in London, including land carriage of seven miles, 2s. 7d. per foot: price of dressing the face about half that of Portland stone. It is probable the price in London will be much reduced on the completion of the

Great Northern Railway, which passes very near to the quarries. The exhibition catalogue erroneously describes this stone as from the lower oolite.

No. 201 contained specimens from the great and lower oolite in the neighbourhood of Stamford, consisting of the Barnack rag, a shelly, coarse-grained oolite; Stamford marble, a very calcareous shelly stone, with a crystalline paste, which takes a tolerably good polish. Ca tertion oolite resembles the last, but the colour is lighter. There was also a specimen from the great oolite of Cliphsham, about half-way between Stamford and Colsterworth; one from Whittinger Pendle, half-way between Stamford and Wansford; and one from Ketton, all somewhat fine grained and bright cream-coloured; and also a specimen of argillo-calcareous flagstone from beneath the lower oolite at Collyweston, which is extensively used in the neighbourhood for covering roofs as a substitute for slates and tiles.

The Barnack stone contains 93 per cent. of carbonate of lime, cohesive power somewhat less than the Ancaster stone, but greater than the Bath stone from Box; quantity of matter disintegrated 1 grain in 267.

The Ketton stone contains 92 per cent. of carbonate of lime; cohesive power greater than in any other oolites tried by the commissioners; quantity of matter disintegrated rather more, but requires nearly four times the weight to crush it. The Ketton rag is very heavy, weighing about 155 lbs. 10 oz. per cubic foot. The Ketton freestone weighs 128 lbs. 5 oz. per foot, and is very extensively used for building purposes in Cambridge, Bedford, Bury St. Edmunds, Stamford, also in Peterborough and Ely Cathedrals, St. Dunstan's Church, London, &c. The commissioners give the price in London 3s. 4d. per foot, the high price being occasioned by the expensive freight; but as the Great Northern Railway passes close to Stamford, it is probable the price in London will be reduced to about 2s. 4d. per cube foot.

No. 133 contained six specimens from Painswick, Nailsworth, and other places in the neighbourhood of Stroud. In one or two of these specimens the cement appears scarcely in sufficient quantity to unite the grains firmly. These are all cream-coloured stones from the lower oolite, and resemble the Windrush stone, which was examined by her Majesty's commissioners in 1839. Weight of stone varying from 118 to 135 lbs. per foot. Very durable, used in churches and the neighbouring mansions. There are many tombstones in good condition 150 years old, in the adjoining church-yard.*

THE LORD MAYOR'S SHOW.

SOME of our readers may remember, that in consequence of a communication from Mr. Godwin to Mr. Alderman Musgrave, in 1850, first published in our pages, an endeavour was made, and with considerable success, to improve the character of the show. The writer thought, with Thomas Middleton in 1613, that some "art and knowledge, equal to the liberality of the City, should be displayed in the invention of their pageants," that it would be matter for regret if so ancient a proceeding as the Lord Mayor's triumphal riding were abandoned, and that it was desirable to raise it out of the monotonous routine into which it had fallen "by the introduction, among other changes, of emblems and works of art, accordant with its ancient character, and worthy of the present time."

The show on Monday last (the 9th falling on Sunday) was a poor affair, utterly devoid of thought. With the exception that the number of men in armour was increased, and that there were a few more banners than formerly, there was nothing to distinguish it from those which immediately preceded last year's attempt. There was not a spice of art, nor even of knowledge, for the blazonings were mostly incorrect. The most prominent feature was that questionable notoriety, Mr. Widdicombe, ornamented with a black beard. An extemporized communal procession in any small

* To be continued.

town in France, Belgium, or Germany, elicits ingenious arrangement and artistic beauty: the utmost that London's famous city can do in the way of novelty is, to give twenty men in armour instead of two. Alack, alack!

PRACTICE AND THEORY.

DR. LYON PLAYFAIR'S inaugural lecture at the Museum of Practical Geology, on Friday, the 7th, contained much valuable matter. His theme was, "The national importance of studying and promoting Abstract Science as a means of giving a healthy progress to Industry." At the close of it the lecturer made the following observations on *practice* as compared with *theory*. If England is to keep pace with other countries as a manufacturing nation, it must be by her sons of industry becoming humble disciples of science. At present her reliance in the "practical," or "common" sense, of her population is the sunken rock directly in the course both of her agriculture and manufactures. On this subject Archbishop Whately has some excellent remarks. "By common sense," says he, "is meant, I apprehend (when the term is used with any distinct meaning), an exercise of judgment unaided by any art or system of rules; such an exercise as we must necessarily employ in numberless cases of daily occurrence, in which, having no established principles to guide us, no line of procedure, as it were, distinctly chalked out, we must needs act on the best extemporaneous conjectures we can form. He who is eminently successful in doing this is said to possess a superior degree of common sense. But that common sense is only our second best guide—that the rules of art, if judiciously framed, are always desirable when they can be had, is an assertion for which I may appeal to the testimony of mankind in general, which is so much the more valuable, inasmuch as it may be accounted the testimony of adversaries; for the generality have a strong predilection in favour of common sense, except in those points in which they respectively possess the knowledge of a system of rules; but in these points they deride any one who trusts to unaided common sense. A sailor, e.g., will perhaps despise the pretensions of medical men, and prefer treating a disease by common sense; but he would ridicule the proposal of navigating a ship by common sense, without regard to the maxims of nautical art. A physician, again, will perhaps contemn systems of political economy, of logic, or metaphysics, and insist on the superior wisdom of trusting to common sense on such matters; but he would never approve of trusting to common sense in the treatment of diseases. Neither, again, would the architect recommend a reliance on common sense alone in building, nor the musician in music, to the neglect of those systems of rules which, in their respective arts, have been deduced from scientific reasoning, aided by experience. And the induction might be extended to every department of practice. Since, therefore, each gives the preference to unassisted common sense only in those cases where he himself has nothing else to trust to, and invariably resorts to the rules of art wherever he possesses the knowledge of them, it is plain that mankind bear their testimony, though unconsciously and often unwillingly, to the preference of systematic knowledge to conjectural judgments." Practice and science must now join together in a solemn union, or the former will soon emigrate to other lands. The time is past when practice can go on in the blind and vain confidence of a shallow empiricism, severed from science "like a tree from its roots." The rudest sailor may steer his ship in the direction of a landmark, but without compass and sextant he dare not traverse the expanse of ocean. Ignorance may walk in the path dimly lighted by advancing knowledge, but she stands in dismay when science passes her, and she is unable to follow, like the foolish virgin, having no oil in her lamp. Depend upon it, an empirical knowledge of practice is not the way now to succeed in the struggle of individuals or in the struggle of nations. Intellect is on

the stretch to get forward, and that nation which holds not by it will soon be left behind. For a long time practice, standing still in the pride of empiricism and in the ungrateful forgetfulness of what science has done in its development, reared upon its portal the old and vulgar adage—"An ounce of practice is worth a ton of theory." This wretched inscription acted like a Gorgon's head, and turned to stone the aspirations of science. Believe it not; for a grain of theory—if that be an expression for science—will, when planted, like the mustard seed of Scripture, grow and wax into the greatest of trees. The pressure and difficulties of the age, and the rapid advancement of intellect in continental nations, have been the Perseus to cut off this Medusa's head from the industry of England, and to fix it on the shield of Minerva, who turns to stone such as still believe that science should be ignored by practice, but, reversing that shield, wisely conducts those who would go further under her guidance. It is now rare to find men who openly avow, although they actually entertain a belief in, a necessary antagonism between theory and practice. Theory is, in fact, the rule, and practice its example. Theory is but the attempt to furnish an intelligent explanation of that which is empirically ascertained to be true, and is always useful, even when wrong. Theories are the leaves of the tree of science, drawing nutriment to the parent stem while they last, and by their fall and decay affording the materials for the new leaves which are to succeed. I have now said enough to shew you that it is indispensable in this country to have a scientific education in connexion with manufactures if we wish to outstrip the intellectual competition which now, happily for the world, prevails in all departments of industry. As surely as darkness follows the setting of the sun, so surely will England recede as a manufacturing nation, unless her industrial population become much more conversant with science than they now are.

ARCHITECTURAL EXHIBITION, 1852.

THE committee have taken the Portland Gallery, Regent-street, and have arranged that the exhibition shall be opened on the 12th of January.

Considering that a collection of new materials, new patents and designs connected with architectural construction, models, carvings, decorations, &c., united to the Architectural Exhibition, would be alike of interest to the profession and of great advantage to inventors, by bringing such objects more fully and immediately before the notice of architects and the public, than could be done in any other way, they intend to devote a portion of the gallery to this purpose; and they invite immediate notice of the articles intended to be exhibited, in order that a proper place may be assigned, and arrangements made as much as possible beforehand.

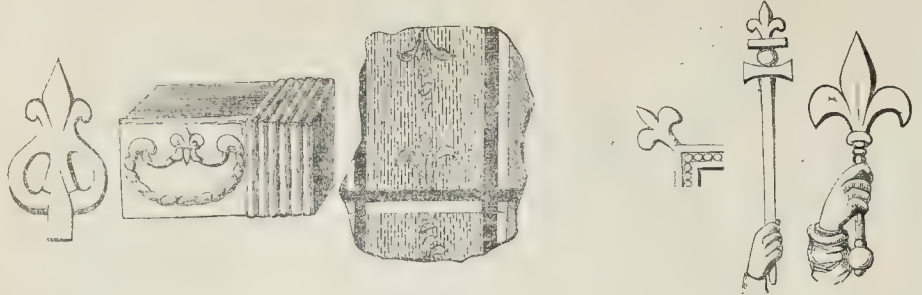
A committee will be appointed to select and arrange, from the articles sent in, such as appear of most general interest, as the comparative limits of the space will probably not allow the whole to be shown to advantage.

We hope many of our advertisers will take advantage of this opportunity, and assist in making the collection valuable. The committee appeal to their professional brethren and others for subscriptions and for designs, to enable them to carry out the project satisfactorily.

ELECTRO-TELEGRAPHIC.—A system of telegraphic wires has been laid from the central Berlin police-office to all the stations and police houses of guard. The plan was first proposed with a view to giving quick notice in case of fire, but the telegraphs will be far more actively employed for the business of the detective force. In case of disturbances the telegraphs will offer the means of concentrating the police or bringing out the military with the greatest rapidity.—*Globe*.

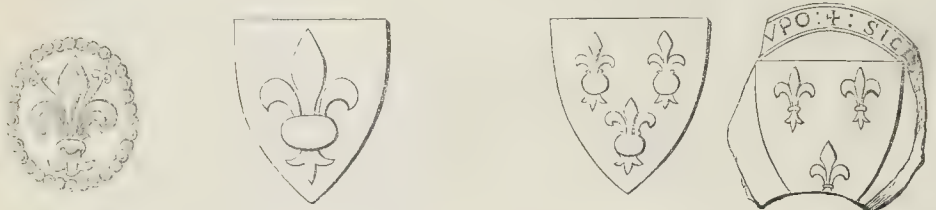
* The following form the committee.—Messrs. Allom, Ashpitel, Bell, Billings, Christian, Colling, Donaldson, Edmeston, Ferguson, Godwin, Gray, Jane, Lamb, Laxton, Nash, Papworth, Scott, Seddon, Truefit, J. D. Wyatt, and Digby Wyatt.

THE FLEUR DE LYS IN HERALDRY AND ARCHITECTURE,



Roman Bronze Ornaments, Altar and Fresco Painting.

From Montfaucon, Monarc. Franc. Plates XX. and XXVI.



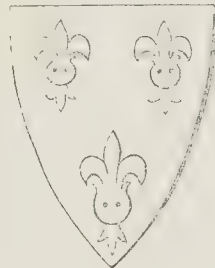
Arms of Robert d'Agulon, from Charles's Roll.

Arms of Robert d'Agulon, from Charles's Roll.

Arms of George de Cantelupe.

Arms of George de Cantelupe.

Seal of William de Cantelupe.



Arms of William de Cantelupe, temp. Edward I. Col. Arm.

THE REFORM OF HERALDRY.

THE FLEUR-DE-LYS IN ARCHITECTURE.

The importance of a knowledge of heraldry, or rather *armory*, to architects and antiquaries, is so great as to lead us to set forth at some length an attempt which has been made by Mr. Planché, in an interesting work just now published, under the title of "The Pursuivant of Arms,"* to clear the science from some of the affected and bombastic nonsense with which it has been overlaid by pedantic armorists. "I have no tabard to my back," says our author, "no crown to my brow, no authority, no office; I am guiltless of grants, and unacquainted with fees; but I am devoted to the study of heraldry, and may truly call myself 'a pursuivant of arms,' as I have long and diligently pursued the subject by a path, untrodden, I believe, by others, though several have crossed the track. Are you inclined to keep me company, and see whether it will lead us? For the end, I tell you fairly, is yet to seek. If so, have with you. I will guide you as well as I can and as far as I know. No great distance, perchance; but I will rather declare my ignorance than wilfully misdirect your steps; for I look upon our journey as one in quest of truth, and he would

ill deserve to find her who should lie by the way."

The main and most interesting point which our author urges is, that it is scarcely possible to find an ancient coat that was not originally canting or allusive (that is to say, alluding to the name, estate, or profession of the bearer), excepting, of course, those displaying simply the "honourable ordinaries," which he maintains took their rise from the ornamental strengthenings of the shield.

Amongst the earliest of the natural and artificial objects adopted as charges, the Lion, the Fleur de Lys, and the Eagle are the most numerous, "being the symbols assumed by the sovereigns of England, France, and Germany, for reasons which will be hereafter examined, and consequently borne with some alteration of colour or position by all who could claim kindred or connection, however distant, with royalty. To these were added griffins, swallows, martlets, wheatheaves, crescents, stars, roundlets, amulets, and a variety of objects familiar to the pilgrim and the crusader, such as water-buckets, cockle-shells, bezants, Palmer's-staves, helmets, swords, battle-axes, arrow-heads, &c., as well as hundreds of others, the names of which bore affinity more or less in sound to those of the titles, domains, or families of the bearers. These were again granted to, or imitated by, the holders of pro-

perty under their original assumers, until it became a work of considerable ingenuity to compose a coat of arms which should escape challenge by a previous possessor. At first these various objects were borne singly, or they were repeated *ad libitum*, and in any position, according to the fancy of the owner, or in compliance with the shape of the shield; but it soon became necessary to determine strictly their number, and to consider one more or one less a distinct coat—nay, to account the slightest difference of attitude in an animate, or of position in an inanimate, object, a sufficient alteration. From the regulations arising out of this obvious and imperative necessity sprang the *system* of heraldry, which we get the first glimpse of in the rolls of the thirteenth and fourteenth centuries; and from the establishment of certain officers to frame and enforce them, we may date the commencement of those fanciful theories, and perhaps intentional mystification, which, promulgated with a view to exalt the science, have contributed mainly to its degradation."

The Fleur de Lys being a form which constantly occurs in architecture and decoration, we will take Mr. Planché's account of it. Next to the origin of heraldry itself, perhaps nothing connected with it has given rise to such controversy as the origin of this celebrated charge.

"It has been gravely asserted that it was

* The Pursuivant of Arms; or, Heraldry founded upon Facts. By J. R. Planché, Esq., F.S.A. London: W. N. Wright. 1852.

brought down from Heaven by an angel, and presented to Clovis, king of the Franks. Upton calls it '*flos gladioli*,' and his translator, Dame Juliana Barnes, tells us that the arms of the King of France 'were certainly sende by an Angell from Heaven, that is to say, iij. flouris in manner of swordis in a field of azure, the which certain armys were given to the aforesaid Kyng of Fraunce in sygne of euerlasting trowblu, and that he and his successors always with battle and swordes should be punished.' It has been also called a toad, and the head of a spear, and Dallaway and Lower incline to the latter belief.

I am not going to record all the arguments which have been from time to time brought forward in support of this or that theory. My province is to state facts and leave you to draw your own deductions. As an ornament, the *fleur de lys* is seen on Roman monuments, and as the top of a sceptre or sword-hilt from the earliest periods of the French monarchy. (See engraving.) As a badge or cognisance it first appears on the seals of Louis VII. of France, called *Le Jeune*, and also surnamed *Flcury*, from the abbey of that name, the favourite retreat of the French kings, and where Philip I. was buried.

By Philip II., surnamed Augustus, the contemporary of our Richard I. and John, it was borne both singly and repeated '*sans nombre*,' and analogy supports the conclusion which one of the most intelligent of French writers came to long ago,—that the *fleur de lys*, or *fleur de luce*, was merely a rebus signifying *fleur de Louis*, or flower of Lewis.*

Whatever may have been its derivation, its appearance in English coat-armour is early and frequent, as may be expected when we remember the land from whence issued so many followers of the Norman William. Like the lion of the north, and the eagle of the south of Europe, the flower adopted by the mighty sovereigns of France as their family ensign, cognisance, or device, became, differently tintured, the armorial coat of numbers, who could claim connection with, or owed fealty to them. An example of it as '*armes parlantes*' occurs in the rolls of Henry III.'s time: 'Robert d'Agulon, de goules oue ung *FLEUR DE LIS d'argent*.'—Glover's Roll: Agulon and Agulho, signifying, in mediæval Latin, a point, or the top of a spire, '*Apex turris Ecclesie*' (Du Cange in voce). The pointed architecture of the thirteenth century presenting us almost invariably with floral terminations (finials) of this precise form.

But there is another example in the same roll remarkable for its disagreement with the usual coat assigned to the name: 'William de Cantelowe,' bears '*de goules a trois *FLEURS DE LICES d'or**' not a word, you perceive, of 'the leopards' heads jessant de lis,' which we afterwards find in the coat of Cantelupe, which is the same name spelt indifferently in those days Cantelowe, Cantelo, Cantelup, or Cantilupe, and whilst in the Cottonian MS. B. M. marked Julius C. 7, and in Charles's Roll, we find the original form of the charge without the Leopards' heads ('*testes de LUPARS*'), a painting of the arms of the time of Edward I., indicates, I think, how they were introduced into the globular portion of the ancient figure, leaving why still to be discovered.

If not an amalgamation of separate coats, in token of alliance or sub-infeodation, it was probably a heraldic difference assumed by a junior branch. The arms of the See of Hereford, adopted from those of Thomas de Cantelupe, forty-fourth Bishop, A.D. 1275, son of William, Lord Cantelupe, and Eva de Braose, presents us still with the Leopards' heads reversed jessant de lis, another difference of this coat, quartered also by the Wests, Earls of Delawar, and Viscounts Cantelupe.

The *fleur de lys* was soon selected as a general mark of cadency, and also used as an ornament for the *diapering* of shields, that is, covering the whole field, or separate portions of it, with a pattern independent of the

heraldic bearings, in imitation of the fine cloths made at Ypres, in Flanders, and therefore called *d'Ypre*, from whence our modern *diaper*: see a supposed specimen on the shield of Robert de Vere, Earl of Oxford, under MARKS OF CADENCY, which has been curiously misinterpreted by some writers."

From Mr. Planché's able and ingenious disquisition, which, we may say, is throughout profusely illustrated with woodcuts, we deduce, first, that heraldry appears as a science at the commencement of the thirteenth century, and that, although armorial bearings had then been in existence for some time, the precise date of their first assumption has not been discovered. Secondly, that the object of those who assumed bearings was not, as it has been generally believed, to record any achievement or to symbolise a virtue; but to distinguish their persons or properties in a manner to be easily recognised, and show their alliances or holdings. And, thirdly, that thus looked at, it is seen to have a new value, the importance of eliciting genealogical facts being admitted by all. We cordially recommend the work.

LONDON CHURCHES REOPENED.

Six churches, and all of some pretension, have been lately reopened, or are now under repair, in almost every instance at considerable expense.

St. Paul's, Covent Garden.—This is certainly a building of considerable simple grandeur; but that it is "one of the finest pieces of architecture"—a very common expression for it—is, in deponent's opinion, "quite another thing." Nearly the whole external grandeur is owing to the projecting roof, without which the building would appear tame and the windows petty. The original appearance, as seen in the earliest engravings, was far less elegant, from there being no steeple. A very small cupola, for bell, was placed on the south porch, which, with the north vestry and rustic gateways, are coeval with the church. Afterwards, a large square open cupola was erected, and replaced after the fire of 1796, which destroyed the interior of the church only, by the present steeple, which contains two bells—the larger a fine one—and has a pleasing appearance from every quarter but the west. The east portico—of "election" notoriety—of two circular and two square columns, is Tuscan, the side blank walls dubious, and the arches in them ugly. A clock with figures appears in the old views, where an illuminated one was set up about eighteen years ago. The interior is airy and neat, but has nothing striking except the altar-piece. The present popular rector, Mr. Hutton, has been active in the repairs. Four thousand five hundred pounds was the sum for the time and building charged to the Earl of Bedford by Inigo Jones.

The spirit of the late excellent duke, in erecting the spacious and exceedingly neat market, at a cost of 40,000*l.*, or upwards—though doubtlessly paying very well—is worthy of notice.

St. Mary-le-Strand is termed a specimen of ornament judiciously applied, columns and entablatures abounding throughout. The tower is grand in front, but the sides too shallow; the semicircular chancel beautiful. Perhaps the lower windows being blank gives a grandeur to the interior, which partly resembles Whitehall Chapel, though without galleries, and with an arched, elaborately panelled ceiling. The organ-loft, lofty and isolated, on four fluted marble or stone columns, is to be extended to the side walls. In the chancel are stained windows and two upright paintings in frames ("Brown pinxit").

St. Andrew's, Holborn, has been thoroughly repaired. This has been termed about the most elegant Protestant church in Europe: the proportions are fine, 105 feet by 63 feet, and 43 feet high, the centre not much exceeding the sides. It may be affirmed that columns rising, as here, from the galleries, excel those from the ground, as at St. Martin's. The armorial windows at the ends of the aisles contrast curiously with the older stained glass in the chancel. Whether the strange communion table, of marble, in steps or stages,

and wrought iron, placed here some six years ago, will be liked or not, can hardly be predicted before a view of it. The bells, eight in number—tenor, 23 cwt.—are good, though rather even toned, but not often rung; the tower, favoured by its position, is 110 feet high.

St. Botolph's, Aldersgate, has such a "queer" look, that it has been supposed by passers-by to be a "brewery;" the upper part of the tower, which contains two bells, the larger a melancholy-toned one of 14 cwt. is deplorable, and the lower story is below the door of the church, yet this church, rebuilt nearly forty years ago, is said to have cost 10,000*l.* and the stuccoed ceiling of the nave alone 1,500*l.* The whole of the interior certainly is neat; the pulpit, organ, and some other parts good, though not the best. In the north aisle is a monument from the old church, the inscription on which ends thus:—

"Who blessed each gift, improved each favour given,
Believed and wrought—the rest remains for Heaven."

St. Giles's, Cripplegate, has been repaired, from church estates, and, from rather a dingy or disfigured, has a cheerful internal appearance. Here appears a late style, rebuilt after a fire in 1545. The arches, seven in number, on each side, are excellent, springing from foliated corbels, above light clustered columns. Galleries end before the easternmost arches on each side. The tracery of every window, except in the tower, has been removed. The chancel is modernized Roman, with a circular window, a refined, though minute altar-piece, a brass railing, and a pavement of black and statuary marble. In this part are some good monuments: that of *Milton*, buried under the reading desk, on one of the pillars in the nave, was erected by Samuel Whitbread, perhaps rather from a republican sympathy. The canopy of the pulpit is a grand one. In the churchyard is a fragment—and that a "bastion"—of the old city wall, which ran tolerably straight by Sion-college to Bishopsgate. The tower is 120 feet high, without the cupola,—about the length of the church. It contains celebrated lively chimes, erected or restored, about sixty-five years ago, on ten bells, which change every three hours, having seven or eight tunes, play treble and bass on some notes, and have been improved by Professor Taylor. In the tower are twelve bells, besides that in the cupola, tenor 38 cwt. The churchyard entrance, nearly disused, with carvings of hour-glasses, skulls, &c., is dated 1660.

This church has been, for whatever reason, a favourite one for general charity sermons: part of the choir of St. Paul's has attended; and Madame Caradori, as a friend of the organist, Mr. Mitchell, has been heard *incoq.* On the evening of the reopening, the 12th ult., a sermon was preached for the Cripplegate Pension Society, by the Vicar, Archdeacon Hale (who has given a third—afternoon—service, and is popular with the parishioners), from Acts xx. 35. He well urged the helplessness and mutual dependence of men, the nobleness of "labouring to support the weak," even if they have erred, not only because this would give the best claim to remonstrance, but because any disposed to refuse might be sinners themselves, unworthy, if weighed by their own merits, to offer their addresses to heaven.

St. Luke's, Old-street, is also repairing and cleaning, which was very much needed. Some old stained glass had been placed in the chancel window previously; and the organ, now under the presidency of Mr. Smart, repaired at an expense of 600*l.*, about seven years ago. The heavy interior, with large Ionic columns, and a very elliptical ceiling, rather resembling a hall, contains 1,600 sittings; but there are now five other churches in the parish of 60,000 inhabitants, or upwards. Most persons know the curious tower and fluted obelisk, above 200 feet high, of this church, and it is hard to say, looking at it in different lights, whether it should be called impressive, or ugly; though very easy to define it a caprice, *sui generis*. The larger bell of two is astonishingly grand for its weight, not quite 29 cwt.

J. D. PARRY.

* We must recollect also that Clovis is only the Frankish form of the modern Louis; Clovis, Clodovius, Lodovius, Lodowie, Ludwig, Louis, the *e* being dropped, as in Clothaire, Lothaire; Chilperic, Hilperic, &c.

INSTRUCTION OF ARCHITECTS AND ENGINEERS — DIPLOMAS — GOVERNMENT INTERFERENCE.

ONE of the leading features, if not the great feature, which has arisen out of the late Exhibition, is the necessity for giving to our industrial classes such an education—sound, systematic, and practical,—as may fit them to pursue their several callings with more credit to themselves, and greater benefit to the country at large. Good: to this no one can object. But what if it be found, on pursuing the inquiry, that many persons at present engaged in the direction of, and having the control over, a large portion of these classes, and who cannot be placed in the same category with them, should also be wanting in a proper knowledge of their profession, be possessed of attainments of a very common order, and he allowed to pursue their occupation without "let or hindrance," without the public having any guarantee that they are what they represent themselves to be, that they are qualified to undertake the construction of important works, and to regulate the expenditure of large sums of money. Yet this is actually the case with our engineers and architects, as every one must know. They, unlike other professional men, are not obliged, before commencing practice, to follow any systematic course of instruction: they are not required to undergo any rigid examination, that their qualifications may be fairly tested; nor is there any law at present to prevent even the most ignorant from assuming the titles of architect, or engineer, or the high-sounding initials C.E., and thus misleading others, and bringing disgrace on the professions themselves.

In the infancy of a science, when the principles on which it depends are vague, undecided, and undefinable, it is easy to understand how impossible it would be to lay out a course of examination as a test of proficiency in it; but when these become known and appreciated, as they must be sooner or later, this difficulty is removed. Hitherto some such cause as this may, perhaps, have precluded the possibility of requiring our architects and engineers to be subject to the same laws as other professional men, for though the practice of these professions dates from the earliest period, the application of science to them is of a comparatively recent date. Now, we fancy, the strongest advocate of the "practical" dogma would be rather loath to admit, that he was guided by no rule or principle in the design and construction of his works, that it was all hap-hazard or chance, precedent rather than principle. As the number of precedents, however, increase, principles are evolved, and principles beget laws, and laws decide, fix, and regulate a science.

Formerly the professions of the architect and the engineer were pursued in common, and even now much of the knowledge required by the one is necessary for the other. Both should be equally well grounded in the mathematics, the root and foundation of most of the other sciences,—especially in mixed or applied mathematics, so as to comprehend the principles of proportion: both should be thoroughly acquainted with natural philosophy; that the nature of the different elements, and their operation upon one another, may be precisely known, and particularly with the important branches of mechanics, hydrostatics, and hydraulics: both should be possessed of such a knowledge of chemistry, as, at least, to understand the action of the elements on materials, and the processes which many materials have to undergo to be reduced to the purposes of construction; and also of geology and mineralogy so as to ascertain the value, relative and absolute, of the various materials used in construction. More than this, they both require to be perfectly informed on, if not practically acquainted with, certain technical branches of art, as carpentry, masonry, and iron-work. Here, perhaps, they might diverge,—the architect to make the fine arts, and the ornamentation of buildings, his peculiar study, and the engineer to gain experience in the details, and mode of carrying out, of those numerous constructions with which, at the present day, he has to deal.

Do we find such a course of instruction pursued by the vast body of young men now entering these professions? And, if not, how are their ranks recruited? Too frequently, it is to be feared—for after all it is but a tithe of the whole number who attend the engineering and architectural classes established at some of our colleges—a boy on leaving school, with just an ordinary education, is thrust at once into an engineer's shop, or into the office either of a civil engineer or an architect; becomes an apprentice or a pupil, and if like the generality of apprentices and pupils, wastes and fritters away a great portion of his time, knowing little when out of it, occasionally nothing at all, and yet, forsooth, he is an architect or engineer. Students or pupils in other professions may be equally neglectful for a time, but only for a time, as they have an examination before them—great incentive to industry, perseverance, and application—which some way or other they must pass before they are recognised or are allowed to practise in their respective callings.

Some few years back this evil was strongly felt, and out of the feeling grew the College of Civil Engineers—the C. C. E.'s,—but originated as it was by indifferent parties, not by the engineers themselves, taking no heed to their remonstrance or counsel, and assuming that engineers could be turned out ready made, no wonder that it proved, as was predicted, a most signal failure. It began with the wrong people, and in the wrong way. The attempt to bring up engineers, without going through the ordeal of an office, and experience on actual works (not playthings and pretty toys, as at this place), was tantamount to saying, that a medical man could learn his profession without any hospital practice, or that a man could become a lawyer without experience in the routine and practice of the courts—an utter absurdity. Any reform for the improvement of a class, must spring from that class itself, who are necessarily the best informed on its wants and requirements, and most interested in carrying them out. To the architects and engineers themselves, then, must we look for any melioration of the present evils in the system of instruction, and for establishing a fair claim to those rights and privileges now enjoyed by other professions; nor can it be too strongly enforced, that this step is daily becoming more urgent and necessary. If, in the first instance, a Bill was introduced into Parliament, to prevent any one from practising in either of these professions, unless they have been regularly bred to it, and have passed a creditable examination, then one great point would have been gained; and afterwards, some scheme might be devised for promoting the acquisition of those branches of learning which it is desirable for them to know. The consequence of these professions having hitherto neglected to do so is already too apparent to be passed over in silence.

Last Thursday saw the opening of a "Government School of Mines," soon to be followed, doubtless, by an edict that no one shall practice that branch of engineering without their diploma. Now, why engineers, more than medical men and lawyers, should depend on Government aid, is a mystery, rendered all the more perplexing by our knowledge of the fact, that engineers do rail most violently against every instance of Government control. Do these gentlemen forget that Government aid must involve, more or less, Government control, and that in this case the effect of the interference of the Government will be to destroy the independence and dignity of their profession? Is it such a poor and beggarly one that it cannot support itself? Or have its members lost all pluck and courage, and, in dealing with vast enterprise for others, lost all enterprise for their own calling? We can neither admit the one nor believe the other. As the duties and responsibilities of engineers have been great, their rewards must have been equally so; therefore poverty cannot be their besetting sin. And to believe that those men who guide and control the elements, making each one subservient to the uses and wants of mankind, whose operations extend over both land and water, now rearing the mighty fabric

which shall resist the relentless ocean, and give a safe anchorage for our ships, now tunnelling through the bowels of the earth, or building up those gigantic structures which span the valleys,—to believe that these men are wanting in spirit and individual enterprise is to believe that a noble occupation has a debasing influence instead of the very contrary.

We have seen how closely allied architects and engineers have been, and how very similar their course of instruction must now be. But perhaps it may be said that the science of construction is of so various and diffuse a character that no one man could be found competent to undertake the whole of it. This must be admitted; and herein we are again supported by the example of other professions. Neither in law nor in medicine do we find one man required or attempting to grasp the whole subject. There are barristers and attorneys, physicians and surgeons; and even these are again subdivided according to accidental circumstances or to the peculiar bias of a man's mind; for one man becomes celebrated in equity, another in common law, another in conveyancing, and so on; and every disease or ailment has some particular men, or set of men, who have made it their especial study; yet this subdivision is not considered to be inconsistent with a thorough knowledge of the principles on which each and all depend. So with engineering and architecture, even as now pursued, one man becomes renowned as a railway engineer, another as a hydraulic engineer, dealing with harbours, breakwaters, &c., and another as a towns' engineer: one man becomes famed as a Gothic architect, and another as a classic architect, though the knowledge on which skill in either of these branches is founded is, or ought to be, the same. Let us, then, indulge the hope, that architects and engineers, instead of being antagonistic to one another, as they have sometimes been, may unite and form one common body, which, while allowing each to perceive its individuality, might demand and procure that as a whole which, single-handed, there might be some doubt of their obtaining.

TEMS.

NOTES IN THE PROVINCES.

Nottingham.—The trustees of Parliament-street Chapel have presented to Mr. Groves, of London, a massive silver salver, with an inscription engraved thereon, expressing their approval of the manner in which he has completed the erection of their organ.

Northaw (Herts).—New schools and school-house have been erected here, at a cost of 750*l.*, from a design by Mr. S. S. Teulon, architect. The builder was Mr. W. Norris, of Hackney. The structure is of red brick, with Caen stone dressings, and open stained roof. The opening took place on 24th June last.

Lynn.—Mr. Bennett's tender for the re-appearing of St. Nicholas' Chapel has been accepted. The sum at which it is taken is 1,243*l.*—the whole to be done in the plainest manner; but should ornamental carving be preferred, 200*l.* more will be required. As yet, it is said, the subscription list will not warrant this additional expense.

Cambridge.—The Corporation committee, appointed to receive estimates for the erection of almshouses for the Hospital of St. Anthony and St. Eligius, according to designs prepared by Mr. R. Reynolds Rowe, architect and town surveyor, have received the following tenders:—

Messrs. Quinsee and Attack	£760
Messrs. Peck and Son	745
Mr. Bullock	735
Messrs. Hunt and Stevens	692
Mr. Richard Freeman	670
Messrs. Bell and Sons	657

The last was unanimously accepted, and the works were ordered to be commenced forthwith. The shattered and ugly almshouses, which have for so many years disfigured the principal approach to the town, as remarked by the local *Chronicle*, are thus about to be removed.

Windsor.—Much fault, says a contemporary, is found with the structure of the substitute for the old Datchet Bridge (Victoria Bridge), and the lodge built adjoining, it is said, has

been found so unfit for occupation, that her Majesty has directed the porter to vacate it until it has been sufficiently altered to ensure his health and comfort.

Culham (Oxford).—The foundation-stone of the Oxford Diocesan Training School, for the education of teachers, was laid on Wednesday week, by the Bishop of Oxford, at Culham, about a mile and a half south-east of Abingdon. The building will be in the style of the fourteenth century, and will stand on three sides of a quadrangle, with a frontage 226 feet long. About a hundred dormitories will be provided. The cost will be about 12,000*l.*, at least 2,000*l.* of which is still to be raised.

Hatcham.—The foundation-stone of the Hatcham National and Infant Schools was laid on Tuesday in last week, by the Earl of Shaftesbury. The site is on a part of the ground known as formerly Mr. Cormack's nursery, and near the Royal Naval School. Out of 6,000*l.*, the estimated cost of the intended new church, not more than 300*l.* are required to make up that sum.

Southampton.—The site approved of by the Government Inspector of Prisons for the new gaol is the late Mr. Maddison's property, Castle-square, the price being 4,000*l.* for the house and an acre of ground. The sanction of the council to the purchase was to be asked for on Monday last. As to the widening of Bridge-street, a local paper says,—"A snake-like model of Bridge-street upon the curved plan is exhibited at the Audit House, and a most ridiculous abortion it appears."

St. Albans.—The church of St. Albans, which has lately undergone extensive external and internal reparation, was re-opened for Divine Worship on Monday week. The exterior has been renovated, and the north aisle rebuilt, and carried out to its due length, a portion of the small graveyard being taken in for that purpose. The eastern wall, which was composed of decayed brick, has been taken down and replaced by one of stone, in which is a three-light window. A bell-turret supercedes the old wooden tower. As regards the interior, it has been paved nearly throughout with encaustic tiles (at the cost of a friend), and repewed. Some of these tiles have also been placed in the wall at the back of the communion table. The cost of the reparation, in the estimate sent to the Church Building Society, was set down as 341*l.*; but in carrying out the work some additional expenses for extras were incurred, so that the total cost approaches nearly 400*l.* The repairs have been executed under the direction of Mr. Perkins, architect, who, we understand, gave his services gratuitously.

Lydbrook (Forest of Dean).—The new church here, built after the design and plans of Mr. Woodyer, of Guildford, architect, designer of the church at Highnam, is now completed. The church is a very spacious fabric, situated in a picturesque valley on the borders of East and West Dean, and in the parishes of English Bicknor and Ruarden, and a detached portion of the parish of Newland, and contiguous to the iron mines of Messrs. Halliway, Partridge, and Co., Messrs. Russell, and others, and also to a number of coal pits.

Cirencester.—The new church at Watermoor (chapel of ease to Cirencester) was consecrated on Thursday in last week. The church is situate about half a mile from the town. It is surrounded by a burial-ground, planted here and there with evergreens. The tower is low, but it is intended hereafter to surmount it with a spire. The architect is Mr. G. Scott. The church is in the Early English style—simple in its details. The interior consists of nave and chancel. The latter contains some stained glass windows. The roof of the chancel is groined, painted, and gilded, and there are the usual sedilia, together with a stone pulpit and oak reading-desk. The seats are all open, and there are 430 sittings, of which 309 are free, including 95 for children. The proposition for erecting this new church, says the *Gloucester Chronicle*, was set on foot by the Rev. W. F. Powell, vicar, of Cirencester, who contributed a large sum towards the object. Earl Bathurst also liberally presented the ground, and added a money gift of 300*l.* Mr. Mullings, M.P. for

the borough, gave 250*l.*; and among the other liberal donors were the late Mr. D. Rowly, of Cirencester, 200*l.*, and Mr. Robert Croome and his sister, Miss Croome, 1,000*l.*

Swindon.—The new church here has been consecrated. It is in the Decorated style of architecture, and is capable of seating nearly 1,000 persons. It is intended to be substituted for the old parish church, which is too small for the increased and increasing population of the place, and is in a decayed state of repair. The new church is said to have cost at least 6,000*l.*, a very large portion of which has been raised by the voluntary contributions of the parishioners.

Manchester.—A correspondent of the *Manchester Courier* recommends the erection of a separate cathedral rather than the conversion of the Collegiate Church into one. He advocates at the same time, however, the restoration of the latter. Her Majesty, he thinks, ought to be invited to lay the foundation-stone of a new cathedral to rival St. Paul's, rather than that of a mere chapel as proposed in connection with the Collegiate Church.

Boston Spa.—St. Mary's church, having been enlarged, was reopened on the 2nd inst. The enlargement consists of new north gallery and a side aisle, containing, together, 192 seats; also near the pulpit seats for the aged and infirm. The porch and windows have been remodelled, and trefoiled lights introduced, with a little stained glass in the upper part. The new chancel consists of a three-light window with plain stone dressings and plain glass. In the west gallery an organ (made by Mr. Haunton, of York) has been placed.

"*Morecambe.*"—This is the name given to a new town in course of establishment for sea-bathing quarters, near Poulton, on the Lancashire coast. The land between Poulton and the southern part of the new foundation, including the Polygon, and which belongs to the North-Western Railway Company, is almost all taken up for building lots. Water will probably be brought along the railway from high-level springs about eight miles off; and the local board of health for Poulton, Bare, and Torrisholme township is interested in the sanitary arrangements.

Glasgow.—The site fixed upon for Marochetti's equestrian statue of the Queen is said to be St. Vincent's-place, fronting Buchanan-street. Marochetti's objection to St. Enoch-square, according to the *North British Mail*, is, that as the statue would in that situation have to face the north, the features would be generally in shadow. The artist has undertaken to complete his task in 18 months, and the cost, it is said will not exceed 4,000*l.*

Cardiff.—An inquiry has just been made before the deputy-sheriff and a jury, as to the value of a piece of corporation land near the South Wales Railway Station in St. Mary's-street, which the railway company require to form a convenient approach to the station. The ground in question is about 1,830 square yards: the depth averages 163 feet, having a river frontage of 130 feet. To show the increasing value of land here—in the year 1816 this was let on a lease of 42 years, at a rent of 5*l.* 5*s.* per ann., and ultimately to Messrs. Bachelor, on lease, which expires in May, 1858, for the sum of 85*l.* per annum. They are to receive 1,200*l.* as compensation for their lease. Fourteen witnesses were called by the corporation, and their estimates of the value generally agreed, being about 175*l.* per annum. The value of the reversion was 2,487*l.*; but under a compulsory sale, they considered that it was fairly worth 3,108*l.* Eleven witnesses were called by the South Wales Railway Company. The estimated value by the company's general valuer was—

100 feet frontage for houses, deducting 15 feet for three passages, to let at 6 <i>d.</i> per yard, with a yard at the back	£45 10 0
Present value, at 25 years' purchase	1,137 10 0
Reversion of 7 years' lease	886 15 0
The sum awarded by the jury was 965 <i>l.</i> 3 <i>s.</i> 4 <i>d.</i> , and no compensation for damages, being 130 <i>l.</i> less than the sum originally offered by the company.	

METROPOLITAN IMPROVEMENTS.

APPLICATION is to be made to Parliament in the next session for an Act for widening and improving the north end of Dowgate-hill; for widening and improving Threadneedle-street, opposite Old Broad-street; and for widening and improving the south-east corner of Mark-lane, and the north side of Great Tower-street adjoining. Application is to be made in the next session of Parliament for powers to enable the Woods and Forests to convert Kennington-common, and the two pieces of vacant land on the east and west of it, into an ornamental park, to be open to the public. Notice has been given by the Commissioners of Woods and Forests that they are about to form a new street from the end of Lower Sloane-street to the north end of the Chelsea Suspension-bridge, to afford the public a direct access to Battersea-park, now in course of formation; and also an embankment along the north side of the Thames, from Vauxhall-bridge to Chelsea Hospital. The proposed temporary bridge at Westminster is abandoned, and a permanent bridge is to be constructed on the north or lower side of the existing bridge, from the penny steamboat pier to the opposite stairs.

At Buckingham Palace and Piccadilly, by the time her Majesty comes to reside at Buckingham Palace, for the winter season, a vast alteration and improvement will have been effected. All the houses, commencing from the White Horse, in Stafford-row, to the Gun Tavern have been removed, and a new line of road made. Mr. Charles Pearson has brought before the corporation a plan for improving the City of London, "by widening the intended new street from Farringdon-street to Clerkenwell, by raising it on a level with the high ground of the adjacent streets, and extending it to King's-cross, by constructing a trunk railroad in a well-lighted and ventilated subway under the surface of the street, connecting the northern railroads and northern suburbs of the metropolis with termini in Farringdon-street and the new street; by lifting Holborn valley 17 feet, nearly on a level with Holborn-hill and Snow-hill; and by removing the wholesale meat and vegetable markets, and the railway carriers' receiving-houses, from their present confined and inconvenient situations, to spacious sites in the new street.

GAS AND WATER SUPPLY.

London.—The reiterated assurance by interested parties that the cheap gas would yield no dividend, has just been belied by the announcement of a dividend of seven-and-a-half per cent. per annum on the part of the Great Central Gas Company, with an assurance "that ten per cent. on all the capital paid will be returned to the shareholders before the company is eighteen months older." The reduction of price has already led to an increase of consumption, in the city, since the commencement of this undertaking, from 450,000,000 cubic feet to 750,000,000. The mains, too, are only now completed.

Leighton-Buzzard.—A meeting of almost all the influential residents has been held, in order to adopt measures for the reduction of the price of gas from its present exorbitant rate of 10*s.* per 1,000 cubic feet. It was unanimously resolved "That a reduction in the price of gas to 7*s.* per 1,000 cubic feet would be of great advantage to the consumers, without injury to Mr. Brothers (the manufacturer), as it is believed a great increase would take place in the consumption, and other parties who do not at present consume gas would be induced to do so."

Sandgate.—This place has been lighted with gas from Hythe. The price, it is said, is to be 10*s.* per 1,000 feet, for three years. The gas company also furnish meters and fittings at 7*d.* per light per quarter.

Poole.—A correspondent of the *Poole Herald* calls attention to the impure state of the gas in this town, and the very inefficient and slovenly way in which the repair of pipes, metres, &c. by the company's servants is conducted. As to the quality, he says that besides an abominable odour and feeble light, the burners are continually eaten into holes, and

verdigris constantly formed in the brasses, paint destroyed, &c. He cannot understand, therefore, how it happens "that the gas was submitted to chemical investigation, and pronounced free from any injurious mixtures." There is a good deal of humbug in some "chemical investigations;" that is very clear.

Salisbury.—"The directors of the highways of this city," says a Hampshire paper, "contemplate taking active steps to procure a cheaper mode of lighting for the city; and with that view they purpose renewing the inquiries of last year, into the high charges of the gas company. We are assured, by one of the directors, that a London house is ready to put gas of good quality into the existing gasometer, or into new works, at the rate of 2s. per 1,000 feet; and it is justly considered, under such circumstances, that the charge to the public here should not be more than 4s. per 1,000; as it is not thought to be just that the present consumers should pay for the interest of capital unwisely expended, to an extent threefold what is now requisite to lay down pipes and construct the works necessary for supplying the whole city and borough."

Ruthin.—A meeting has been called here to consider the best mode of supplying the town with water. The source now fixed on is the Llanbedr Hall estate, and a company is in course of formation.

Ulverston.—It is said that a company is in the course of formation in Ulverston for the establishment of water-works to give the town a sufficient supply of soft and pure water. The amount of capital required is about 7,000*l*.

Glasgow.—Mr. Donald Henderson, of St. Vincent-street, has taken out a patent for an improved apparatus for generating gas. This apparatus is said to be a kitchen range, by which, independent of all the ordinary uses of a kitchen grate, a house of any extent may be supplied with carburetted hydrogen gas sufficient to illuminate every apartment therein and outhouses, if required, and that at one-fourth of the average price of gas generally supplied to towns. Mr. Henderson, it appears, has also patented some improvements in the combustion of gas for heating, by which objections to it as a heating medium are said to have been overcome; also, a bath in which water is to be heated by the same process.

AMERICAN MATTERS.

A Union Monument is to be erected at New Orleans at a cost of 20,000 dollars. It will perpetuate the name of Henry Clay, a statue of whom is to occupy the summit.

Iron Veneering for Buildings.—Mr. Gough, of Harlem, has invented and is now applying a new (?) improvement in architecture. This is ornamental cast-iron plates put on the front of a house, like veneering on cabinet work. The castings are made in the plates, and put on by a permanent elastic cement which allows for the expansion and contraction of the metal.

Iron Furniture.—The *Boston Transcript* says,—"The manufacture of iron furniture is creating a revolution. Iron is being substituted for wood wherever it can be done; and as it has now been demonstrated that furniture and household ornaments of every description can be manufactured of iron, of far more artistic forms, with far more beautiful polish, and with greater economy to the manufacturer and to the consumer than wood, it is not strange that iron furniture is becoming so popular, and being so rapidly introduced. It never wears out: it is capable of being wrought into far more splendid forms: it is susceptible of a far higher degree of polish, gilding, and finish; and articles are there on exhibition which are finished in imitation of the finest Sevres porcelain; sofas, settees, chairs, and other articles of iron, with clocks in *papier maché*, bronze, gilding, wood, and all other colours and imitations. Some are inlaid with pearl, richly coloured and tinted, and, in fact, we have never seen, in this country, furniture manufactured with so much elegance and taste. A very great change has been wrought in a year or two on this subject, and greatly for the advantage of the entire community. The physicians of the hospitals

in New York have banished wooden bedsteads and furniture as fast as they could from the walls of these institutions.

Book Sales.—The last trade sales at New York lasted seventeen days, and amounted to nearly 100,000*l*.

A Floating Theatre.—Spaulding, the circus proprietor, is about building in Cincinnati a monster floating palace, for theatrical, circus, and menagerie performances. It is to be 400 feet long, with 60 feet beam, and is to accommodate 4,000 spectators. It is to be towed by two steam tenders to the various towns upon the Mississippi and its tributaries, in summer, and to be moored at the levee in New Orleans in the winter. It is estimated to cost 40,000 dollars.

Boston Ship Building.—The feats of the yacht *America* have been entirely eclipsed, says the *Transcript*, by those of the *Flying Cloud*, built at East Boston by Mr. Donald McKay. This skimmer of the seas made the voyage from New York to San Francisco in eighty-nine days. She ran, in three days, 992 miles.

The Astor Library, New York.—The *Home Circle* gives a description of this building, executed by Mr. Saelzer, the architect. The building is constructed after the style of the Byzantine school of architecture. The first story and part of the second are built of brown stone: the columns, architraves of windows, the cornice, parapet, and the ornamental work are of the same material. The height of the front of the building, from the level of the sidewalk up to the top line of the parapet, is 67½ feet, the length 125 feet, and breadth 65 feet. The ascent to the entrance will be by six stone steps, to a brown stone platform into the front vestibule, ornamented on either side by a stone sphinx; from thence to a flight of thirty-two marble steps, 8 feet in breadth, leading to the library-hall floor. Upon approaching the summit of these steps, the visitor finds himself near the centre of an immense alcove, encircled by fourteen piers, formed of brick, plastered and finished to resemble white marble, and supporting galleries of iron midway between the floor and the ceiling. The side walls form a continued row of shelving and book cases, capable of containing 100,000 volumes. Above the floor of the main hall, at an elevation of 52 feet, is the principal skylight, 54 feet long and 14 feet broad, formed of thick glass, set in iron. Besides these, there are circular side skylights of smaller dimensions. Thorough ventilation has been secured by iron framework in suitable portions of the ceiling.

Strikes in America.—The *Boston Traveller* says, as to a recent strike on the part of the machinists,—"As was foretold, the machinists are gradually having their wages reduced. Not directly, as the labour of mechanics is still in good demand, but by a gradual process, which, in the end, will prove full as effective as an immediate reduction. The proprietors are discharging, one by one, the men they least need, and these men, thrown out of business, seek employment at other shops, where they are, with scarcely an exception, obliged to labour for less wages."

THE SEWERS COMMISSIONERS.

CAN it be possible the Commissioners of Sewers (according to the report of the last day's proceedings) are serious when they propose the drainage of Lee, in Kent, as a matter of the first and greatest importance, to be discussed on that and the next day of meeting, in preference to every other work of necessity, so anxiously expected in the metropolis? Now, in the name of common sense and the people of London, is this to be allowed? Are the pestilential courts abounding even in my own immediate vicinity, with all their abominable exhalations and horrors, to remain as they are, while both the time and money of the commissioners, with a host of engineers, surveyors, and draftsmen, are to be employed on the drainage of Lee, in Kent, already one of the most salubrious and delightful retreats in the neighbourhood of London? Is it, I ask,

because one of the chief commissioners, the principal mover of this scheme, Capt. Dawson, resides in this fortunate locality, that all the crying evils and abominations of London are to be suspended, in order to make this Lee a sort of paradise for Capt. Dawson and the numerous great guns, his associates, who sojourn in these would-be Elysian fields?

JOHN BAILEY DENTON.

THE ROYAL FREEMASONS' SCHOOL FOR GIRLS.

WIDELY spread is the charity of the Freemasons: they stand pre-eminent for practical benevolence. We give in our present number a view of a building now being erected by them at Wandsworth for their school for female children, from the design of Mr. Hardwick, R.A.

This charity was instituted on the 25th of March, 1788, by the late Chevalier Bartholomew Ruspoli, for the purpose of maintaining, clothing, and educating female children, daughters of brethren belonging to the Society of Free and Accepted Masons, who, from affluent or prosperous circumstances, have become so reduced as to require its aid, and for protecting and preserving them from the dangers and misfortunes to which distressed young females are peculiarly exposed,—of training them up in the knowledge and love of virtue, and such habits of industry as are necessary to their condition,—and of impressing on their minds a due sense of subordination, true humility, and the principles and practice of social, moral, and religious duty.

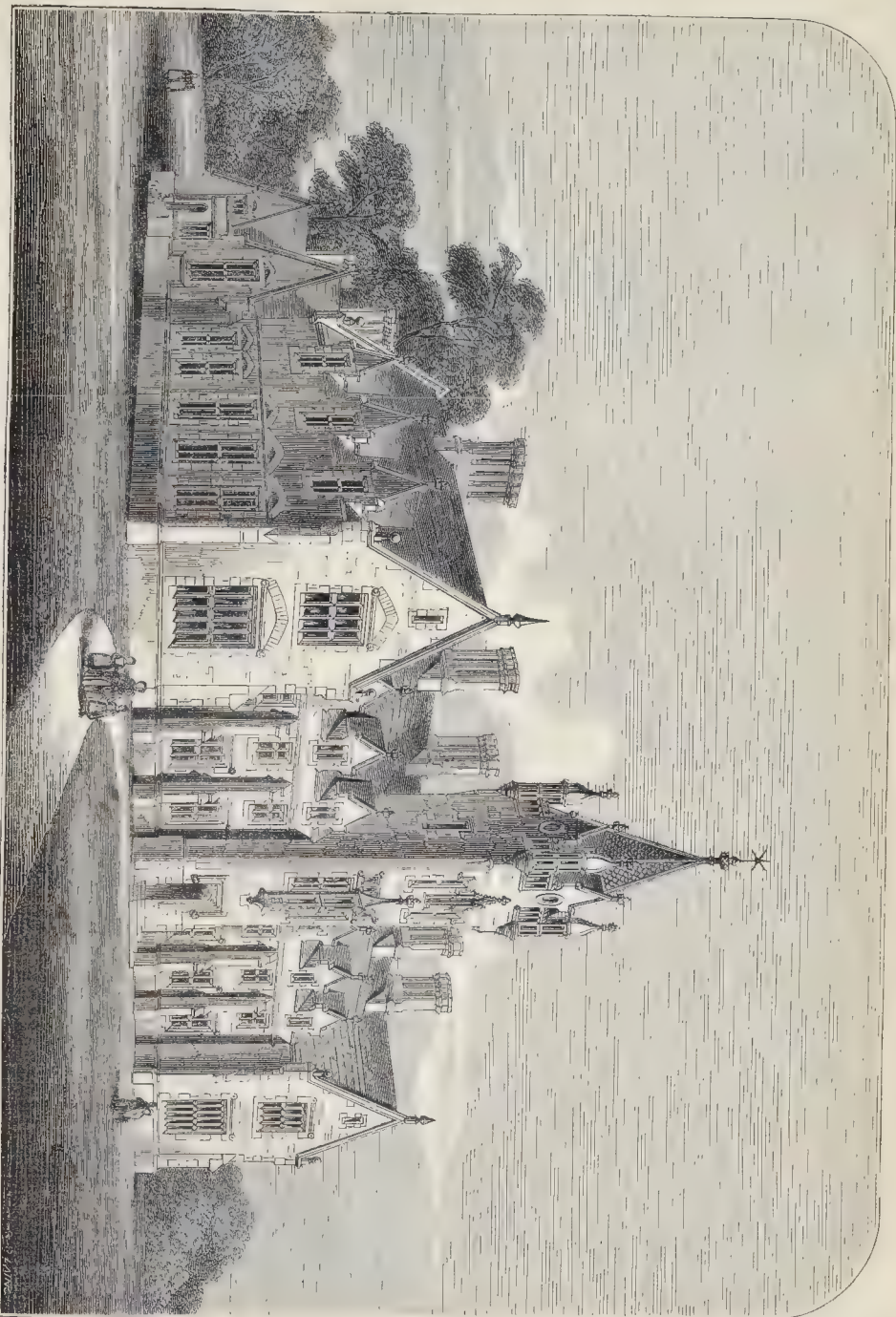
This school is entirely supported by voluntary contributions. 642 children have been admitted into it since its establishment.

The present school-house, which is calculated to accommodate sixty-two children, is situate near the Obelisk, in St. George's-fields, Southwark, and was erected by the governors in 1793, at an expense of upwards of 3,000*l*, upon ground held under leases of the City of London, which leases will expire in March 1853. A sum almost equal to the above amount has since been expended upon the premises; and if it had been considered advisable to renew the leases (which could not have been done but at a much enhanced rental), a very large amount must again have been expended to render the building more convenient and properly available for the purposes of the charity.

Under these circumstances, the governors considered it desirable, on account of the health and morals of the children, as well as for enlarging the usefulness of the institution, to purchase freehold land in a better situation, on which to erect a more commodious edifice; and a building, such as we have represented, is now being raised there. The new locality, in Wandsworth, contains all the advantages such an institution can require,—contiguity to London, and easy access to the premises,—gravel soil, extensive views, an abundant supply of water, close vicinity to places of worship, salubrious air, and extensive grounds. The building when finished will hold eighty children, and accommodation can be easily supplied for a larger number if it should ever be required. The cost will be about 8,000*l*, and it is proposed to make the establishment perfect in every sanitary point of view.

We willingly aid its promoters in soliciting support for an institution which has already effected so much good, and which, under the direction of Providence, its enlarged capabilities will enable the governors materially to extend.

DRYING LEATHER.—One of your correspondents of last week, "J. M.," inquires as to the best method of drying leather. He will find that the most perfect method of doing so is upon the desiccating principle, viz., the application of rapid currents of heated air, of any required temperature, which can be kept uniform at pleasure throughout the process, thereby avoiding the irregularity of heat arising from common furnaces, which is more apt to destroy than to dry, and more especially such a substance as leather.—D. G.



THE ROYAL FREEMASONS' SCHOOL FOR FEMALE CHILDREN, WANDSWORTH.—MR. F. HARDWICK, R.A. ARCHITECT.

THE COST OF THE EXHIBITION BUILDING.

The original contract for the building provided that a sum of 79,800*l.* should be paid for the use of it towards the purposes of the Exhibition, and in the event of its purchase the price was fixed at 150,000*l.*; but it also had attached to it a schedule of prices, according to which all additional work not included in the specification was to be executed. The additional work found to be required in the progress of the undertaking raised the contemplated expenditure of 79,800*l.* for the hire of the building to 109,000*l.*, and that amount has been nearly paid under the strict terms of the contract. It appears, however, that this would not secure the contractors from loss, and the Royal Commissioners have been led to pass the following resolution, which carries with it the comments it naturally induces:—

"It was resolved, that although, under ordinary circumstances, the payment of a higher sum than that agreed upon for work executed under a contract, after public tender, is highly objectionable, and would establish a very dangerous precedent, and although the Commission could admit no claim on the part of the contractors, yet that they were of opinion that, under the circumstances recapitulated in the report of Lord Granville and Sir William Cubitt, Messrs. Fox, Henderson, and Co. should be secured against ultimate positive loss, and that the sum of 35,000*l.*, as recommended in the above report, should be forthwith advanced to them, upon their written agreement to abide by such terms and conditions as the Commission may hereafter prescribe.

"It was also agreed that the further questions raised in that report, as to the final verification and settlement of the accounts, and as to the conditions to be imposed in case of the materials being sold for a higher sum than that estimated, should be referred to the Finance Committee."

There seems to poor mortals who, like us, deal in small figures, rather a wide step between "no claim" and *five-and-thirty thousand pounds*. As it now stands Messrs. Fox and Henderson are to receive for the use of the building 144,000*l.*

Some friends of Messrs. Munday, deducing from this unexpected liberality to Messrs. Fox and Co. proofs of the profits they have lost by giving up the contract they at one time held, are striving to obtain for them a larger sum as compensation than that awarded by Mr. Stephenson, 5,120*l.*

The Executive Committee have announced that the possession of the building will be given up to the contractors on the 1st of December.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Berlin. — The Philanthropic Architectural Association (*Gemeinnützige Baugesellschaft*) of the Prussian capital held its anniversary on the 27th ult. The chairman (Prince of Prussia) said, that the undertaking had been prosperous last year, inviting the further co-operation of the public thereto. *Landbau-meister* Hoffmann stated then at great length, that the Philanthropic Architectural Society had hitherto erected 15 dwellings, with 145 abodes, and 20 workshops. Amongst the dwellers are 56 masters of trades (1), 27 journeymen, &c. This scale ascends even to some minor employés of government, especially of the postal department, &c. When, on the 14th Oct. 1849, the society opened its first houses, the number of lodgers was only 70; now it amounts to 850, amongst whom there are 400 children. The speaker still lamented the small degree of assistance afforded to the society by the public at large, and didactically alluded to the example of England. The house now in course of erection in the Ritterstrasse alone will cost 12,000 thalers. The income of this year amounted to 27,000 thalers; the outlay to 21,000 thalers. It was considered very desirable that the waste ground owned by the society should be soon built over, for which 20,000 thalers more were required.—One of the lodgers alluded to the paucity of dwellings

under 50 thalers (7*l.* 10*s.*) a year. The Prince presented the society with a description of the model lodging houses of the London Exhibition.—*New Houses of Parliament.*—The provisional building of the first chamber in the Leipzig street progresses satisfactorily. But it is projected to erect next year a joint building for both houses of the Prussian legislature, for which huge structure an appropriate locality is sought.—The head government have demanded the opinion of all provincial governments, and of the Society for the Improvement of the Working Classes, on the occupation of children in factories, mines, &c.; according to which young people under sixteen years of age are restricted in working for certain branches of trade, as well as entirely prohibited some occupations encroaching on the health of the young. A stringent supervision of such works, as well as the railways, in a sanitary and educational (moral) point of view, is also in contemplation.

Austrian Art Affairs.—Court-Councillor Count Thun, brother to the Minister of Public Instruction, is now engaged on a draft of a new organization of the Vienna Academy of Fine Arts—an establishment whose utter stagnation seems now to attract attention. The Bohemian States, also, had decided on ornamenting the interior of that original old building, known as the Tycho-Brah Astronomical Observatory, at Prague, with frescoes taken from the Czechian history. To this undertaking Director Ruben, the painter of Columbus, was chosen, who devoted considerable time in the composition of the cartoons. But when they were completed, the supreme sanction for their execution was refused. M. Ruben, who is one of the celebrities who had accepted the situation in Austria, in hope of times favourable to art and science, has received this news with a feeling of great disappointment.

ENCROACHMENTS IN THE NEW ROAD, ST. PANCRAS.

Your attention has been called, and very judiciously, to the encroachments now in progress in the New-road, notwithstanding the existence of an Act of Parliament for their prevention. Some years ago attempts were made by parties owning property in the locality to introduce buildings as now carrying on; but the St. Pancras Vestry of that day, consisting of the principal inhabitants of the parish, interfered and prevented it,—looking to the true interests of the parish and the public. Recourse was then had to the introduction of wooden buildings upon wheels, which, being removable, were intended to evade the provisions of the Act of Parliament, to which your correspondent refers. These moveable machines or wooden houses, were suffered to remain unmoved, and gradually to sink into the ground, whereby the parties expected, in course of time, to establish a foundation, which could not be considered to come within the prohibition of the Act of Parliament, as not resting on an old foundation. This device, however, was rendered abortive, and no buildings were permitted to be erected upon these imaginary foundations. In course of time a new state of things occurred in the parish: the old and respectable body of vestrymen were expelled from office, by the operation of what is called "Hobhouse's Act," and the ultra party obtained the ascendancy. Like the disciples of that school, the first thing they did, in carrying out their false economy, was to let the old toll-house (which had been surrendered to the parish with the roads), for a tobacco-shop, producing some paltry 20*l.* or 30*l.* per annum in aid of the poor-rate. This building was certainly on an old foundation. The example thus set, the parties who had previously been prohibited from carrying on their erections immediately followed, which was encouraged by the vestry, they thinking, no doubt, that they had accomplished a great object in this pitiful increase of the poor-rate, by the addition of the assessments from these buildings. Thus matters have crept on, and all in the teeth of the Act of Parliament declaring such buildings nuisances and re-

moveable as such accordingly. It is to be hoped that you will persevere in directing public attention to these nuisances, until the continuance of them is not only prevented, but those existing are extinguished, and this important thoroughfare to the three great railway stations—the Great Western Railway, the North-Western Railway, and the Great Northern Railway—is restored to its original position.
AN OLD PARISHIONER.

POWERS OF PAVING BOARDS.

CLERKENWELL COUNTY COURT.

(Before Mr. Serj. Jones.)

PREW v. HELME.—This was an action to recover damages for a trespass committed by the defendant, who is surveyor to the Board of Commissioners of Paving for the parish of St. Andrew, Holborn.

Mr. Parry, who appeared as counsel for the plaintiff, said his client had no vindictive feelings in bringing this matter before the Court, and merely sought to recover nominal damages,—the plaintiff's object being rather to obtain his Honour's opinion upon a point of law than to recover compensation, and (should his Honour's opinion be favourable) to prevent a recurrence of what he (Mr. Parry) conceived to be a most unwarrantable act on the part of the defendant. The circumstances which brought the parties into conflict were to be regretted, more particularly as the defendant had been urged to the commission of the act by another party—(a Mr. Babb)—a next-door neighbour of the plaintiff, Mr. Prew (the plaintiff) had for many years carried on business as a tailor in High Holborn, and it so happened that his neighbour (Babb) was fond of litigation, and possessed not that feeling which, in the common acceptance of the term, was called "neighbourly." This was not the only occasion on which neighbour Prew had had to complain of neighbour Babb's annoyance,—neighbour Babb having summoned him before a magistrate and obtained a conviction for what was considered an offence against the statute; albeit the offence complained of was purely the result of accident; the legs of a pair of trousers, which amongst other articles adorned Mr. Prew's emporium, having, whilst struggling with a brisk breeze, rather exceeded the strict line of decorum and flapped against neighbour Babb's window. Now to prevent a repetition of such an unforeseen intrusion, Mr. Prew erected a board in front of his premises. No sooner, however, was the board fixed, than away bounded Babb to the Board of Commissioners, and these gentlemen, who, no doubt, sat in "meditation deep," thought with the irascible Mr. Babb, that their Local Act had been violated,—that their rights and privileges had been illegally trampled upon. They accordingly directed their surveyor to remove forthwith the object of Mr. Babb's disquietude, and on the 15th of July, shortly after sunrise, the worthy surveyor made a formidable attack upon Mr. Prew's board, which, with the able assistance of a street orderly, he triumphantly carried away (laughter). These facts would be clearly proved; so that the point for his Honour's consideration would resolve itself entirely into a question of law. It was not a question whether one Board had power to remove the other.

Mr. Paine.—That is the *knotty* point.
Mr. Parry.—Not at all: the question entirely turns upon the dry construction of section 56, of 57 Geo. 3, c. 29 (the Metropolitan Paving Act), in pursuance of which the defendant before removing the board was bound to lay an information before a magistrate; and I submit that the board having been removed by the defendant before he obtained the judgment of the magistrate, the defendant violated the Act of Parliament, and was guilty of a trespass.

Mr. Paine said he would admit the facts as stated by his learned friend, and would leave the question to the consideration of the Court, although he had considerable doubt as to whether the section relied upon was not capable of a very different interpretation to that which his friend assumed was in favour of the plaintiff.

His Honour, after taking time to look into the Act of Parliament, was clearly of opinion that a trespass had been committed; but as the plaintiff did not seek to recover heavy compensation, he should assess the damages at 40*s.* and costs.

CALCAREOUS BRICK.—Signor Longo, a builder at Aosta, according to the *Piedmontese Gazette*, has discovered a limestone quarry, at Cesalet, near Aosta, which yields hydraulic lime of the common quality, in the near proximity of a sort of earth, which, mixed with the lime, forms with it a compound which will harden under water within fourteen hours, and become as hard as good brick at the end of three days.

BOYDELL'S FIRE-PROOF CONSTRUCTION.

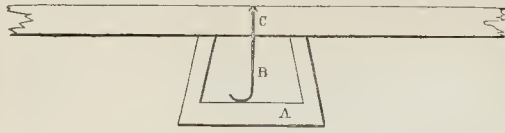


FIG. 1.

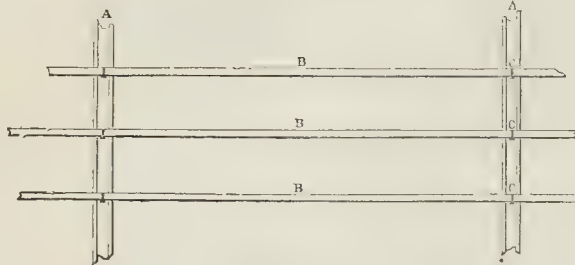


FIG. 2.

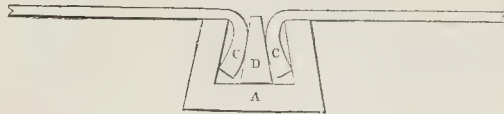


FIG. 3.

FIRE PROOF HOUSES.

BOYDELL'S WROUGHT-IRON SUBSTITUTE FOR WOODWORK IN ROOFS AND CEILINGS.

EVERY scientific endeavour to render dwelling-houses fire-proof has our best wishes, and ought to receive full consideration on the part of the public. We saw last week two houses in Gloucester-crescent, Regent's-park-terrace, which are being built with this end in view by Mr. J. Boydell, who took out a patent for rolled wrought iron for roofs and floors several years ago, but has only just now attempted to bring his system into use.

The same principle applies to both joists and rafters. They are bars of wrought iron, grooved from end to end, the bottom of the groove being slightly wider than the top. This groove may be filled with wood, into which the nails fastening the floor-boards are driven, without the wood being liable to be drawn out of the groove. At the same time, the points of the nails are turned by the iron bottom of the groove and clinched—See Fig. 1—which shows a transverse section of (A) the joist, the groove (B) being filled with wood to receive the nails of the floor-boards (C).

In Fig. 2, A, A represent the grooved rafters, into which the bent ends of the angle irons (B, B) are fixed at C by iron wedges—as shown by the transverse section,—

Fig. 3.—A being the rafter and D the wedge which fastens together in the groove the two ends of the angle irons (C, C). The angle irons, or battens, may thus be placed at any distance from one another, according to the gauge to which the slates will work.

Light framed girders carry the joists: the ceilings are formed of plain-tiles to receive the plaster: the hearths for the fire-places are of iron, so are the lintels over the door and window openings, and throughout the carcass of the house there is no timber of any kind.

The construction is very light, and, according to the patentee, does not increase the expense of an ordinary dwelling-house.

Some precise experiments on the strength of floors thus formed would tend to give confidence to the public.

INDENTED GLASS FOR CHURCH WINDOWS.

A DESCRIPTION of glass, termed "quarry" glass, has been recently manufactured by Messrs. Hartley and Company for church, chapel, and school windows. For these windows, as our readers know, small pieces of glass are generally used, fastened together with lead, which, from the amount of labour required, are costly, and when finished are constantly liable to get out of repair: the wind and rain are soon found to penetrate the joints, and often render adjoining sittings exceedingly uncomfortable. The glass we refer to is thick, of large size, untransparent, and marked by indentations into the shape of quarries. We counsel the makers against attempting to put it off as an imitation of lead lights: let it be put forward as what it really is. Large plain surfaces of glass do not accord with the character of Gothic architecture, and hence adherence to a rude kind of glazing. The indented glass may, for aught we know (we have not yet seen it), enable architects to dispense with quarries, and make their windows air tight. The new glass being strong, no frame would be required: it would be secured at once to the stonework.

DRAINS TO THE COMMON SEWERS.

Where a landlord gives permission to a party to run a drain into his, it is held that the party, having once given that permission, cannot afterwards close up the drain, and is bound to keep it clear at his own expense, although the stoppage of the drain arises from the drain he permitted to run into his.

In the case of Ward v. Warner, at the Lambeth County Court, before Mr. Chilton, the plaintiff said he sought to recover 2*l.* 7*s.* 9*d.*, a moiety of expenses incurred in repairing a drain on his premises. Last year the authorities ordered the defendant to make a drain from his cesspool, and the plaintiff, to oblige the defendant, who was a neighbour, consented for him to run the drain into his. The defendant's drain was, however, so badly constructed, that in a short time the Commissioners of Sewers ordered it to be redone. As the evil arose from the plaintiff's drain, he thought it but fair that

he should bear half the expense he had incurred. Defendant said he was not liable, as the obstruction did not occur on his side. The Judge said the plaintiff had given an uninterrupted access to his drain, and had made an improvident agreement; and he was bound to keep it in order.

Mr. Ward.—But I did not agree for ever, and I shall at once remove it.

The Judge.—Then you do so at your peril. I think you had better come to terms. I must give a verdict for defendant.

Mr. Ward.—It is too bad; and if that is the law, the sooner landlords and builders are acquainted with it the better, especially as the Commissioners of Sewers are every day ordering alterations and new drains. But I will have it stopped, for I will apply to the Commissioners of Sewers upon the subject.

RATING WATERWORKS.

REGINA v. THE EAST LONDON WATERWORKS.

In the Queen's Bench.

THE East London Waterworks Company had been rated by the trustees for lighting, paving, and improving the hamlet of Mile-end Old-town in respect of their mains and pipes passing through the hamlet. The company appealed against the rate, which was confirmed on appeal, subject to the opinion of this Court upon a case stated. By the local Act, the rate is to be laid on all persons who occupy or enjoy "any messuages, tenements, coachhouses, &c., or other buildings, tenements, or hereditaments," situate within the hamlet.

Council having been heard, Lord Campbell said, the question in this case was, whether the East London Waterworks Company were liable to be rated to the local rate under the particular terms employed in the Act of Parliament in respect of their mains and pipes which were fixed in the ground. There could be no doubt that they were the occupiers of tenements for certain purposes, so as, for instance, to become liable to the poor-rate under the 43rd Elizabeth; but in the local Act, there was specific mention of the things which were to be rated, and among these were messuages, coachhouses, stables, &c., which gave the sense which was to be applied to the words "tenements and hereditaments." These words must, therefore, be construed as limited to tenements and hereditaments of the kind specifically mentioned in the Act; and this was the rule of construction which had been adopted by the court in the case of the Manchester and Salford Waterworks. The decision of the Court, therefore, was to reverse what had been done by the sessions, and to quash the rate.

IRISH BUILDING AND RAILWAY WORKS.

A NEW Presbyterian Church is to be erected at Belfast, and the subscriptions for defraying the expenses are increasing.

The Board of Guardians of the Youghal Union have decided upon the erection of a new workhouse, and tenders are being received for the same, in conformity with the drawings, &c. furnished by the architect to the Poor-law Commissioners.

New station-houses are to be erected at Clonmel and Cahin, on the Waterford and Limerick Railway, in accordance with the plans prepared by the architects, Messrs. Murray and Denny, of Dublin. The ground surveys and setting out of the line are being proceeded with, on the new deviation; and the land through which the railway is to run at Piltown, has been given up to the company. The works on this portion will be commenced immediately.

The works at the new R. C. Church of St. Mary, at Irishtown, county Dublin, are progressing: the walls of the north and south aisles, and sacristies have been raised to their full height. Those of the east and west ends are built to the commencement of the gables. The interior columns and arches, which are to divide the church into nave and aisles, and other portions, are still wanting.

The Killarney Junction Railway works have been at last resumed: when all preliminary arrangements are made, 3,000 men will be engaged on the line.

The Cork and Bandon line is near its completion, and the differences between the contractors and the company having been arranged, it is expected that the railway will shortly be opened for traffic.

The Waterford and Kilkenny Railway Company have got possession of 18 miles of the line between Jerpoint Station and Dunkitt.

The Tralee Board room is being enlarged, and sundry alterations made throughout the workhouse.

The new pier at Queenstown is to be on a site given by Lord de Vesci, and will consist of a stone mole, 100 feet to deep water, with a head 265 feet long, laid on a foundation of timber piles.

The first stone of a new agricultural school has been laid at Whitechurch, the estate of the Earl of Bessborough.

The pier of Ardglass harbour has been surveyed and examined, for the purpose of restoring it, and forming a harbour of refuge.

BEST ASPECT FOR HOUSES.

I AM in the regular habit of reading your interesting journal, which lies on our club table (the Conservative.) Amongst the many useful and valuable suggestions which it contains, I do not remember seeing any observations on the economy, healthfulness, and superior comfort obtained in the erection of dwelling-houses (especially in the country) in a southern aspect, as regards the principal dwelling-rooms.

Economy—because in the winter and autumn months the sun generally supercedes for the time the necessity of large fires, from the genial warmth it gives to the entire apartment, as well as promoting ventilation and rendering it wholesome and agreeable.

Also, if windows were more frequently thrown out from the side walls to catch the sun east or west, or both, now that the window-tax is abolished, additional light, warmth, and cheerfulness would be gained.

Every body knows how unhealthy, cold, and dismal a room becomes with a northern aspect where no sun enters; and I would recommend this subject to the serious attention of medical men when recommending or suggesting situations for their patients.

From my own observations, I find that the aspect of the majority of dwelling-houses is east and west, than which nothing can be worse—too hot in summer, and too cold in winter.

Again, the shading of rooms by large trees suffered to grow too near our houses, is an evil much to be deplored.

In the arrangements of a house let the morning or breakfast-room be east, the drawing-room south, and the dining-parlour west—to commence with and follow the sun all day, and if in the midst of the summer, the setting sun is too hot and glaring, why, then use the breakfast-room as a *salle-a-manger*. G. C.

BRUNELLESCHI'S DOME.

HAVING called the attention of your readers to this dome as in part an instance of a Gothic one, I am anxious to lay before them the following, from Vasari's Lives, being an extract from Brunelleschi's own report to the syndics and wardens appointed to judge of the designs:—

"The difficulties of this erection being well considered, I find that it cannot by any means be constructed in a perfect circle. Now it appears to me that those architects who do not aim at giving perpetual duration to their fabrics, do not even know what they are doing. I have, therefore, determined to turn the inner part of this vault in angles, according to the form of the walls, adopting the proportions and manner of the pointed arch, this being a form which displays a rapid tendency to ascend."

Now it requires little argument to support the assertion that a dome built from the proportions and manner of the pointed arch is essentially Gothic, as the mere style of ornamentation is comparatively unimportant. Further, Brunelleschi's adoption of a "form which displays a rapid tendency to ascend" is

a sufficient proof that this great architect considered a dome to be an "aspiring feature in architecture;" nor do I doubt that his authority will have some weight with your ingenious correspondent, who argued for the *horizontal* of the dome, and denied that it was an aspiring feature as, we have shewn, Brunelleschi held it to be. H. T. B.

BUILDERS' DIFFERENCES.

Will you be good enough to insert the following tenders for a house in Gresham-street (Mr. S. Wood, architect)?—

Grimsdell	£6,929
Lucas	6,200
Hicks	6,183
Haynes and Co.	6,183
Cubitt	6,182
T. & W. Piper	5,987
Hayward and Nixon ..	5,977
Lawrence and Sons ..	5,740
R. & E. Curtis	5,731
J. Jay	4,973

Pray insert the inclosed tenders for building two villas, at Brixton, for Mr. W. Morris; quantities furnished:—

Abbey	£3,000
Gerry	2,988
Hugoe	2,698
Pilditch	1,866

A subscriber will esteem it a favour the following appearing in *THE BUILDER*:—Tenders for alterations to house, Streatham-hill, for Mr. C. T. Gabriel.

Thompson	£1,130
Jewell	1,067
Ashby and Sons	1,047
Higgs	968
Lawrence and Sons ..	732

RECOVERY OF ARCHITECT'S CHARGES.

COCKERMOUTH CHURCH.

In the case of Clark v. Wyndham, tried at Carlisle before Mr. Justice Williams, which has been reported in *THE BUILDER*, our readers will remember that the plaintiff obtained a verdict for 150*l*. In the present Term Mr. Cowling, as counsel for the defendant, moved to set aside the verdict for the plaintiff on the fourth issue, and generally to enter a nonsuit.

In order to understand Mr. Cowling's application to the Court, and fully appreciate the important point involved in it, it is necessary that the facts of the case be to some extent recapitulated.

This was an action of assumpsit, the declaration in which contained several counts, the first of which was a special one, framed to recover damages for the non-payment of a sum of money claimed for plans and drawings prepared by the plaintiff for the rebuilding of Cockermouth church. The church had been, in November, 1850, destroyed by fire, at which time a subscription was opened, and a committee formed for its re-erection, a member of which was the defendant, General Wyndham. The committee issued advertisements, offering premiums of 50*l*. and 25*l*. for the two best designs for such church. The plaintiff competed and sent in a design, which was rejected by the committee, who adjudged the premiums to two other candidates. The plans were, however, to be submitted to a vestry meeting, convened for that purpose, which being done, the vestry dissented from the committee's opinion, and decided in favour of the plaintiff's design. The committee thereupon advertised for tender, for building the church according to the plaintiff's design, but imposed upon him these conditions, namely, that although he was to make the necessary plans and specifications for carrying out his design, yet, in case the estimate for the building should exceed 4,700*l*, exclusive of the commission and the salary of the clerk of the works, the plaintiff was neither to claim, nor to be paid, for his trouble and labour, and the committee was to be at liberty to decline his design. Four builders sent in estimates, only one of which was below 4,700*l*, and the committee not pledging themselves to accept the lowest tender, took no further steps in the matter, and this together with a dispute, which arose among the subscribers, had the effect of altogether postponing the erection of the church. The plaintiff thereupon brought his action for payment for the preparation of the plans, &c. At the trial the jury were of

opinion that the lowest estimate might have been prudently acted upon, and found, as before stated, a verdict for the plaintiff for 150*l*.

The ground of Mr. Cowling's motion was, that the correct construction of the committee's resolution was, that they reserved to themselves the option of proceeding or not on the lowest tender, and not to leave it to the jury, to say, whether they (the committee) could have prudently done so. The Court, however, refused the rule, and in so doing stated its opinion to be, that the plaintiff's declaration was in substance the common count for work and labour in drawing plans and specifications, although it assumed a special form on account of the above conditions, imposed by the resolution of the committee. That, *prima facie*, the work being done by Mr. Clark, he was entitled to be paid for it, and that it lay on the defendant, as one of the committee, to show why the plaintiff was not so entitled. The Court remarked, that the contract was thus:—The plaintiff says, I have such confidence in my plans and specifications that I will undertake to receive nothing, if they cannot be fairly worked out for 4,700*l*. This action is not for commission, but for work and labour in drawing the plans.—Mr. Clark has therefore recovered 150*l*.

FITTING THE POOR FOR THEIR DWELLINGS.

I AGREE with your correspondent "J. B." that much of the misery in which so many working men's families live, is caused by the ignorance and untidiness of the working man's wife, together with his own improvidence; and I should rejoice if at all schools for the children of the poor, were taught the art of living comfortably on economical principles, and keeping tidy homes, as well as reading and writing: it might easily be done; and it is a most important matter, connected with the desire to make the children of working men useful members of society, and fitting inmates of improved dwellings, that we should so teach them.

But concurring so far with your correspondent, I must differ with him in his estimation of the wives of working men, and express my conviction that they are not such as he describes. I would say further, that, in London alone, we have tens of thousands of married poor women who only want the improved home,—the home that shall contain, in one dwelling, or one floor of a dwelling, a living room, two or three bed rooms, a scullery with sink and water, and a water-closet, to make that home at all times a comfortable one to the working man and his family; therefore do I trust that the good movement in that direction will go on, until every working man's family can command a separate tenement, or separate floor, with the conveniences of separate rooms, of water laid on to a sink, a water-closet, dust shaft, coal box, a slate pantry, and a distinct entrance; like those built by Prince Albert, in the barrack ground, facing the Great Exhibition. Speaking of which models, I would fain believe that good men have them in view as patterns for erecting such, or better, for the occupation of those whose improvement, physical and even moral, mainly depends on such provision. We are all deeply interested in the cause, for from such philanthropic undertakings most assuredly will proceed widespread advantages to society generally.

I have only to add that the greater portion of the evils deplored by "J. B." have been caused almost entirely by the wretched, close, damp, undrained, and consequently unhealthy habitations, which the law has allowed to be built, and the poor to inhabit, for the last 100 years. FELIX.

Books.

A Lady's Voyage Round the World: a selected Translation from the German of Ida Pfeiffer. By Mrs. PERCY SINNETT. Longman and Co. 1851.

THESE two little numbers of "The Traveller's Library" contain, perhaps, one of the liveliest and most varied and entertaining, though at the same time simple and unassuming, narratives ever written since old Lithgow gave his travels to the world, before the present century began. Much of its interest, however, lies in tact

and subtlety, observance and taste, peculiarly feminine. The fact of a middle-aged woman roving alone through the world at will, and everywhere meeting with little else than respect and kindness,—even robbers doing homage to her sex and giving instead of taking,—is one of a highly interesting and gratifying description, full of hope for human nature.

Mrs. Pfeiffer puts to shame more than one accredited traveller in the frequency and the graphic character of her remarks on everything in the shape of architectural curiosity or pretension met with in the course of her wanderings,—especially in India, China, Ceylon, &c. By the way, she incidentally corroborates the feasibility of a recent suggestion as to the want of windows in the Nineveh temple-palaces by reminding us that a want of windows is a peculiarity amongst the countless temples of the Hindoos. A remark of hers also on the extent of Delhi gives one a pretty shrewd idea of one at least of the real causes or reasons for the astounding extent of Nineveh.

"To the great imperial city of Delhi the eyes of all India—almost of all Asia—were once directed. It was, in its time, what Athens was to Greece, and Rome to Europe, and a similar fate has befallen it; for of all its greatness only the name is left. The present town is called New Delhi, although it is 200 years old, and is a continuation of the old towns, of which there have been seven; for, as often as the palaces, mosques, &c., became dilapidated they were left to fall to ruin, and new ones erected by the side of them; so that at last, ruins included, the town extended eighteen miles in length, and more than six in breadth; indeed, if many of them were not covered with a thin stratum of earth, it would appear the most extensive city in the world."

The author's account of one of the monuments of Delhi may be quoted, both as an example of her manner of describing such things, and of the style of the translation, which seems to do justice to the original.

"One of the most remarkable monuments I saw was what is called the Kotab-Minar, in which is the grand pillar, a polygon of twenty-seven bills, and five stories or galleries. The diameter at the base is 54 feet, its height 226; it is of red sandstone, and the upper part white marble; but it is chiefly admirable for the marvellously wrought sculptures and decorations which wind round it in broad stripes, and which are so delicately and exquisitely chiselled that they resemble the finest lace. Every description of the effect of the wonderful work must be far excelled by the reality, and fortunately the column is in as good preservation as if it had not been standing 100 years though it dates from the thirteenth century. The upper division leans a little forward, it is not known whether intentionally or otherwise; and it terminates in a flat terrace which does not seem to harmonise well with the rest of the structure. Possibly something may have formerly stood upon it, although this is not known. It was in its present state when Delhi was taken by the English. We ascended to the summit and obtained a magnificent prospect over the world of ruins, New Delhi, the Jumna, and the wide country round."

Historical Calculations based upon past Events in the History of the World, &c. Glasgow: R. Jackson. 1851.

We know not well what to say about this little pamphlet, although a great portion of it relates to the measurements of the temple given by Ezekiel. It is compiled from a work entitled "The Mystery of God Finished," and is designed to show "that the progressive development of the principles of human action, and the leading events in the history of churches and nations, have been regulated by fixed laws, the future results of the calculations pointing definitely and distinctly to the time of 'restitution of all things,'"—which, the author seems to calculate, is to begin in our own beloved "isle of the sea," and the preparation for which extends more particularly "from the year 563, when Columba arrived first in Scotland, until the year 1863, when the divine national man shall appear." As to this

"divine national man," we suspect that those who are preparing "a knife and fork" for him, and "a seat at table," and who hence seem to regard him as an individual merely, will find themselves immensely mistaken; but really, although we do admit that the true "Temple of the Lord," in which he will appear, is the human body, we are not versed in such "measurements of the Temple" as these, and therefore the less we say about them the better.

The Hand-book of Architectural Ornament. By W. GIBBS, Ornamental Engraver. London: Ackermann and Co. 1851.

Observing at the first glance several examples pilfered from our pages (where they appear exclusively), without the slightest acknowledgment, we are not disposed to look farther.

The Royal Exhibition Companion; or, the Sights of London. London: Clayton and Son, Strand. 1851.

This is a series of penny guides, and consists of twenty-five distinct hand-books to most of the sights in London, and within 25 miles of St. Paul's; each part containing thirty-two pages of letterpress. They are necessarily brief, but appear to be tolerably comprehensive and clear so far as they go.

Miscellaneous.

DRURY-LANE THEATRE.—JULLIEN'S CONCERTS.—Mr. Julien has done much to popularise good music, and deserves the thanks of those who regard with interest the progress of the universal art. At this moment, when there is singularly little to be seen or heard in London, save the note of preparation, and with such attractions as he can offer, he may be sure of full houses every night of his brief season. The theatre stands greatly in need of thorough decoration, and will probably have it in time for the approaching opera season there. For the present occasion, Mr. Gye has shaken his wand, and, with the aid of white hangings to the boxes with swags of artificial flowers, scarlet and gold coverings to the pillars, the glittering crystal curtain, and a promenade adorned with his usual affluence of white calico, gold lace, roses, and good taste, has made it all that could be desired *pro tempore*, if it were not for the murky ceiling, difficult to hide, which suggests what the superficial prettiness covers.

THE GATESHEAD SURVEYORSHIP.—Two candidates were nominated by the Gateshead Council for the office of town surveyor and inspector of nuisances—Mr. William Hall, C.E., of Bradford, Yorkshire, and Mr. Robert Coxon Young, of the Gateshead firm of R. and R. C. Young, builders. "It had pertinaciously been insinuated, beyond the Tyne," says the *Gateshead Observer*, "that while our corporate body were advertising for candidates, a majority of the members stood pledged to appoint a resident burgess. We declared our trust that the majority would be unswayed by local predilections—would vote for the candidate who came before them best recommended; and the result has justified our confidence and repelled the 'insult.' Mr. Young had many powerful recommendations in his favour—local friendship, an unullied personal reputation, and, as an architect and builder, a standing second to none in Gateshead. But a majority of the members, however highly they respected their townsman, were of opinion that the public interests would best be consulted by the election of Mr. Hall, and gave their votes accordingly." Another local paper thinks that the borough has been "insulted" by a stranger having been deemed more eligible than a townsman to fill the office of town surveyor.

A SHAKE-UP FOR CABINET-MAKERS.—It is not probable that any one believes that a knowledge of all the timbers which grow on the surface of this beautiful earth is inherent in carpenters, cabinet-makers, or carvers; but should any one have the faintest notion of such a thing, he has only to go to the Great Exhibition and take even a casual view of the specimens of wood there displayed, and he will find amply sufficient to dispel the delusion under which he might have been labouring.

If, after this, he expects that the workers in wood will be kept down to the routine use of our native oak, the hitherto almost universal mahogany, or rosewood, as the only materials for our furniture, he will be more short-sighted than we could well have supposed any man capable of visiting and examining the Exhibition could have been; and we are compelled to give him up in despair, and appeal to others of more susceptibility, asking them, if such a series, even as that now in the Crystal Palace, could be permanently secured together with such illustrations of the working capabilities of the various specimens as would show their economic value for carving and general cabinet-work, would it not be a boon of no small importance to manufacturers of furniture, and a great stimulant to the arts of design as applicable thereto? For it must ever be remembered that the character of a piece of carved wood depends largely upon the natural structure of the wood used in its construction; and in the more florid examples of wood-carving, a close grained and fine fibre is essential to the safety of the work; and thus in all judiciously executed examples, we shall find the character of the carving varies according to the peculiarities of the fibre of the wood, and it would have been the height of absurdity to have attempted to carve a work similar to the bedstead in the Austrian department in oak instead of zebra wood.—*Art Journal*.

INSTITUTION OF MECHANICAL ENGINEERS.—A general meeting of this institution was held at the Society's rooms, in Birmingham, on the 22nd ult. Mr. Archibald Slate, in the absence of Mr. J. E. McConnell, was called to the chair; and the secretary read a paper by Mr. J. A. Skipton, of Manchester, "On the Direct Conversion of Rectilinear into Circular motion in the Steam-engine." Mr. Marshall next read a paper by Mr. Clift, of Birmingham, "On the Preservation of Timber by Creosote." The author expressed his conviction that the mode of saturating wood with creosote, patented by Mr. Bethel, was the best yet proposed. The material used consisted of bituminous oils combined with a portion of creosote, the latter substance being acknowledged to possess the most powerful antiseptic properties. The timber, when subjected to this process, would be proof against the ravages of the destructive worms which generally destroy timber, and wood so impregnated would be most suitable for railway-sleepers, mining-work, docks, &c. Mr. Archibald Slate then placed before the meeting a paper "On a New Equilibrium Canal Lift for transferring Boats without loss of Water or of Power." An improved safety lamp, the invention of Mr. C. Elvin, of Belgium, was presented by Mr. S. H. Blackwell, of Dudley.

ECCLESIASTICAL RESIDENCES.—One of the longest Acts passed in the late Session of Parliament relates to ecclesiastical residences in Ireland. The object of the Act (14 & 15 Vict. c. 73) is to consolidate and amend the laws on the building, maintaining, and exchange of ecclesiastical residences, and to apportion more justly and equally the expenditure in respect of such residences, and render the liability of ecclesiastical persons in respect of dilapidations less burdensome. There are several clauses on the subject of building and improving ecclesiastical residences by way of memorial, certificate, and charge; others as to persons who are to be deemed successors to such residences. Some of the provisions have reference to the compulsory building of glebe houses; to the building and improving of ecclesiastical residences by means of money raised on mortgage; as to the way of endowment of glebe lands and houses by well-disposed persons desirous to promote the residence of a minister to officiate in any church, parochial chapel, or perpetual curacy. Many of the clauses in this Act relate to dilapidations, and as to the purchase and sale of residences, and as to the recovery of rents upon reserved glebe lands, &c. There are 57 long provisions in the Act.

CLEOPATRA'S NEEDLE.—Letters from Alexandria say that a government engineer from Malta "is exhuming the prostrate column known as Cleopatra's Needle."

THE EXHIBITION SURPLUS: A SCHOOL OF DESIGN FOR SUNDERLAND.—The local committee of the Exhibition, existing in Sunderland, met on Monday week to memorialise the Royal Commissioners on the subject of the surplus (the mayor, Mr. W. Mordey, in the chair). The chairman referred to the industrial pursuits of Sunderland—shipbuilding, the manufacture of glass and earthenware, &c.—and urged the importance of having a school established in the town to inculcate art and science. The Rev. R. Skipsey proposed that the commissioners should be memorialised for a grant to assist in founding a school of design in Sunderland. Such a school, he stated, was on the eve of being established. The motion was seconded; and Mr. Hartley, the glass manufacturer, as reported, spoke earnestly on the importance of a due combination of theory and practice. He thought, however, that Sunderland was not yet quite ripe for the establishment of a school of instruction in the theory of the different trades and manufactures which she carried on. But if such an institution were founded in London, it might gradually extend its branches to the provinces. The same speaker afterwards remarked that he found in the Exhibition a most beautiful specimen of clay adapted for glass manufacture, which he had never heard of before: it came from Germany. On seeing it he sent to Germany for a supply on trial; and ten tons of it had arrived that very week at his works. Mr. Todd, another speaker, said that the Exhibition surplus should be applied to the foundation of a normal college in London. The result of the meeting was an adjournment for a fortnight.

LONDON IMPROVEMENTS UNDER THE COAL DUTY ACTS.—A return has been made to an order of the Common Council, from which it appears, among other heavy items, that the formation of Farringdon-street, removal of Fleet Market, and erection of Farringdon Market, cost 250,000*l.*; the building of the new Coal Market, and improvement of Thames-street, &c., 94,167*l.* odd; the formation of Cranbourne-street, Upper Wellington-street, and New Oxford-street, also of Commercial-street, Whitechapel; Victoria-street, Westminster; and other minor improvements without the city, 665,000*l.*; and the improvement of the approaches to New London-bridge, including ground and premises in a long list enumerated, 1,016,421*l.* odd. The sum total raised for public works and improvements out of the coal duties since 1766, is 3,738,067*l.* odd, of which 1,117,345*l.* were for those within the city, 807,500*l.* for those without the city, and 1,813,221*l.* odd for those of a general character.

ST. JAMES'S PALACE AND PALL MALL.—How long is that heterogeneous collection of unsightly and mean-looking buildings, called St. James's Palace, to be allowed to remain in its present state? Placed in immediate contrast with so many magnificent private residences, it serves merely as a reflection upon the boasted loyalty, public spirit, and taste of the age. At the same time might be effected that most desirable improvement first suggested in the columns of *THE BUILDER*, of continuing Pall-mall to the Green-park, clearing away the intermediate houses between the Earl of Ellesmere's and the Duke of Sutherland's, and thus giving a grand finish to one of the noblest thoroughfares which this or any other capital can boast. At all events, something should be done to the palace, unless it is to remain a monument to national disgrace.

FOOTPAD.
READING LITERARY INSTITUTIONS.—Last week an appeal was made in the Court of Queen's Bench on the part of the subscribers to the Manchester Library and News-room, who occupies a building called the Portico, against a rate which had been assessed upon it by the overseers of Manchester in respect of their occupation. There are 400 subscribers to the Library and News-room, in which there are as many as 15,000 volumes, besides periodicals and journals. The affairs of the institution are conducted by a committee. The question now raised was, whether the building was exempt from rates within the

provisions of the Exemption Act, as being a building occupied exclusively for the purposes of literature, science, or the fine arts. Lord Campbell said it was quite clear that this institution was not within the exemption. The statute exempted those places only which were established for the promotion of literature, science, and the fine arts exclusively, and did not extend the exemption to cases where the members derived a particular benefit to themselves. If this exemption were allowed, there was hardly a club in London which might not claim exemption. This was a private society, established for the convenience and advantage of its members. The rate must be affirmed.

THE IRON TRADE.—The first month of the quarter is ended without any amendment in this trade. A few privileged parties, enjoying unusual advantages as to mineral property, name, and payments, may be even now realizing a small profit towards paying the interest of capital; but with far the greater number the expenses of production are scarcely covered, and many find themselves involved in a gradual but unavoidable impoverishment. It has been stated that in some localities near Stourbridge and Dudley the miners have given notices to demand an advance of wages; but should the men desert their employment in so ill-advised an effort, there is great doubt whether they will not have to return at lower than higher wages.—*Birmingham Gazette.*

IMPROVEMENT IN LIGHTHOUSES.—We are requested, by Mr. R. Retlie, to state that the telegraphic improvements attributed to Mr. Wells, of the Admiralty, in a recent number of *THE BUILDER*, are his, and not Mr. Wells's.

ELEMENTARY DRAWING AND MODELING SCHOOLS FOR ARTISANS.—The Council of the Society of Arts, now that the Exhibition labours of those most likely to be interested in the subject are at an end, have resolved to urge forward this proposal, and with that view the secretary has published by their order an address to the public on the subject, reiterating what we have already announced, that as soon as any locality shall have signified its desire to establish one of the schools, the council will be prepared to afford the co-operation of the society on the conditions announced. It is the opinion of the council that the Schools of Design cannot properly fulfil their original purpose till it be made a necessary condition of entrance to them that the student has already acquired the power of drawing and modelling; and one object and advantage of the establishment of elementary schools would be the preparation of pupils for the Schools of Design.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—The first ordinary meeting of the session will be held on Monday evening next, when a paper will be read by Mr. J. W. Parnworth, "Upon some of the productions connected with Architecture in the Exhibition of 1851."

GENERAL SUPERINTENDENT OF WATERWORKS.—Mr. Hawksley, the engineer of the Whitehaven waterworks, says a contemporary, has been appointed, by Government, General Superintendent of Waterworks throughout the kingdom.

PUBLIC BATHS AND WASHHOUSES IN LONDON.—The following is the return for the month ending October 31st:—

ESTABLISHMENTS.	BATH DEPARTMENT.		WASH-HOUSE DEPARTMENT.	
	Number of Bathers.	Total Receipts.	Number of Washers.	Total Receipts.
LONDON.				
The Model.		£ s. d.		£ s. d.
Whitechapel.....	12,916	164 0 0	4,384	43 0 0
St. Martin-in-the-fields.....	16,841	271 0 0	4,902	49 0 0
St. Marylebone.....	11,227	149 0 0	2,368	27 0 0
St. Margaret and St. John, Westminster.....	6,266	77 0 0	2,414	27 0 0
Greenwich.....	5,460	120 0 0	71	2 0 0
Totals.....	55,740	781 0 0	14,039	153 0 0

WALKING HEAD DOWNWARDS ON A CEILING!—Some interest has been excited in *Pittsburg*, says the *Montreal Courier*, by the performance of Mr. M'Cormack, who walks head downwards on (or rather under) a slab of polished marble, to which his feet attach themselves, as he asserts, by atmospheric pressure. He made some six or seven steps, the slab being only under nine feet long. This experiment is said to be the result of many years of research and labour, involving philosophical principles. Shoes are used, it is stated, with mechanical contrivance in imitation of the feet of flies, heretofore the sole performers of this kind of gymnastics. A large number of prominent citizens witnessed this, and other experiments of his upon discoveries of others. They resolved that Mr. M'Cormack be requested to deliver a public course of lectures in Pittsburg, and that the meeting pledge themselves to assist him in the prosecution of his scientific researches.

KINGSTON, JAMAICA.—Mr. Walsh, architect, whose name has, before now, been seen in our pages, has been appointed surveyor of highways and bridges for the city and parish of Kingston.

TO CORRESPONDENTS.

"Architecture to his Son," next week.
"D. G.," "H. H.," "D. G.," "W. V.," "D. R. H.," "D. G.," "G. M. H.," "I.," "E. T.," "R. S.," "E. G.," "Johnny," "R. R.," "H. A.," "F. F.," "W. R.," "D. L.," "B. T.," Leicester (there is now no London letter, "J. E. W. and Sons," "J. E. W.," "F. E. G.," "R. C.," "T. T.," (thanks), "R. F.," (draws a very erroneous inference), "C. F. D.," "T. D.," "H. C. T.," "W. C.," "H. C.," "A. Trustee," "A. G.," "H. W.," (thanks), "J. B. D.," "R. M.," "H. W.," "D.," (too late now), "Dun Edin.," "Sid.," (under consideration), "S. G.," jun. (shall appear), "F. M. R.," "H. B. D." (we should be disposed to trust to it).

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editor, and not to the Publisher.

Books and Addresses.—We have not time to point out books or bad addresses.

ADVERTISEMENTS.

BENNETT'S THERMOMETERS, 65.
Chairs, beds, hallways, baths, churches, gardens, and every other place, with every kind of thermometer, at this manufactory, where 1,000 may be had for 50*l.*, or may be selected from, at 1*l.* each in such lowest prices; larger sizes to suit every class, purpose, and climate. Barometers at equally moderate prices. BENNETT, Watch, Clock, and Instrument Maker to the Admiralty, &c., 10, Abchurch-lane, London. (See the Board of Ordnance, the Admiralty, and the Queen—65, Chancery-lane.)

LIGHTNING CONDUCTORS.—R. S. NEWALL and CO., Patentees of the Copper Rope Lightning Conductor, beg to inform the nobility, clergy, &c., that they supply Lightning Conductors, with the point and all sizes complete for fixing, at one shilling the foot, whatever the altitude of the building intended to be protected.
R. S. NEWALL and CO.'s Patent Copper Rope Conductor is highly used by architects, engineers, and scientists in all parts of the Kingdom.
References are permitted to Mr. Trimen, of the Adelphi; Mr. James Mitchell, of Leicester; Office and Warehouse, 10, Bishopsgate-lane, London; Manufactory, Gateshead-on-Tyne; Warrington, &c., Queen-street, Glasgow.

TARPAULINS for COVERING ROOFS.
During repairs, SCAFFOLD COBB and every description of ROPE used by Builders upon the lowest terms. Marquee and temporary awnings on sale or hire. Orders sent post receive the most prompt attention.—WILLIAM FLETCHER, 116, Finsbury-square, City, Manufacturer, by Appointment to Her Majesty's Honourable Board of Ordnance.

ARCHITECTURAL EXHIBITION, 1852.

The Committee beg to announce that the Exhibition will be opened to the public at the Portland Gallery, opposite the Polytechnic Institution, Regent-street, on the 17th of January, 1852, and will remain open till the 18th of March. Drawings, &c., &c., must be sent in on the 1st and 3rd of January. The Committee intend to adopt the recommendation given at the public meeting of subscribers, and to unite with the Exhibition a Museum of Inventions, Patents, &c., &c., and any other objects directly connected with Architecture. Applications, addressed by letter, to either of the hon. secretaries, will be immediately attended to.

JAMES EDMONSTON, Jun. & Co.,
court, Old Broad-street, City.
JAMES FERGUSON, F.R.S.A., 20, St. Paul's Church-yard, London.
Honorary Secretaries.

COLOSSEUM.—The original and extraordinary PANORAMA OF LONDON, painted by Mr. Parris, will be EXHIBITED, with the other splendid features of this Establishment, equally re-embellished, daily from half-past ten till half-past four. The grand PANORAMA OF PARIS by NIGHT, by Dawson and Sons, every evening except Saturdays from Seven till Ten. The most admired music from two till half-past four, and during the evening, when the conservatories, saloons, &c., are brilliantly illuminated. Admission, day or evening, 5*l.*; children and schools, half-price. CYCLORAMA, Albion-street, admission is a grand moving Panorama of London and the Earthquake in 1755, exhibited daily at Three, and every evening (except Saturdays), at Eight o'clock, illustrated by appropriate music on the new grand Apollonian, Children and schools, half-price.

THE DEPOSITORS OF WORKS OF ART AND INGENUITY IN THE GREAT EXHIBITION, and the respective officers of the ROYAL POLYTECHNIC INSTITUTION, incorporated in 1838, is CLOSED to the PUBLIC, for the purpose of receiving approved Deposits, for sale or otherwise, without expense to the Depositors. Those who wish to embrace this opportunity should send their works before the 1st of December, and they will then be fully protected in the Catalogue.

THE INSTITUTION will be RE-OPENED on the 8th of DECEMBER.
B. L. LONGBOTTOM, Secretary.

m and Hot Water Pipes, and Packings for Pistons and Gland of Steam Engines, cut any size to order.

The Builder.

No. CCCCLX.

SATURDAY, NOVEMBER 22, 1851.

THEN Pancras Road, where some time ago Alfred fought the Danes,—whence the place came to be called Battle Bridge, and so continued till an amusing caricature of George IV. in cement turned it into King's Cross,—some enormous constructions are now going on to form the London Station, we will not call it "Terminus," of the Great Northern Railway. This line, as most of our readers know, gives the most direct route to Yorkshire. Hot and costly was the fight for this traffic, but ultimately (in 1846) the directors of the Great Northern obtained their first Act, and have since been gradually strengthening their position and enlarging their scope. Some idea of the contemplated magnitude of the operations on this line may be formed, when we say that the goods station here when completed, will occupy 45 acres of land. From this station the railway passes under the Regent's Canal and Maiden-lane, under Copenhagen Fields, over the Holloway-road, through tunnels at Hornsey and elsewhere, and over an enormous viaduct at Welwyn: this viaduct has 42 arches 330 feet wide and 97 feet high.

The buildings for the passenger traffic at King's Cross, up to this time, have been of a temporary character. They are to the north of the permanent station, beginning where the Regent's Canal passes under Maiden-lane. (On the west side of them buildings of great size are being raised for the goods traffic. There is, for example, a shed 600 feet long, by 3350 feet wide, terminating with a row of lofty warehouses. Cranes, traps, and turn-tables are formed to facilitate the operations of loading and unloading, and large coal stores and a granary are being built, which have direct connection with the canal.

To obtain a site for the new passenger station, which we illustrate in our present number, the Small-pox Hospital and Fever Hospital were cleared away, together with a large number of houses, mostly of inferior character, including all those on the west side of Maiden-lane, which road has been greatly widened as an approach to the goods station. An iron railing will enclose the buildings, and the small houses on the opposite side of Maiden-lane-road will be removed to open the whole to view. Our engraving* shows the south front next Pancras-road: the two main arches mark the end of the arrival and departure platforms, and have each a span of no less than 71 feet. These are separated by a clock-tower, 120 feet high. The smaller arch, on the right, which is over the cab-drive from the departure platform, has a span of 34 feet. The width of the façade, from the side towers, is 216 feet; the extreme width of the station is 305 feet; the height of these towers, 77 feet. The clock will be 90 feet from the ground, and will have dials 9 feet in diameter.†

Passengers will enter in the centre of the pile of buildings on the left hand (west), extending northwards, and will find themselves in a pay-office 100 feet long, 40 feet wide, and 40 feet high, with a gallery on the east side of it to connect the various apartments on the first-floor on either side, which it would otherwise separate. The first-class waiting-room is at the north end of this office; the second-class at the south; and there are refreshment rooms and all the other accommodations which are now looked for in stations of this importance. The rooms are all large and lofty, but are to be finished very plainly. The waiting-rooms open, of course, into the departure-shed, which is 105 feet in width, and 800 feet long, covered with a semicircular roof 71 feet in height to the crown. The departure-shed is exactly the same size, and is covered in the same way. A wall with arched openings in it to admit of the carriages being shifted from one line to the other separates the sheds. These roofs, which are now in course of construction, consist of semi-circular beams, formed of bent deals, abutting against iron shoes in the buildings on each side and in the central wall, and placed, 20 feet apart. These carry purlins 8 feet apart, by means of iron shoes affixed to the sides of the beams. The centre portion, about 3-5ths of the whole, is to be glazed with glass half an inch thick, in 8 feet lengths, 2 feet 6 inches wide, resting on iron bars. The remainder of the roof on either side will be slated. Each beam or rib consists of 16 inch-and-half boards in thickness: each board is fastened to the next with screws, 18 inches apart, and iron bolts pass through the whole at distances, and are secured to an iron band which runs from one end of the beam to the other on the outside.

The brick arches already mentioned as forming the ends of the sheds (the space beneath them being filled with glass) are formed of paviors: the soffit, which is in four recesses, is 7 feet 6 inches wide. The brickwork throughout, and there is a large quantity of it, very little stone being used, is an exceedingly good specimen. The mortar is compounded of blue lias lime, clay from the foundations burnt and ground, sand, and cinders; in the proportion of 1 lime to 1 sand and 2 burnt clay and cinders: it soon becomes exceedingly hard.

The architect under whose superintendence these works are being carried out is Mr. Lewis Cubitt, and the contractor is Mr. J. Jay, who is also executing the other works to which we have alluded, north of this station, partly under the direction of Mr. Joseph Cubitt, the engineer of the line, and partly under Mr. Lewis Cubitt. In this new station, it will be seen, great plainness prevails: the architect depends wholly for effect on the largeness of some of the features, the fitness of the structure for its purpose, and a characteristic expression of that purpose.

The City Solicitor, in his plan for improving the City of London now before the corporation,* proposes by a branch line to bring the passengers and provisions from this station and from Euston-square and Paddington to a central station in the City. Whether or not Mr. Pearson's be a sound and desirable project we need not now determine: there is much in it that wants explanation, and the cost, not-

withstanding what the projector said, would be enormous,—but of this we are certain, that some plan should be adopted to connect the various railways. To speak of a terminus to a railway so long as there is any place farther on to be reached, has always seemed to us absurd. If we wish to go from London to Manchester we find no break up of the road at Birmingham or other towns, but can go right on to our journey's end. If, however, when we come back we would travel on, say farther south than London, another sort of conveyance must be taken to, and probably some hours are wasted before the journey can be continued. The first thing to be done towards rendering our railroad system more complete is to bring into communication all the existing lines which surround London.

ARCHITECTURUS TO HIS SON.

THE LAMP OF DELINEATION.

ON the threshold of only the second part of my discourse, I feel constrained to demand that we pause to observe what must make the calling of the architect a subject for any one's wonder. For, among all the complex callings of civilised life, I think there can be none whose professors must combine knowledges so many and so diverse in their nature. I have passed censure upon a considerable portion of our young generation for large pretension and small possession: for the one of these I have hazarded the suggestion of a cause,—and now for the other I think we have a good cause here, and one to which must be allowed great weight as an excuse. And while I think of it, I must say this for the comfort of the offending in general, and, at present, of those of our own class in particular; as there is a reason and a cause for everything, so there is for fault, whereby even fault is found to be more misfortune than folly. We are pursuing the wrong course, therefore, when, in an attempt to rectify error, we treat it as the culpable folly of its partisans: let us rather search out and operate upon the cause of the mistake, than assail the mistaken.

Certainly in matters generally of men's business there is, compared with the case of the architect, what we may affirm to be universal simplicity: the study is the study of a single theme. It is so with other artists—the painter and sculptor, the musician, the actor, the man of letters,—it is so with the artisan, the tradesman, the manufacturer, the dealer,—with the merchant, the financier,—with the man of science of any sort—the engineer, the mathematician, the naturalist, the antiquary,—with the soldier, the mariner, the agriculturist,—with the physician, the lawyer, the divine. In many instances the requisite knowledge is a matter of severe application and slow experience;—but I think I may say that in almost all the subject is a simple one, a subject of singleness. In the province of the architect, however, we have subjects, not only essentially difficult and experimental, but singularly varied in their character;—the art itself, draughtsmanship, constructive science, building economics, and craftsmanship; and in late and present practice more,—antiquarianism—dilettantism the learned, or archaeology the romantic and infinite. If all these themes were of anything like one nature or sympathy, I need not say so much; but what can be more widely diverse than the skill of the draughtsman, the skill of the builder, and the skill of the archaeologist? In other callings and studies, a man's sympathies may be ever so painfully absorbed, but it is, generally speaking, towards one direction always: the architect, on the other hand, must have sympathies to divide hither and thither in directions widely different and even contrary. Other men's minds breathe a single atmosphere, and diligence and *gusto* will carry them along their one stream with never a weariness; but with the architect, the case is that of a mind distracted almost to impossibility,—thrust into one atmosphere and another which have no-

* See page 739.

† The clock will strike hours, half-hours, and quarters. The principal bell, from an Irish foundry, was at the Great Exhibition, and received a medal: it weighs 29 cwt.

* See a communication on this subject, page 732.

thing in common,—called upon to furnish sympathies and tastes which I pronounce to be, in their diversity of nature, impossible to be furnished by any individual mind. A man might almost as well pretend to be physician, mariner, and banker, all in one, as artist, builder, and antiquary. No mind was ever made to embrace, for the whole of these subjects, that constitutional predisposition or *gusto* which is the only natural guarantee for resolute pursuit: he who is the artist must probably do violence to his sympathies in becoming builder or archæologist; and equally the man of practical bent in making a struggle to attain to art; while the man of merely antiquarian devotion is, perhaps, in a worse position than either.

To turn, then, to Delineation: I have spoken of, first, the Art; and have now to speak of, secondly, Delineation, its servant. And although I have exhibited in such high estimation the mistress, I can scarcely speak less highly of the handmaid; for delineation in architecture is to the art only an attendant art, and still a sister art: they are scarcely a higher and a lower—scarcely a superior and inferior,—so intimately dependent is art upon delineation—so intertwined are they in their offices. The lamp of art burns dimly indeed without this aid, if it be not rather only a phosphorescent fire with no flame. Where the poetry of the poet would be without language, a vague and unformed phrenzy, there would be the art of the architect without the power of delineation: there, in fact, too often is such art of the architect, unexpressed and unexpressible because of his untaught hand, which cannot write it down in form, however fleetly his perhaps ardent mind may nevertheless do its part in subtle imagination and sound judgment. In fact it is no rare thing to find among our architects, sometimes as the very natural result of the continual habituation of a discriminating although uncultivated mind to the practical elaboration of architectural matter, and sometimes even as a matter of artistic power, a sort of knowledge and a sort of fancy which they can never satisfactorily express or explain, or record; but which it is clearly to be seen is no fiction or delusion, but simply a power of thinking, unsupported by the requisite power of expressing the thought,—the mistress art present perhaps in excellence, but, because of the absence of the handmaid art, the interpreter, producing only an undefined, untold, and unintelligible vision. In my desire, therefore, that you should be a perfect architect, it is surely meet that I impress upon your mind most urgently the value of this second art so all-important to the first.

Again, the working of the mind is but the action of a piece of mechanism,—an electric telegraph of a more exquisite structure. Our delineation or expression is, in this case, the printing apparatus which completes its perfection. Impinging agencies at the far-off beginning transmit to the end a certain precise and regular, but as yet unintelligible, action: the magic printer writes it down in human speech, and the before confused and meaningless movement—mere thrilling of wires—becomes a record which a child may read. So with the mind: impinging agencies occasion a process of action, which, as its result, produces what as yet is but the same confused and meaningless electric thrill,—till the expression-apparatus reduces it to intelligible language; and if there be no expression-apparatus so to do, the mere thrill of nervous action is all that is produced, evanescent, unrecorded, and abortive. As many a gem of brilliancy is forever hid in the unfathomable deep, so many a mind of poetry has lived and died and never formed its fancies into speech; and many an admirable conceit of art, no doubt, has run through some mind of man and vanished, like a falling star. The ethereal fancy, with all its supremacy of nature, as creative and divine, is thus, without the aid of the mechanical and comparatively common-place routine of expression, as fruitless as if its exquisite power had no being.

Presuming, my son, that your mind is that of an artist,—the attainment of the power of delineation is a matter of no material difficulty,

and therefore its non-attainment would be a matter of negligence. But as, with many persons there must necessarily be a deficiency in predisposition this way, with them the attainment of the power of delineation, as the language of their work, must be made a question of duty of the very first degree. Whatever lamp of the seven the practical architect may possibly be able to dispense with, it assuredly can never be this; for I cannot conceive any man of business who is placed in a more unworthy position than the architect who has to depend upon another—an assistant—probably a young and inexperienced person—for the delineation of his projects. It is not to be expected that a man of extensive business can find much time for such a thing as drawing by his own hand, and he must, therefore, work by the hand of another as regards the detail of his intentions; but no man who is devoid of the power of drawing can ever claim to be an architect,—because, as I have said, whatever may be his imaginative genius, it is without the power of expression.

Say also to your friends, when you meet with such as are dull or careless draughtsmen, that if they could realise the rich enjoyment of a ready hand,—that almost spontaneous flow of delineation, like the fluency of the orator or the improvisation of the musician, which he has who is a master—frequently issuing in advance of his fancy, as if partly by accident, and partly by inspiration of the pencil,—they would strain a nerve to acquire the power which can produce such pleasure; and that, moreover, if they knew the superiority it gives to its possessor in the eyes of others, the facility of illustration and experiment, the ease of explanation, and the advantage in the mere competition of business they would again strain a nerve to acquire the power which can produce such profit.

The delineative skill necessary for the architect comprehends geometrical drawing, perspective, hand-sketching, *chiaro scuro*, and figure-drawing; and if water-colouring and landscape be added, so much the better for practical purposes.

To those who are not at all or but little acquainted with it, geometrical drawing appears to be one of the most dreary and unpoetical things in existence; but those who have proved its practice further know better. The poetry of it is speedily attainable by perseverance and care, and nothing in other delineative skill can compensate to the architect for the want of it. In fact, there are certain styles of design and certain subjects which cannot be fairly represented or judged of without a careful geometrical drawing, just as there are others in which pure geometrical drawing fails to produce expression. Moreover, I need scarcely observe that in geometrical drawing the architect has the common language of his office work; so that I may say with regard to this description of delineation in the first place that the amount of it which the architect ought to possess is the fulness of its power—his skill in it requires to be complete.

With regard to perspective delineation also, I must say that you ought to be a perfect master of it. No design can be depended upon till tested by perspective, as the nearest approach to realisation. The acquirement of this art I think must be considered a very interesting matter of study, and by no means difficult; but I fear, notwithstanding this, that with many learners the subject is not pursued to the full extent I recommend.

By the term "hand-sketching" I signify a thing of three kinds: first, the power of executing irregular matters of delineation, curves, &c., and ornamentation; secondly, the profiling of sectional mouldings; and, thirdly, a general skill in delineating without the instruments any subject of design. In the first place, no one can pretend to be master of geometrical drawing in its common architectural form without the power of supplying with perfect readiness all irregularities, curves, and ornament. But I do not know that all of us are quite *au fait* in even this. And in Gothic design particularly the details of enrichment become so multifarious and often complex,

and so much a question of solid more than superficial form, and of foreshortening and perspective (so to speak), more than flat outline, that a draughtsman requires to have an artistic hand of more than common skill to overtake all this. In the second place, the profiling of mouldings is a point of the utmost importance. Some of our architects at the present day are exceedingly perfect in this respect, compared with what we can observe in the works of several preceding generations. Nothing so much makes up for deficiencies elsewhere as perfection in the details; and as, at the same time, there is a considerable temptation to slur over this matter, it is necessary, therefore, to inculcate special attention to it. In the third place, I am of opinion that every architect ought to learn and exercise carefully a skill of general delineation, independently of the instruments. Without this he can never design with fluency or certainty, and especially in Gothic or other picturesque style. In fact, I think every architectural draughtsman ought to make himself able as a feat to execute an elevation of moderate difficulty by the eye alone, without the instruments, so perfectly as to deceive for a little a practised observer.

In *chiaro scuro*, or light and shade drawing, there is again an important part of architectural draughtsmanship. In our climate the sunshine is so much a matter of uncertainty that I almost incline to think, that for general practical effect one might depend upon a plain line-perspective more than upon a shaded drawing as a test of design; but even still there are many other respects in which a simple skill in light and shade becomes not only useful, but necessary,—and if a pictorial drawing is to be made it is of course indispensable. I would only further remark upon this point that care ought to be taken to prevent, in one result of the practice of *chiaro scuro*, a fault very readily fallen into. Some of us, as bold masterly draughtsmen, are much inclined to throw into a design in this way a force which it never could possess in nature, and there is an inclination to become so accustomed to do this as to cause one to forget the fallacy of it,—than which nothing can be a more insidious error. And in connection with this I may also observe that in perspective also we are apt to fall into a similar error; for some of us are inclined not only to show greater vigour of detail in perspective, without thinking of its necessity in the building itself likewise, but even to improve and amend proportions in perspective without remembering the elevation—forgetting, indeed, the fact that the use of perspective is as a test of realization.

Figure-drawing is what ought never to be lost sight of in the education of the architect, as may any day be evidenced by the manner in which a perfect geometrical or perspective drawing is ruined by the introduction of very badly drawn sculpture. The architect does not require to possess a skill in this matter further than one point—the power of executing creditably anything of architectural sculpture or statuary which may occur in his design,—but so far as this I consider he must possess it as a matter of course. It is also to be kept in mind that nothing else conduces so much to the attainment of a ready hand generally as the practice of the figure.

Many persons now-a-days object to coloured drawings of designs, but I cannot sympathise with them. A water-colour painting of a design in the abstract is the most perfect approximation to reality of effect of course,—and, without colouring, the effect of structural variety of colour cannot be ascertained. More than this, as I hold that every young architect ought to be encouraged to acquire for himself the power of executing in colour a drawing of his design, rather than be compelled, as at present, to pay largely for colouring which is often of very indifferent merit pictorially, and generally much worse architecturally, I advise the learning of this art as an accomplishment, if no more. And here, of course, I include landscape-drawing, without which no perspective is complete. It is easily acquired, and as a good landscape contributes materially to the production of a reality of effect as regards the

buildings, so an effect the very reverse—an effect suicidal—is produced, when a green cabbage at one flank, and a brown birch-broom at the other; a thin soldier shedding a tear over an unknown wild beast in the middle, red and yellow roses blooming upon brocoli, and an equidistant feather-bed bursting in the air, are all that can be introduced as embellishment.

Gothic architects ought also to be proficient in modelling and carving to a small extent, as a matter of delineation; except they prefer to leave all details of ornament in the hands of the workman, who, although a meritorious and trustworthy artisan, may, nevertheless, be not so much a man of good feeling, as to forbear saying, "I did it all myself: these architects know nothing about it." My son, as you grow up you will find (while I think of it) that in this respect the poor architect is the butt of every ignorant person under him. His clerk says he cannot draw at all well; his builders declare him to be quite incompetent, constantly requiring to be kept right; the very journeymen wink to each other behind the best man's back, in the profundity of their philosophy; and this, however much the result only of the pragmatic dogmatism of empires, is at the same time the result, not unnaturally, that that complexity of calling which cannot but occasion a want of confidence.

But to proceed: in my remarks on art, I forbore to enlarge upon one point, which falls in better here. The art of architectural design, or artificial beauty in building, I laid down to be of two elements—beautification of structural forms and extrinsic ornament. Now, in both of these points the question of delineation is of great practical moment: in fact, delineation may be declared to be not only the handmaid of the fancy to wait upon it, but also the prime minister beforehand, to regulate its action and supply its material. Much of the power of beautifying structural forms lies in habituation and practice. And in respect of ornamentation, the designer's skill depends even still more so upon these. For when we look at the essence of ornament, whether geometrical or natural in character, it is manifest that practical proficiency in its use is chiefly proficiency in its application as a thing much more experimental than metaphysical—more a matter of precedent than invention. That is to say, ornament is matter more to be collected from nature and art; not, like structural beauty, matter of special invention of beautify. Therefore, in the department of ornament, it is manifest that delineation is the mainstay of the designer, that he attains his skill by accumulation of examples and practice of hand, by study of the contributions of the ages and dexterity in the application of their principles.

It occurs to me to argue, in conclusion, thus:—Many persons, as I have before observed, are inclined to affirm that the painter makes the best architect. Why so? Because of the fact that his powers are entirely and intimately those of the production of beautiful form—grandeur, grace, grouping, the picturesque, *chiaro-scuro*, breadth, repose, play, harmonious mass, melodious outline. And they presume that the other questions of architectural skill will be supplied from elsewhere—by the builder probably, or the architect. Now, how are we most truly to read this theory? Simply thus: that these advisers discern in the architect a deficiency in respect of artistic power: they acknowledge and perceive the admirableness of architectural art; so much so, indeed, as to demand that the incompetent, as they conclude, be dismissed from its government,—that this art be entrusted to the artist, and no longer to the house-dealer. Of course they, being ignorant of how the lamp of architecture-art must be lighted at the lamps of science and building, do not perceive that the mere painter would produce no architecture at all, but merely the fashioning of what might as well be a rock or a heap of snow as a building: they demand beauty in the abstract—the beauty which they recognise in the works of the painter. Learn, then, my son, a lesson from this. What is so likely to supply this asserted want—this superiority of the painter—as the acquirement for yourself of the painter's

power? Devote yourself, therefore, to the matter of delineation with earnestness—every part of it, and more than enough rather than less. If even you should have to light your way by another man's lamps in practical science and building, it is better—a much more practicable thing—than to depend on another for either art or delineation. K.

NOTES OF AN ARCHITECT IN SPAIN.

On the 1st of July, 1848, we left Marseilles for Barcelona. We started in the *Elbe* steamer, and after circumnavigating the celebrated chateau, *D'If*, soon lost sight of the distant mountain peaks which flank Marseilles, and got clear off for Spain. The voyage was dreadful; the decks continually washed, and the cabins full of water. We arrived at sunset the next day, twelve hours after our proper time, and then, owing to absurd port regulations, had to spend the night on board, and as Spanish authorities never hurry themselves, did not land until about twelve the next day.

The first view of Spanish ground did not enchant me, being rather sterile and flat: the town, however, is very bustling and thriving, being the commercial city of Spain.

There are many remarkable Gothic remains here. The "Deputacion," once the palace of the kings of Aragon, and the cathedral are the two most complete specimens in the town. The palace has a very picturesque court-yard and staircase of a rich fanciful Gothic, and the cathedral possesses the most solemn and effective interior I have seen for some time. Its style of architecture, though fantastic, is excellent in effect, perhaps aided by its being unfinished. The plan is remarkable, the cloisters being immensely large and forming a component part of it. The chapels which indent all sides of the cloisters, are filled with rich retablos—a species of altar-screen,—and some very good old paintings, in their original Gothic framework, curiously worked, coloured, and gilded. The iron gates or *rejas* of some of these chapels are beautifully wrought, and there is throughout an exuberance of sculpture and painting, and a fertility of invention, which, setting all conventional rules at defiance, must yet excite great admiration. In the church also, there is much good iron work. The Norman doorway to cloisters is excellent. The bosses of ceiling in nave are worked round the edges with black painted foliage, carried off, on the plain grey-stonework of vaulting—(very fair effect). The pulpit and the stalls are mixed Gothic and Renaissance: the carving is wonderfully rich, fanciful and bold. The light of the cathedral is very dim, the windows few, and the effects very striking: so dark is it in parts, that you do not see the black kneeling figures of the women praying close beside you until a whirr of the fan startles your ears. This is the case generally in Spanish churches; and if the darkness is typical of their mental state, it imparts a mysterious awe, very different to the glaring richness of most churches. Beneath the organ is suspended a Saracen's head, which rolls its eyes when music is going on, a curious relic of old Spanish revenge. The organ, loaded with statues, busts, and festoons, is placed over a dark receding archway, and forms a good picture, if nothing else. The fonts are numerous and curious. Some of the painted glass windows are very fine: the heads of the statuettes and draperies are full of sentiment and truth. In fine, taken altogether I have never seen a church so awful, so picturesque, and so artistic. This may arise, however, from the artificial darkness before alluded to, and my having seen it under the effects of a splendid sunset. The other churches are not very remarkable, though good, and the Roman antiquities are Roman, that being their greatest attraction.

The Rambla is a fine walk, but the new buildings are in a poor imitative French style, poorly carried out. The Liceo Theatre is very large and pretty well decorated: the space between pit seats is 2 feet 9 inches, rather more than necessary. The boxes are open throughout: there are no visible supports, but I should prefer some, on so large a scale, if only to give

the idea of security. There is a restaurant and *café* attached to it: its exterior has nothing noticeable. Inn, the Cuatro Naciones, dear and not clean: try the Oriente. The ceilings at Barcelona are formed of wooden joists, filled up with half-brick arches: this appears to have been the general custom. After having sufficiently explored Barcelona, we took places in the diligence for Zaragoza, and suffered much on the road—which is of the dreariest and worst description—from not having provided ourselves with wine and provender, a *sine quâ non* of the Spanish tourist.

Zaragoza is a rum, old, dirty, Italian-like town on the Ebro. In the immediate neighbourhood is some pretty good vegetation, stretching away into the most arid barrenness. Dust hangs about like a fog. The streets are narrow, many half ruined during the war of independence, and roughly laid with large round stones, most painful to the pedestrian. The houses are old, dirty, and sombre: negligence and dilapidation are around you: palaces are workshops, and animals wander through the streets where no masters are seen. It seems like a ruined Babylon in the desert, and on the banks of the broad sluggish Ebro you half expect to see crocodiles sunning themselves.

There is a remarkable leaning tower here: it appears to be straight for about a fourth of the height; then it leans, and is capped by a cupola, which appears to have an opposite angle of inclination, thus making the whole mass a very awkward, unequal affair. It is of a mixed Gothic-Arabic character. There is a good staircase internally, which is covered throughout by brick corbelling. The view from the top is extensive and peculiar.

There are two cathedrals here, La Seu and El Pilar. The first has a fine Gothic dome, square on plan, covered out at angles to form an octagon. This octagonal portion of the dome, is *plateresco*: the ribs which spring from it resting on twisted columns, with niches and statues between. Each intersecting groin has a boss, I believe, of gilded wood, spreading out in filigree ornament, like a large fan, very thin, and not over good. Above this ribbed dome again comes an octagonal lantern, with ribbed roof, the whole very rich and effective. The retablo is a very fine one, of a flamboyant Gothic character. The chief feature in this, and others I have seen, is an immense quantity of painted sculpture, saints, sacred subjects, and local legends, with a large rich foliage, worked moulding enclosing the whole. The light here, as at Barcelona, comes from very few and small windows, the great mass being in darkness. The general character of Gothic in this church is of a late and transition date. The Italian work is of the richest and most fantastic nature, and may be termed bad.

Santa Maria del Pilar is nothing externally, and internally, though very massive and effective, of the worst rambling grotesque Italian or Louis Quatorze: notwithstanding this, there are few churches in Italy of this style so fine: the solemn effect produced by a few windows is again remarkable. The screen behind the tabernacle is Gothic and gorgeous, and the centre dome being very large and having no lights, leads the imagination into vast heights above: the effect is very fine and remarkable. The other churches of the town appear to possess little merit, that attached to the military hospital being the most peculiar.

The most striking features of Zaragoza are the court-yards or patios of the palaces, and the general street architecture: of the former there are examples in almost every style: the latter is of a Ferrarese character, with grand bracketed wooden cornice, sometimes double, very projecting; beneath this a range of double arched openings with a dado; the rest of the building, very plain, mere brick, no stone dressings or rustics, with a large single-arched doorway leading into a court, often of the most romantic and grotesque character: one of

* The style called "el Plateresco" in Spain was so named from its resemblance to richly-chased metal plates: it is also called "Le Berraco," from the great architect and sculptor. Its best period is circa 1660, A.D., and it combines the delicacy and fancy of French Renaissance, with the grotesques of our Elizabethan.

the best is a Moorish Gothic building, now a carpenter's shop, and another, the Casa Zaporta (of which an illustration, by Mr. McQuoid, appeared the other day in *THE BUILDER*), is now a diligence office and iron-foundry—"sic transit gloria mundi." The Exchange, or Lonja, is very simple and massive outside, and excellently proportioned: the interior forms one fine Gothic hall, with groined roof, supported on two rows of Ionic columns: although faded and injured, it is still very noble. The courts consist almost always of a colonnade, with an arched gallery above, topped by one of the old richly-worked wooden cornices: the principle seems to be for the ceiling joists to project and rest on wooden brackets, which are finished off on the wall by a few mouldings: the soffits and interspaces are deeply cut, and have often ornamental pendants, producing fine effects of light and shade. In the centre of the court is generally a picturesque well. The grand staircases of these patios are remarkable for the dome-work of wood which covers them at a level with the roof, formed of complex panelling, inlaid with foliage, geometrical figures, &c. Some are of Moorish pattern, filled in with plateresque ornament, in shallow panels. These buildings are well deserving of study, and are models of a good, massive, and ornamental style of domestic architecture. A common ornament in brick walls, is to form patterns on them half-brick deep, more or less complicate: the effect is good if closely worked, but it is only fit, I think, for blank walls, and then forms a good prevention to the sudden abruptness of a large cornice. The Palace of the "Deputacion" is very good cinque cento, with two square turrets at angles, and two rows of arched windows: the body of the building is plain. The Aljafaria is nothing outside: we could not get permission to enter. Inn, Fonda de Turco, pretty good and reasonable; four pesetas a day for board and lodging. The general character of the road from here to Madrid is of a wild, arid, desolate character—vast plains generally uncultivated and often covered with wild thyme and herbs, which render the air fragrant: there are few rivers, and between the long, cleft-like valleys of the mountains, run stream-like lines of olive-trees. At Calatayud are some remarkable buildings, but the town itself is most singular, being built on, and in, and beneath a jagged mass of rock: high in the air you see a church or an old ruined Moorish castle; whilst in the face of the rock are cut cottages and houses: it is a ruinous-looking place, evidently beloved by the genius of desolation.

THE STRIKE IN LONDON.

We hear, with great regret, that no satisfactory arrangement has yet been made between Mr. Myers and his workmen, and that the latter, therefore, to the extent of about 2,000, still remain out of employ. On Wednesday evening last Mr. Myers met the men, to the number of 500 or 600, to discuss the matter with them. At this meeting, if we are rightly informed, he was asked if he would pledge himself to give them the short Saturday unconditionally at the expiration of six months, if they agreed to return to their work and wait that time. Mr. Myers replied—"If I give this pledge I shall stand alone, as no other builder is pledged to the four o'clock unconditionally." To this the workmen made answer that if Mr. Myers would do that they would compel all the other builders to do the same.

Mr. Myers asked for a quarter of an hour to retire and consider this proposition; and, on his return, said, after mature deliberation, he must decline pledging himself to such a course, considering that by so doing he would be inducing the men eventually to strike against other builders.

The ground on which the strike took place, our readers will remember, is this, that Mr. M. would not allow the short Saturday to any man who lost more than a quarter of a day during the week. At the meeting to which we have referred, he offered, as a concession, to increase the limit, and to give the short Saturday to all who did not lose more than five hours in the week, irrespective of illness

or wet weather, but they insisted on having it without any reservation; so that, to put an extreme case, a man might stop away five days, come on Saturday, and get all the advantage of those who had attended regularly during the week.

With every desire that operatives should be able to finish work early on Saturday, we cannot help thinking that they treated their employer harshly in this case, by striking, as we are told they did, without the slightest notice to him of their intention; and some of the men, we know, feel this themselves. This being the case, and the employer having made concessions, we do think, and we say it with the best intentions, that they should accept his terms, at all events for the present, and go back to work. No one likes to be altogether beaten, whether master or man, nor would a generous mind desire to beat. It would surely be much pleasanter to go back with a good understanding than to force a point (supposing they succeeded in doing so), which would leave behind it unpleasant feelings and a desire to retaliate on the first opportunity.

HISTORY OF ROUND CHURCHES.

ST. SEPULCHRE'S CHURCH, NORTHAMPTON.*

I NEED hardly remind you that, for the history of the round churches of England (if history be taken in its proper sense, as including causes and antecedents as well as facts and events), we must travel far out of our own country. We must bind the cross upon our shoulders and take staff in hand and follow the pilgrim or the warrior on the way, toilsome or perilous to him, but to us full of unmingled interest: we must throw ourselves upon the ground with him in his ecstasy of thankfulness and devotion at the first glimpse of Salem's towers, or scale with him the wall bristling with Saracen spears and gleaming with Saracen blades: we must visit with him, kneeling on our knees, and trembling alike with awe and with excitement, place after place, sanctified to his heart and ours by its connection with our Saviour's history; and, most of all, we must walk with him round and round that Sepulchre in which our Lord's body lay, and from which it arose, victorious over death and the grave. We must step upon our homeward shore to pick up the scallop, witness of our accomplished vow, and put the mystic shell into our caps as we return with him to his beloved home; and once there we must feel his yearning for some memorial of the scenes he has witnessed: we must pore with him over the rude sketch in which he attempts to re-produce the Church of the Holy Sepulchre, where he worshipped so devoutly, and which he compassed with reverent steps and up-turned eyes: we must watch the sketch growing to a plan, and the plan slowly embodied in sterner materials, wood, and stone, and iron: we must even put our hand to the mallet and to the chisel, and follow the craftsmen in their pious work, all in their turns kindling into greater zeal as they learn what this pillar, and that round, and that eastern apse, and those radiant clerestory windows represent. All this we must do before we can enter into the soul of our round churches, though the mere history of their erection, of their decay, and of their restoration, may be far more summarily discussed.

It is, I confess, my ambition to carry you a little way at least in the more arduous path. I must, therefore, crave your patience if I digress from the round church in this town, assuring you, at the same time, that we shall return to it with a better will.

That the immediate disciples of our Lord should forget the spots hallowed to their affections by his presence and actions, would be impossible; and almost equally so, that they should neglect to point them out to their children, and their children's children. Among these, none received greater regard than the tomb in which our Lord was buried, and from which he rose; and in this instance, the

heathens, in their determination to rob the Christians of their spiritual title in the sacred spot, unwittingly assisted in perpetuating its remembrance. A Temple of Venus was built over the Holy Sepulchre, and it was thenceforth a matter of history, no longer subjected to the less tangible evidence of tradition, that on that spot the tomb of our Saviour was to be found.

The piety of Constantine, the first Christian emperor, and of his mother Helena, hastened, so soon as it was in their power, to cleanse the sacred spot from this pollution, and to crown the holy Mount with a better temple, open to the devout worshippers of Jesus Christ. The Temple of Venus was destroyed: the ground was cleared: the Holy Sepulchre was found undestroyed, beneath many feet of soil; and soon a beautiful church was erected over it. This church, called the Church of the Resurrection, was circular, enshrining the Holy Sepulchre around which it was built. But the munificence of Constantine did not cease here. The death of our Lord, as well as his resurrection, was to be commemorated; and eastward of the round church already mentioned, but connected with it by an open court, and surrounded by a corridor, he built a much larger church, called the Martyrium.

Thus, the whole structure of the Church of the Holy Sepulchre consisted of a round, together with an addition at the east end; and I may so far anticipate my description of our English round churches as to say that in these, too, are found the same parts,—a round, answering to the Church of the Resurrection; a chancel, answering to the attached Church of the Martyrdom.

The Church of the Holy Sepulchre, after having been visited by pilgrims for three centuries, was destroyed by fire at the sacking of Jerusalem by Chosroes II. The emperor Heraclius rescued the Holy City from the Persians; and though it fell soon after into the hands of the Arabian followers of Mahomet, the resort of Christians to the Holy Sepulchre can scarcely be said to have been checked by the Moslem lords of Jerusalem. The Khalif Harun el Rashid even sent to Charlemagne the keys of the church, in token of the free admission which he granted to the Christians, 'to that sacred and salutary place.'

But the rule of the Egyptians was more adverse to Christian pilgrims. By the orders of Hakem, who commenced his reign in 996, the Church of the Holy Sepulchre was utterly destroyed, and even the cave itself was preserved only by the natural indestructibility of its materials. The church was again rebuilt by the patriarch Nicephorus, with funds from the imperial treasury of Constantine Monomachus; but the Christians still groaned under heavy burdens, which were rather increased than lightened when the Holy City again changed masters, and fell under the despotic rule of the Turks. Such was the state of things until the voice of Peter the Hermit, at the very end of the eleventh century, aroused all Europe to the defence of pilgrims to the Holy Sepulchre, and to the recovery of the Holy City from the hands of infidels.

The church which the first crusaders found, was not, therefore, the same which Constantine the Great had erected, though on the same spot, and probably very much on the same plan: that is, there was a circle of columns, with their outer wall, surrounding the sacred cave; and eastward of this, the larger Church of Martyrdom, connected with the Church of the Resurrection, by an uncovered court. And this is all that we require by way of comparison with the English churches which we are about to describe; nor need we more than glance at the fact, that the present church, re-edified since its almost total destruction by fire in the beginning of this century, still presents evidences, in its architectural features, of the work of the pilgrim Christians of the twelfth century, in the enlargement and adornment of the sacred edifice.

We may well believe that the Christians who returned from their devout pilgrimage would gladly erect memorials in their own country, of the glorious and spirit-stirring sights of the Holy City; and this natural wish

* On the 21st October the Architectural Society for the Archdeaconry of Northampton held a meeting: the proceedings are fully reported in the *Northampton Herald*. At that meeting a paper on the above subject, of which the following is the title, was read by the Rev. G. A. Poole.

was expressed in the erection of churches, in some degree at least similar to that of the Resurrection. Of these, three have perished; Temple-Bruer and Aislaby, in Lincolnshire, and the old Temple in Holborn. Four yet remain; the Church of the Holy Sepulchre in Cambridge, the church of the same name and dedication at Northampton, the Temple Church in London, and the church of Little Mapledsted, in Essex; to which may perhaps be added the round chapel in Ludlow Castle.

The first of these in order of time, and not the last in beauty, is the Church of the Holy Sepulchre in Cambridge.

The ancient and round portion of this church consists of an outer circular wall, with a rich Norman door-way, opening into an aisle, which embraces a central round, resting on eight circular piers, and finishing above with a clerestory, surrounded by an arcade, pierced with eight lights, and finished with a conical roof. The piers are low and massive, without bases, and with capitals of varied designs. The arches are all circular, and some of them adorned with the zigzag moulding, so characteristic of the Norman style. To this part of the church is added a chancel and two aisles, of perpendicular character.

The character of the round takes us back to the very beginning of the twelfth century, or rather, to the last few years of the eleventh; and it appears from a MS. in the Bodleian Library that it was consecrated in 1101. For the rest, we know nothing, except what its form and its dedication tell us. It was certainly erected by some one interested in, or connected with, the Crusades, and, most probably, that prayers might be offered in it for the success of these religious expeditions. But it cannot owe its erection to the Templars, who did not exist till 1118, and who did not obtain possessions in England until 1134.

The next in date is St. Sepulchre's, in this town; but, omitting this for the present, we proceed to the Temple Church, in London, which, as well as the Church of Little Mapledsted, is closely associated with the history of the Crusades, being first founded by those orders of religious chivalry, the Templars and the Hospitalers, who were bound by the most solemn vows to the defence of pilgrims to Jerusalem.

The Templars had already a church in Oldbourne, now Holborn, before the erection of the present church was commenced; and the latter, when finished, was called the 'New Temple,' with reference to the more ancient foundation. The older edifice, like this, was round, and though not, in all probability, so sumptuous, had yet been built at great cost; for it was of Caen stone, as appeared when some of its remains were discovered at the beginning of the last century. The present church consists of a circular portion, and, eastward of this, of a chancel, with its two aisles, answering in their relative position to the Church of the Resurrection, and to the Martyrium, as built by Constantine. The round, then called the New Temple, was consecrated in 1185 by Heraclius, patriarch of Jerusalem, on his arrival in England to obtain succour from Henry II. against the Saladin—an event still commemorated by an inscription over the door leading to the cloisters. The oblong portion of this church was consecrated on Ascension Day, 1240.

The church of Little Mapledsted is dedicated to St. John of Jerusalem, the patron saint of the Hospitalers, to whom it owes its erection. In 1186 the whole parish was given to this chivalrous order by Juliana, daughter and heir of Robert Dornelli, and wife of William Fitz Andelin, steward to Henry II. Here, therefore, a commandery was erected. The church, still remaining, carries us back to the times at which the knights flourished in wealth, reputation, and true greatness.

In size, this church is inferior to either of the other three; but it is even more remarkable in some respects, for the whole, with the exception of the porch, is of the original design and execution; and the chancel, with its semi-circular apse, still more closely resembles the church of the Martyrium, so often before

alluded to, than the same relative portions of the churches before mentioned.

And now, returning to St. Sepulchre's, Northampton, I shall reverse my former plan, and give the first place to its history.

The first Earl of Northampton was Waltheof, son of Siward, Earl of Northumberland, a noble and valiant Dane. Waltheof was one of the most formidable of the Conqueror's opponents, but William, in respect for the doughty champion of a fallen race, confirmed him in his former honours, and added to them the Earldoms of Northampton and Huntingdon. He gave him, too (let us hope it was not wittingly), a treacherous and cruel companion in his greatness. He gave him Judith, his niece, to wife, who afterwards procured Waltheof's execution by base, and probably false, accusation. At the same time, there was in William's Court one Simon de St. Liz, a noble Norman, but lame in one leg, a defect which turned out greatly to his happiness, for when William would have given his niece Judith, the treacherous widow of the noble Waltheof, with all her possessions, to Simon de St. Liz, the lady refused to accept him on account of his lameness. Simon, happy to be thus rejected, married her daughter instead, and so succeeded to the greater part of Waltheof's estate and to his titles. Soon after this, Simon de St. Liz built the castle of Northampton, and about the year 1084 he largely endowed the convent of St. Andrew, making it however, unhappily, an alien priory, subject to the Cluniac Abbey of St. Mary de Caritate, on the banks of the Loire. As he advanced in years his zeal for the faith advanced also, and towards the close of his life he took the cross and went to the Holy City. He was fortunate enough to return, and zealous enough to repeat his journey; but being seized with illness on his homeward way, he died about the year 1115, at the aforesaid Abbey of St. Mary de Caritate, and was there buried. Now, to Simon de St. Liz, noble by birth and title, great in power and wealth, the crusader and the devotee, the builder of castles, the founder and benefactor of churches, we may, I think, with great probability, attribute the first erection of St. Sepulchre's; and with this presumption agrees the fact, that it belonged to the Convent of St. Andrew's, which was, as we have said, largely endowed by him. At all events, the character of the Norman portion of the fabric well enough agrees with his time; and we may search in vain for another person who had more of the power and of the will to erect such a church, and with the circumstances of whose life its foundation would better agree.

The plan of St. Sepulchre's, Northampton, consists, at present, of a round, with its aisle; chancel, with north and south aisles, and west tower and spire. To speak generally, the round is Norman, the north chancel is partly Transition, or Semi-Norman, and partly Decorated; the south chancel aisle comparatively recent, the chancel arch and east window, together with the tower and spire, Perpendicular. But the questions before us are—*What was the original form of the church? and by what stages did it arrive at its present amorphous condition?*

The round, as first in date and importance, demands our first attention. At present it consists of an outer wall, with the following Norman features existing or clearly indicated: a string running all round beneath a series of small low windows; over these another string, and then again a series of similar windows, and a third string, on which is the parapet; at regular intervals are shallow but broad buttresses, round which the two lower strings are carried, and which die in the wall under the third string. Nothing above or besides this in the round is original.

As we are at present examining the exterior only, we must next proceed to the tower and chancel, which are manifestly of a different and later character; but there is this great difference between the relation of these portions to the original fabric, that the tower has almost certainly displaced a porch, and that there was no tower originally; whereas the chancel and its aisles do but represent a chan-

cel of an earlier date. How far the evidences of these changes extend we proceed to examine.

First, then, there was in the original church a west porch, for this obvious reason, that the north door is a mere insertion, and an insertion, too, where an original door could not have existed, for a window is destroyed to insert it. In its present form the south door is also an insertion, but in the interior will be found the commencement of a hood-mould which ran over a Norman door, so that in its place at least the south door is original; but an ancient church with one door only is hardly to be found. I conclude, therefore, that there was a west as well as a south door, and that at least to one of these doors there was a porch. Now, in all the round churches, the west door is the principal one, and so I believe it was here, and that it was furnished with some considerable decorations appears at least probable from an attached Norman shaft in the west end, a little bearing to the north in the interior, which probably formed some part of the arrangement of the western entrance.*

The remaining evidences of a Norman chancel are still clearer, and that one did exist would be, of course, certain, though there was no trace of it remaining. Over the pier arches of the present north chancel aisle there is a Norman corbel table, once external, and much resembling that in the clerestory of St. Peter's. This does not indicate, with any certainty, whether the chancel had aisles or not, but, from the height of the corbel table not being sufficient to allow a clerestory over an aisle roof, and, also, from the entire absence of any indications at the junction with the round, that the present aisles occupy the place of former ones, I conclude that there were no aisles. The very dissimilar method of attaching the two aisles to the round would also indicate that aisles were no part of the original plan, for had they been there would have been some provision for their connection with the round, which would have preserved uniformity in this respect, at least, even in future plans, as far as it goes, the analogy of the other round churches confirms this presumption, for Little Mapledsted has a chancel without aisles, while St. Sepulchre's, Cambridge, and the Temple, have chancels later than their round, and so do not help us. There is no evidence of the form of the original east end, but it will be granted that it is at least probable that, like Little Mapledsted, it was apsidal.

We will, therefore, venture to describe the exterior of the Norman church as follows; granting, of course, that our description is in some particulars conjectural.

A round, with aisles and clerestory; aisles, with two series of low narrow lights, and supported by wide, shallow buttresses; clerestory also round, and lighted by four or eight windows, not improbably set in an arcade, as at St. Peter's, and surmounted by a corbel-table and parapet, the roof being conical and of high pitch; west porch, or rather deep doorway of many orders, with a gabled top; south door, without a porch; chancel, without aisles, terminating in an apse at the east end.

We will now enter by the west door, and seek for indications of the internal arrangements.

Here we are at once in the round, consisting of eight cylindrical pillars of considerable height, with heavy capitals, varying in form, the four westernmost being round, the two easternmost having a square abacus, and the other two also rectangular, but more complicated in plan—all extremely plain, and without anything inconsistent with the very earliest Norman date. There is, moreover, a singular want of uniformity in these capitals, even those which are obviously intended to be alike by no means agreeing in details. As for the present octagon of pointed arches resting on the piers, it is obviously a recent substitute for an original clerestory. It is of no date at all, neither within nor without exhibiting a single

* As I need not again advert to it, I may say that the grotesque carving set upon this shaft is quite out of place, and was probably the tympanum of an ancient door; not, however, the west door, for it is too small for this.

characteristic feature, except so far as this very absence of features is characteristic of very late debased work. It will not be too hazardous to replace these with round arches supporting a clerestory, or perhaps, it may rather be called, with reference to its interior effect, a lantern. The aisle roofs were not, I imagine, groined; for, had there been vaulting, the pillars would most likely have had attached vaulting shafts, and some traces of the spring of the groining ribs would remain in the aisle walls.

The interior of the chancel follows sufficiently from what has been said of the exterior, except that there was probably a richly moulded chancel arch.

All that has been hitherto said refers to the original, or early Norman, church.

We now proceed to trace the changes which the fabric has undergone. And here we observe that, in almost every instance, St. Sepulchre's has been most unhappy in its treatment, even the earliest alteration being singularly ill considered. It consisted chiefly in the addition of a north aisle to the chancel; and this we will first examine.

Standing in the chancel, we are struck with the difference between the two series of piers and arches: that to the north is of two pointed arches of two plain chamfered orders, resting on a pillar, and two responds; the pillar of a section which, with a little more grace of execution, would be very rich, a circle with four attached clusters of three bowls each, and a moulded capital; the responds rectangular, of two orders in plan, and with semi-Norman foliated capitals. These arches are surmounted by a hood of a very early section, viz., a half-round, a little pointed; and this runs up almost into the old Norman corbel-table. The arches, therefore, were cut out of the walls, and underbuilt as they now appear. The hood before mentioned, over the arches, occurs again in other parts of the church, and helps to decide the extent of the alterations of the same date with this aisle: it will be found at the junction of the north aisle with the round, showing that the aisle then added had the same width that it now has, though we shall presently find that it submitted to great changes afterwards. The same string occurs, also, over the door, which has so unhappily cut into a window at the north side. That a north door to the round should be added, together with a north aisle to the chancel, is natural enough; but by what perversity of design it should have been so placed, it passes my power to divine. These changes were made, I presume, about 1180 or 1190. The east window of the aisle in question is, in some respects, a little late for this date; but, in other respects, as especially in the jamb shaft in the interior, it quite accords with it. This window is a very plain lancet triplet, with the centre light higher than the others.

At the same time with the erection of this aisle, the chancel arch was also rebuilt, for, though the present arch is Perpendicular, the bases of the jambs rest on semi-Norman bases, older than themselves, but more recent than the round; probably, too, the whole chancel was remodelled.

The next change was, in all probability, the addition of a south aisle to the chancel. The present south aisle is of recent construction, but a string carried round it, and also the mouldings of the arches, prove that old materials are used in it, and these materials are Decorated—about 1320, perhaps;—and, as it would be extremely natural that the building of a south aisle should be followed by such changes as would make the north aisle in some degree uniform with it, I presume that, shortly after, the north aisle was nearly rebuilt, and the present buttresses and windows added. Thus far the changes at this date were, perhaps, judicious enough, but I fear that then the windows, or some of them, which have so dreadfully dislocated the masonry, and destroyed the character of the round, were cut out, with a disregard even of buttresses, not inferior in rashness to the insertion of a door with the point of the arch running up into the side of the window, which had already taken place. Thus treated, had not the west porch

and the east chancel kept it up, I suspect the whole church would have fallen; as it was, the walls began to cry aloud for support, and soon after the two great buttresses at the north-west were built.

We have now a Norman round, much patched, it is true, with chancel and aisles partly semi-Norman and partly Decorated. If, which is not improbable, the lantern perished soon after the strange tampering with the outer walls, the church would demand a steeple, and this was, in fact, built about the last quarter of the fourteenth century. I do not in this paper concern myself with details, except as they indicate date; but I cannot refrain from calling attention to the exquisite arrangement of the tower and spire. The buttresses are admirably adapted to carry up the eye to the spire. The junction of the tower and spire is of a kind not easily described and far from common, but which maintains the same unity of effect more perfectly than the ordinary method with angular squinches. The door is of several recessed orders; the mouldings, both of this and of the belfry windows, are so little removed from the Decorated that the date may be said to be pretty nearly defined by them.

Would that our notice of past changes might cease here; but, alas! the chancel was again tampered with, a new chancel arch and east window were inserted, the window not bad in design for the style. The chancel was also newly-roofed, the corbels being, I think, of this date; they represent grotesque musicians: an organist, a bag piper, a fiddler, a man playing on a Jew's harp, one on a double drum, and one on a keyed instrument, which can be nothing but a precursive shadow of the street accordion of the present day. It is, indeed, more like an accordion than the fiddle is like a fiddle, or the bagpipe a bagpipe, though both these are veritable ancient instruments. The much-enduring round, too, had a wide arched recess, made at its south side, perhaps, for a tomb, and a porch of excessive meagreness was added; and, last of all, but when I presume not to say, the present octagon was run up, and the south aisle of the chancel rebuilt.

Of the future prospects of this church I do not know how far it is my province to speak, but at least, will be understood that what I say will not commit the society.

Shortly after the restoration of St. Peter's Church was committed to this society, the vicar of St. Sepulchre's made several suggestions in writing, involving, I presume, so far as his authority went, a proposal that this church also should be placed in our hands, and entering very fully and very judiciously into the way by which, on its restoration, it might be made more available for purposes of Divine worship, without destroying its architectural peculiarities. It was proposed, I think, to extend the chancel and its aisles two or three bays farther east, and convert them into a nave and aisles, and to add a chancel, the present round being reserved for an ante-chapel and baptistry, to which I need not say it is as admirably adapted in every respect, as it is ill-adapted to other congregational purposes. All this would involve many questions of the extent and of the style of the necessary restorations and additions. Of course, by a society like ours, which is rather conversant with the architectural and archaeological character of a church than with its congregational use (though admitting all the while the infinitely greater importance of the latter), the round is the portion most to be considered; and this, I confess, it seems to me useless to repair. I think it must be rebuilt, the pillars in the interior alone remaining. Rebuilt, however, exactly, and, where possible, stone by stone on the original plan, utterly discarding the barbarisms as well of the twelfth and fourteenth centuries as of the sixteenth and seventeenth centuries.

The chancel is, at present, a great jumble of styles. That it should not, if it be converted as is proposed into a nave of larger dimensions, be restored and added to in the Norman style, I conceive on two grounds. First, that as a Norman chancel, it seems to have had no aisles; and, secondly, that it has been at one time a

tolerably uniform specimen of another style, and this style was rather Early-Decorated, if the historical sketch I have just given be correct.

To this style, then, I would bring it back, by rebuilding the three aisles into the chancel and its aisles, by rebuilding the south aisle in that style, retaining the arches and piers in the north, but continuing them eastward as far as necessary in the proposed Early-Decorated style of the present restoration, and thoroughly restoring, as they now are, in all matters of design, the north walls, windows, and buttresses of the north aisle. The east triplet, if it can be removed as it is, I would retain as the east window of the aisle; it would harmonize with the semi-Norman pillars and arches which would be left. The chancel, that is, the north chancel, I would wish to see either of the Early-Decorated of the new nave, or as much as might be in the style of the tower: perhaps, the latter would be best, for it does not affect in any degree to be restoration, but an addition *ab initio*.

I must add, that its restoration is now needed to complete the parallel of the history of this, with that of the other three round churches. St. Sepulchre's in Cambridge, and the Temple, have been restored at a vast expense, and in a way and spirit which should stimulate us to do the like. Little Mapledest is in course of restoration, though of this I have less certain information. I have somewhere seen St. Sepulchre's in its present state of dilapidation and disorder, spoken of as the glory and opprobrium of Northampton. Let it be the opprobrium no longer: let us hope that, if glory is too much to be derived from a restoration, it may at least be a credit to your fair town.

NOTES IN THE PROVINCES.

Hawes (Yorkshire).—The new church of St. Margaret, Hawes, was consecrated on Friday, the 31st. It has been erected at an expense of 2,300*l.* It is of the Decorated style, and consists of chancel, nave, north and south aisles, north and south porches, and tower at the west end. Attached to the latter, at the south-east angle, is a staircase turret, which rises above the battlements, and is finished with a small spire, and which gives access to the top of the tower. The nave is divided from the aisles on each side by five bays of circular piers and pointed arches; and opposite to each of the four easternmost bays is a window of three lights, with varied tracery, the porches occupying the remaining bay to the west. The roofs are of high pitch, and open to the ridge, presenting an uninterrupted height of 50 feet, the rafters having arched braces springing off shafts attached to the wall pieces. The seats are plain, but of open construction, stained and varnished. The nave and aisles are 60 feet 6 inches long, and 53 feet 7 inches wide; the extreme length of the church, 99 feet 9 inches; tower, 22 feet 10 inches by 21 feet 7 inches, over walls; height to vane of turret, 104 feet. There are 560 sittings, of which 360 are to be free. The church is built of stone from the neighbouring hills, with rough walling and chiselled stone dressings. The church is placed on a considerable eminence in the centre of the town. An organ is to be placed in the church, the gift of Mr. R. Atkinson, of London; also a stone font, the gift of the architect. The church has been erected from designs by Mr. A. B. Higham, architect, and under the superintendence of Mr. Dickens.

Stonehouse (Devonport).—The Assembly Room in the St. George's Hall, Stonehouse, has been completed by the erection of an organ, from the establishment of Mr. Robson, London. It possesses all the modern improvements, and cost 350*l.*, of which amount, however, the Earl of Mount Edgcumbe generously contributed 250*l.* We are glad to find, according to the local *Independent*, that the promoters of this building are likely to get a fair return for the money they embarked in it. They have already rents amounting to an income of 306*l.*, which will pay 5 per cent. on an expenditure of 6,000*l.*, or probably, after paying for insurances, repairs, &c., may enable

the committee soon to make a return of 4½ per cent. on the outlay.

Liverpool.—While the paviors have been recently tearing up the stones of Castle-street, and carting them away, till hardly one block was left in the whole avenue, a curious observer might have seen that there was one stone, and one only, which they treated with marked respect, which they left entirely unmolested, not venturing to remove it one inch from its resting-place. A few old people who knew of it will tell you that it was formerly called "the liberty stone," and those who are familiar with the customs of the olden time know that it has for ages marked the boundary in this direction of the privileged ground, within which debtors could not be arrested on borough process during the continuance of the Liverpool fair. The fair, as our readers may know, is still annually proclaimed; and, during the 14 days, debtors are still safe under its protecting influence.—*Liverpool Times.*

Salford, near Bath.—The parish church was reopened for Divine service on Thursday the 13th inst. It has undergone extensive repairs and alteration. The chancel and vestry have been partially rebuilt, and a stained window placed in the east end; the floor paved with Minton's encaustic tiles; three new windows erected; and the whole has been repewed, and a new gallery constructed. An organ has been placed in the gallery. The funds, aided by a grant of 40*l.* from the Diocesan Church Building Society, were raised solely by private subscription through the exertion of the Rev. E. Whitehead, the rector. The works were executed under the superintendence of Mr. Lamorch Flower, of Keynsham. The fittings are by Mr. James Smith, of Bath.

Sheerness.—On Thursday in week before last, the first stone of a new county court was laid here. The site on which the building is to be erected is at the western extremity of the high-street of Blue Town, and on the south side of the street. Houses formerly stood on the spot, but in 1818 several of them being destroyed by fire, the Government purchased the ground, it being then contemplated to take a large portion of Blue Town into the dockyard; subsequently, some adjoining houses were purchased by the Government and taken down, and for many years the space lay as a waste piece of land, and a receptacle for all kinds of nuisances, till about two or three years since a new "lock-up" house was erected at one end, and the whole walled in; and now, by the erection of a new court-house, the whole will be occupied; and the two buildings will be an improvement to that part of the town.

Windsor.—It was stated the other day in council, by the chairman of a committee for the repair of the town-hall, that they had procured a plan and estimate from Mr. Hardwick, and invited the tradesmen of the borough to tender for the works. The lowest tender was the one sent in by Mr. Holden, for 899*l.*, and that tender had been accepted. Mr. Hardwick signed the contract, and the works were forthwith commenced. During the progress of the repairs, it was found that the pediment at the south end was in a bad state, and a new pediment had been erected at an additional expense of 30*l.* There was only 30*l.* difference between the highest and the lowest tenders. A councillor complained that the whole of the tenders were higher than the architect's estimate. He also suggested, however, a farther increase, in the restoration of the wainscot mouldings, to accord with the new ceiling, and to form panels for the corporation pictures. The old chandeliers, it was thought, would also require to be replaced by others, unless converted into gasaliers, as suggested by the architect.

Hawthornth.—The chancel of the old church of this village having fallen into disrepair, the Rev. J. H. Smyton, the rector, determined to pull it down, and entirely rebuild it. This has been done under the superintendence of Mr. Bailey, of Newark, and is now nearly completed. The east window is a composition by Wailes, comprising, in the three lights, the Nativity, the Baptism, the Last Supper, and

full-length figures, with legends of our Saviour, the Virgin, and Saint John.

Burnley.—The foundation-stone of the Mechanics' Institution building is to be laid on 25th inst. The building is to cost upwards of 3,000*l.*, more than half of which has already been subscribed in free contributions.

Sunderland.—The new congregational chapel erected within the last six months, at a cost of about 2,000*l.*, and capable of accommodating nearly 1,100 persons, was opened on Thursday, in week before last. The style of the building is Italian, and the structure is of stone, with vermiculated groins at the angles. The principal front has a Corinthian portico, and the tympanum of the pediment is broken by the segment of the cornice; which forms an arch over the large western window. The ceiling is divided into three compartments, separated by light cast-iron columns, carried up from the ground, and forming arches between them. The caps of the columns are painted white and gilt; and behind the pulpit is a recess with Corinthian pilasters painted to imitate sienna marble. The ventilation is provided for by the whole of the foul air being removed into a large receiving shaft at the end of the building. The architect was Mr. Thomas Oliver, jun., of Sunderland.

Gateshead.—We have been to see the gas-light at Allhusen and Co.'s manufactory, South Shore, and have now returned to the inferior gas-light in the High-street,—the former made from the Cannel coal of our neighbour's pit at Blaydon (Mr. G. H. Ramsay's); the latter from—we know not what. The one light is white and brilliant; the other resembles, in great part, sky-blue milk. One-half of the new gas, it is stated, will give as much light as the old—and a better light. Wherever we saw the Cannel light, the consumers were unqualified in its praise; and the talk is, that "we really must have a Gateshead Cannel Coal Gas Company."—*Gateshead Observer.*

Sedburgh.—Gas works have been erected here, and are now in full operation, the town, of course, being now "brilliantly lighted up with excellent gas." Not only the whole of the shopkeepers, but a great number of the private householders are likely, it is said, to become consumers.

Ayr.—Amongst the most attractive features of our locality, says the *Ayr Observer*, are the large number of tasteful villas, with which, of late years, has been studded the "West End" of Ayr—the open ground lying betwixt the town and the race-ground. In addition to these buildings there have also been completed many new rows, of which Victoria-terrace on the South Beach, the extension of Alloway-place, and now Barns-terrace, opposite the latter, are the most prominent and extensive. The builders were Messrs. Paton and Son.

Belfast.—It is said that the late Mr. Hamilton, of Hamilton-place, in this town, has, by his will, devised 2,500*l.* towards erecting a new church, at the south side of the town; that a site has been chosen in the immediate neighbourhood of Wills-place, close to the new markets, and that building operations will be immediately commenced.—*Banner of Ulster.*

Miscellaneous.—The new church of Llandilo Talylouth was consecrated on Thursday week. At Witham the new Roman Catholic Church recently erected was consecrated on 22nd inst.

PATENT SAFES.—A case has been decided in the Court of Queen's Bench before Lord Campbell and a special jury, in which Mr. Milner was plaintiff, and Mr. Harrison, proprietor of Tann's patent safes, chests, &c., was defendant. The trial was instituted for the purpose of vindicating the exclusive right, on the part of the plaintiff, of applying liquids, or materials evolving moisture on the application of heat, together with other absorbent materials, within the chambers of boxes, safes, or depositories, calculated to pervade the chambers and contents of the safes with moisture and steam, when heated by fire, thereby preserving the papers from ignition. A verdict was given for the plaintiff.

THE PARKS.

A GLANCE over the files of *THE BUILDER* discovers that, for some years back, the blots and defaults of these public domains have been the theme of many a remark; and it is gratifying to find that the leading journals are dealing with the subject.

Recent intrusions have turned general attention to the regulation of these matters; and to the irresponsibly ruling power of the Woods and Forests, who "bound, sustain, adjust, and agitate the whole."

Since the sportive rarity in carving out the green sward near Buckingham Palace, and the mutation of site for the Marble Arch (from the sleepy hollow to the cunning corner), but little has been effected as to plantation or improvements in any of the parks. Primrose-hill continues in its pristine pastoral nakedness; Battersea wastes are still in shapeless barrenness, and the Regent's as plashy and dank as when first laid out in plantation. There is, however, a sign of life near the Marble Arch—the carriage-drive has been diverted farther from the railings (of course with the view of showing the Arch in better aspect), and Park-lane, at that end, is, for a short distance to be widened; this latter change is *diverting*, but to what great public object can it serve? Unless a continuation of Park-lane be made through the Park from Stanhope-gate to Apsley-house; or else that, at an enormous expense, the other end of the Lane be also widened—at the inconvenient and dangerous thoroughfare into Piccadilly—as a great causeway, the duct is but little improved, save to those few favoured houses immediately facing the amplified portion of the route.

There is also a cab-stand placed of late in centre opposite one side only of Grosvenor-gate. Surely this is a blemish that could not be inflicted upon the exact locale of any noble residence; and is in a position the least called for or suitable in all the town. It is utterly eccentric and unrequired, or if needed at all in that quarter, Grosvenor-square would be really the most appropriate position. As, however, the noble occupants of that square would not brook it (no, not even in Brook street), we shall find no such inflictions imposed on the inhabitants.

Often have remarks on the real blots in Hyde-park appeared in *THE BUILDER*, and as often passed into the oblivion of hebdomadal complaints; but now the *Times* has taken up the matter, and some of the most prominent "*disgrazia*" will be forced upon the reluctant attention of salaried somnolence. The *Knights-bridge-barracks*—the light-horse troop stable at Kensington—the sergeant's guard-house in the very centre of the expanse—the slyly-hidden crib, with 6 acres, where some favoured pensioner enjoys (perhaps justly) an *urban retiro*, occupying the most beautiful and sylvan portion; the waste and rubbish yard (another acre); and lastly, the powder-magazine; surely these ought to be removed, not only as obtrusions and blains on the fair plain, but as altogether useless and pernicious to valetudinarian wanderers, or to nurses and children who seek recreation in this only space available within walking distance.

If one or more barracks be needed there is ample scope further afield: Wormwood-scrubs, for instance—not a bad field for reviews, and completely removed from the swelling and extending population. For a powder-magazine that is the nearest point where so dangerous a deposit should be placed; and as for guards—Royal Blues or foot—the paraphernalia of state might be supplied from detachments lodged, say at Albany-street, or some of the other intramural stations of the Praetorian guards. For the peace of the metropolis the police has been proven not only perfectly adequate but efficient in its preservation.

Now for the range of mean bulks, shops, and houses extending from opposite Wilton-place to Albert-gate, and thence the whole way to Knightsbridge-barracks: they are, as they always have been, a stigma to the municipality of the district, or rather to the government, which does not invest every distinct circle with a conservative power in respect to local improvements.

There are on portions of this range short unexpired leases in private hands; some (the very worst), the estate of the Dean and Chapter of Westminster. As a general rule the old usage is good to leave to private enterprise and to the improved value of localities, the renewing of old and decaying tenements; but in the case of the *Park*—the most important feature of London—here most assuredly the office of great public functionaries should interfere to maintain not only the health but the beauty of their charge in rangership: the improved taste of the day in horticulture, arts, and architecture in particular, require it. What a great builder would or might have done is not the question, for he would have speculated for personal benefit alone: the competent and responsible public officer (if such, indeed, can be found) should have some control in such matters, but that control should be under rigid public scrutiny.

It would be needless to allude to the vexed question of the Glass Palace, its aptitude for a winter garden and shrubbery, the inestimable benefits it would confer on the whole community in this country of infernal fog, drizzle, and frost,—how 20,000 of even the labouring population might then enjoy the reviving influence of an Italian climate, and at the same time acquire a taste for, and probably an acquaintance with, floriculture and horticulture, together with improved health, and the humanizing effects which the contemplation of nature's bloom infallibly impresses on those who hold communings with the floral creation. If 10,000 only had admission at one time, 20,000 would probably frequent the winter garden in the course of six hours, on a winter day; and this at but 2d. a-head would produce 160*l.* 13*s.* 4*d.* a-day.

Supposing the week-days at an admission of 4*d.* to give but half the visitants, or 83*l.* 6*s.* 8*d.* per diem, then the annual returns from the copper toll would realize an income of 34,750*l.* 13*s.* 4*d.* (season tickets, at two guineas, and annual, at three guineas, would yield much more): this would be enough to support the best staff of gardeners, to stock the building or *conservatoire* (the phrase, it is hoped, will make it the more popular) with the choicest productions of the temperate zone; and to keep in permanent repair the structure.

There are other vested interests than those of the Lord Chief Justice to be considered,—the rights of property invested, which in good faith and justice, ought to be required, if the Palace remain where it is.

Foremost amongst the requirements in the Parks is a *spacious and well-tight thoroughfare* for carriages, open night and day, leading from Bayswater to Kensington-gore: such a causeway would be a real benefit to the whole community.

Crochets of mine, which have been published, are of course public property; and as they are palpable to all, must have been the subject of commentary: that they are forcibly urged is matter of gratulation to all: if the issue be good, it can be consolatory to none more than to

QUONDAM.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

ON Monday evening, the 17th inst., the Institute of Architects re-assembled to open the present session, Mr. Fowler, vice-president, in the chair, and a long list of donations was announced, the gatherings of the vacation, including the first part of a new architectural periodical from Berlin, conducted in part by Herr Strack, and an engraving explanatory of a project by Mons. Hector Horeau of a submarine railway to connect France and England,—a project, by the way, also set forth on this side of the channel some years ago, and for which, if our information be correct, the bed of the channel offers more facilities than might be expected.

A clever fellow is Hector Horeau. Many of our readers will remember his design for the '51 Exhibition Building. In his own country he is constantly making himself heard of. We remember finding him some years ago on our first visit to Paris as a student, in a bright red morning jacket and trowsers to

match, with a bevy of the wits of Paris about him, who made his studio rather a lively place for severe study. In Paris they see no reason why flowers may not be grown by the side of any road.

We may particularise amongst the donations the presentation by Professor Donaldson, Foreign Secretary, of a curious MS. volume of notes and sketches by Willey Reveley, who visited Athens and the Levant, after Stuart, and edited the third volume of "The Antiquities of Athens." Reveley was a pupil of Chambers, and built a church at Southampton. Annexed to the book is a letter from Mr. Towneley, the celebrated collector.

When thanks had been voted to the several donors, the Foreign Secretary brought under the notice of the meeting some incidents in connection with the visit of various foreign architects to London during the past season. The reader said, "I am gratified in being able to state that the impression on the minds of most of these intelligent and experienced architects, in regard to the state of our art in this country, is extremely satisfactory. Unfostered as the English architect is by the immediate patronage of the Government, generally limited in the means placed at his disposal, they have found that he has sought, and not without success, to ennoble his conceptions, not so much by the refinements of decoration or the concurrence of the sister arts, as by the largeness of disposition, by simplicity of design, and by the dimensions of his work. The noble—the useful—the convenient—the necessities and first wants of life have been sought in all their highest development, rather than the ornamental; and success has to a great degree attended this peculiar and sober treatment of architecture in England. The variety and excellence of our materials, now being fully brought into play by skilful adaptation, also seemed to strike our foreign friends."

I am led to hope that this visit and interchange of courtesies may not be without fruit upon the future development of architecture among our refined neighbours in the Continental states. For if we have still to learn to invest our buildings with more of the graces of the higher qualities of artistic feeling, and the public to appreciate them, they have also felt the importance of consulting the ordinary claims of human existence still more profoundly, and recognise with still more enlarged views the happy influence which architecture in its widest sense may have in the great mission of ministering to the comfort and physical well-being of the labouring classes—a moral as well as a physical mission, deeply felt by us all in reforming the habits of the vicious, and soothing the misfortunes of the afflicted and needy.

Nor can I forbear to mention the pleasure with which some of our modern metropolitan churches have been visited, combining convenience of disposition with religious solemnity and picturesqueness of effect.

The varied collection of Assyrian antiquities, the marbles from Asia Minor, and the recent decorations of the sculpture rooms in the British Museum, so beautifully carried out under the direction of our Fellow Mr. Sydney Smirke, were unreservedly admired. And I should add also, in reference to the noble sculptures recently introduced by Sir Richard Westmacott, R.A., in the tympanum of the central portico of this National Museum, that they elicited very great commendation.

The following is a list of honorary and corresponding members of the institute, and other foreign architects, who have been here:—Messieurs Blouet, Caristie, Daly, De Joly and Son, Dussillon and Son, Goullier, Hittorff and Son, Hector Horeau, Herard, and L. Vaudoyer, of Paris; Messieurs Epellet, and Girault de Prangey, of Arras; Herr Zanth, of Stuttgart; Klenze, of Munich; Strack, Diebitsch, and Hesse, of Berlin; Messrs. Forster and Son, and Rosner, of Vienna; Mynheers Weenick, and Zocher, jun., of the Hague; Mynheer de Yong, of Amsterdam; Herr Hetsch and Son, of Copenhagen; Herr Hansen, formerly of Athens, now of Copenhagen; Mynheer Pyk, Professor Extraordinary of the University of Leyden;

Herr Stamman, of Hamburg; Messieurs Agea, of Mexico; Herr Zwirner, of Cologne; and M. Gainaud, of Paris.

To the paper of the evening, read by Mr. Papworth, "On some of the productions connected with architecture in the Exhibition of 1851," we shall return hereafter.

CELLAR DWELLINGS.

MODEL LODGING-HOUSES FOR THE LABOURING CLASSES.

NOTIFICATION as to the discontinuance of the use of cellar dwellings, under the Public Health Act, the Common Lodging Houses Act, and the Labouring Classes Lodging Houses Act, has been directed by the General Board of Health to the Local Boards of Health of 138 towns and places to which upon petition the Public Health Act has been applied.

The report of the Commissioners of Inquiry into the State of Crime, and the Means of establishing a Constabulary Force, showed, by evidence received from every part of the country, that the common lodging-houses form, in most cases, the chief hotbeds of crime in country towns; and it subsequently appeared, from similar evidence set forth in the First Sanitary Report, that overcrowded and filthy lodging-houses are the places where epidemic disease usually first breaks out, and is the most obstinate and fatal.

Hitherto the excuse or defence of local administrations for these admitted states of misery and depravity, and for the continuance of a condition of the poor disgraceful to a Christian community, has been the want of power or means either to regulate the existing lodging-houses or cellar dwellings, or to make other and suitable provision for the accommodation of their inmates. To attempt to diminish the overcrowding of common lodging-houses by ejecting the lodgers without providing fitter habitations would, it has been said, and often very justly, only increase the number of miserable outcasts who are found sleeping in out-houses or in the streets. To eject families dwelling in cellars, without any suitable provision for housing them, would be to force them to overcrowd upper rooms, and a doubly crowded upper room might be even worse than a less crowded, though damper, cellar dwelling.

But now, by the Act for the better regulation of common lodging-houses, local authorities are imperatively required to put the existing houses known by that name under regulation, while by the new Act "to encourage the establishment of well-ordered lodging-houses for the labouring classes," they will be enabled to provide better substitutes for such places than any which now exist.

Local Boards, even if model lodging-houses were not self-supporting, might deem themselves justified, the General Board thinks, in laying out the public money for the prevention of charges on the public consequent on continuance of the existing evils.

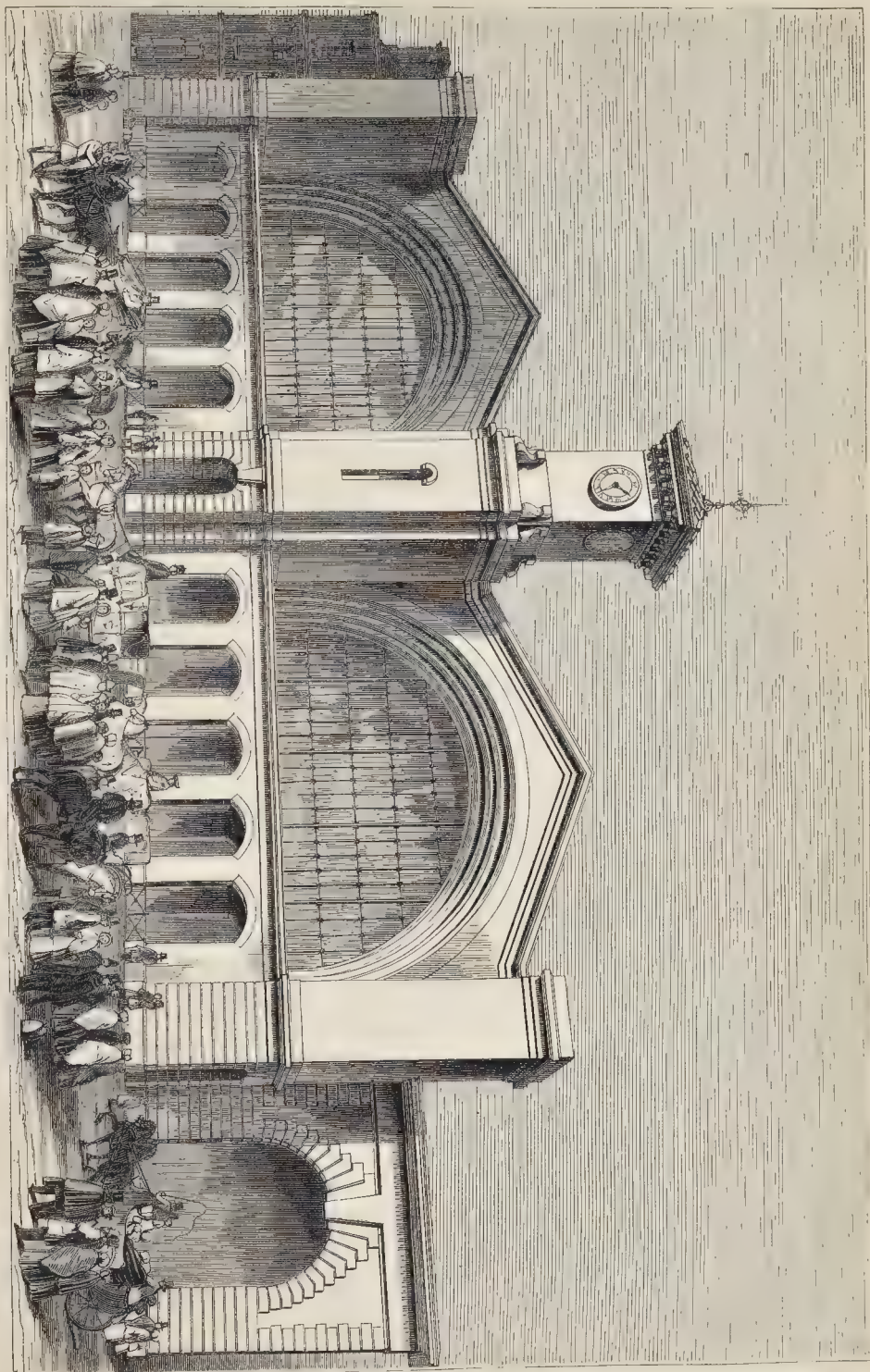
For the information of Local Boards of Health, the General Board has directed an examination to be made of the existing model lodgings and dwellings, and plans and specifications to be prepared as to their expense, with such particulars of improvements in the principles and economy of construction as could be collected from the most recent practical experience. Copies of this information will, when ready, be transmitted to any of the local authorities empowered to apply the Acts referred to, who may be anxious for it, with a view to the execution of these measures.

To let or occupy as a dwelling *any* vault, cellar, or underground room built or rebuilt after 31st August, 1848, or not let or occupied before that date, is now illegal, and has been so since the end of August 1848.

. We may mention here that the "Lodging Houses Acts," edited by Mr. Robert Strange, Barrister-at-Law, have been published for the Society for the Improvement of the Condition of the Labouring Classes.*

* Shaw and Sons, Fetter-lane, 1851.

KING'S CROSS STATION OF THE GREAT NORTHERN RAILWAY, LONDON.—MR. LEWIS CURRIE, ARCHITECT.



[See page 731.]

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Paris.—The Ceiling Painting of the Galerie d'Apollon, Louvre.—The French press speaks very highly of this new work of M. Delacroix, representing Apollo as the vanquisher of the serpent Python. It occupies the centre of the huge Gallery of Apollo, whose immense space it completely fills. It was destined, under Louis XIV., for a painting of Lebrun; but, in fine, had to await its completion at the hands of the painter of the Barque of Dante. The composition of this splendid fresco is the following:—"Apollo, resplendent with youth and beauty, on his car, has already spent a portion of his arrows. Diana, in sisterly love, runs to his rescue, and presents him with others. The serpent-monster, already pierced by the arrows of the god, expires in tortuous motions of agony. In the background, the subsiding waters of the Deluge have left on hill and dale the corpses of its victims. The gods, indignant that the reclaimed lands should merely be the abode of impure monsters of the slime, have come to the aid of the Sun-god. Mercury and Minerva appear, likewise armed. Hercules strikes them with his giant-club; Vulcan, the god of fire, driving before him night and impure vapour; while Boreas and the Nymphs dry the land by their wafts, and dispel the mist of clouds. The nymphs of rivers and springs have possessed themselves again of their urns, amidst the reeds of the banks. Other minor divinities behold at a distance, the gorgeous strife of the powers of the gods with the elements. Still, for the height of heavens, Victory descends from crowning vanquishing Apollo, and Iris, the harbinger of a new world, unfurls in the skies her banner of light, a symbol of the victory of light over darkness and the revolt of the inferior elements." It is to be seen, that art in France is largely imbued with the ideas of modern science, and the social tendencies of the age, and makes good use of it. Although M. Delacroix had to grapple with rather dark tints at such heights, still some art-critics think that Victory is more darkly kept than might have been required: on the other hand, Apollo is generally admired as light incorporate.

Provision for Workmen, France.—The firm of Schwartz-Trapp, at Mulhouse, have founded a benevolent institution for their aged or disabled workmen. Having paid down a first instalment of 10,000*fr.*, the ulterior increase of stock will depend on the contribution of those to be benefited. The managing committee will consist of four persons—two selected by the firm, and two by the workmen. [As sensible a plan as can be desired, altogether.]

Paris.—Completion of the Louvre.—The columns and arcades of the four principal entrances to that huge structure are now undergoing a process of perfect cleaning and scraping. There will be a magnificent fountain erected in the great court, surpassing in size the splendid monument lately erected at Nismes, and imparting life and movement to these long piles of buildings.

Art in Munich.—The great foundry of the Bavarian capital is constantly occupied in bringing forth sterling statuary work. Thus, the statue of Gustaph Adolph has been cast of late, after the splendid model of Messrs. Miller and Fogelberg. Of the latter sculptor, the model of a colossal equestrian statue of Charles John, of Sweden, has lately been made at Rome, which will be also cast in Munich. A still more extensive work, destined for the United States, is also in preparation, which leads German art-critics to the observation, that a Swedish sculptor executing works for America at Rome, to be cast at Munich, would have been considered a thing incredible fifty years ago. Another new art-feature, also, is the employment of photography for copying works of sculpture. Thus, M. Löcherer has published a very faithful engraving of the above statue of Gustaph Adolph.

Munich Art-exhibition, 1851.—The reports on this year's exhibition are very gloomy, and reveal that art-indifference of the Munich people which, although manifest for several years past, has reached now the seemingly

highest degree. It is especially the Academy of the Fine Arts, to whose sphere of duties these exhibitions chiefly appertain, which is blamed, as, with the exception of the director and two professors, no other member of that body has exhibited any of their works. By the pupils still less has been done, although the exhibition is the real test of the activity of that Academy, supported by the State. In extenuation, it has been stated, that "an exhibition is a fair; but a fair where nothing is sold deserves not to be frequented." On this account some proposals for a drawing of prizes &c. are now put forth. Two pictures of French artists—the portrait of General Cavaignac, by Lepaulle, and one by Courbit—are praisingly mentioned. The landscapes of Bernatz, representing scenery of South Arabia and Abyssinia, are meritorious and original. In the sculpture-room, the Judith of Laubmann, a young artist from Hoff, deserves notice, as well as the carving of a young shepherd's boy from Tyrol, made after an engraving of Overbeck's "Road to the Cross." Of architectural works nothing memorable has been exhibited, which also is much adverted to by our German contemporaries, truly observing, that it is this art which chiefly influences and benefits the great masses of the people.

Berlin.—Echo of the World Exhibition.—The German periodicals say that it is not the prize-medals brought back from the London Exhibition, which are considered the objects most important, but rather the knowledge and spirit of emulation which the foreign exhibitors have thus been imbued with. Hence, therefore, Councillor Viebahn, chief of the Exhibition commissaries of the Zollverein at London, has begun to lecture in one of the largest localities of Berlin: "On the Industrial Position of England," which M. V. travelled over last summer. The lecturer stated, that Germany never will be able to compete with the Mistress of the Seas; but by confining herself within legitimate, narrower bounds, still can emulate that great prototype of modern European industry and civilisation. Other lectures of a similar kind are to be held in other parts of Germany.

GOTHIC ORNAMENTATION AND ENRICHED MOULDINGS.

Your correspondent, Mr. Colling, agrees that a great difference exists between Gothic and classic enrichments in the matter of contour; but I think he involves himself in a fallacy by using the term moulding where enrichment or carving only exists. What is an enriched moulding? I define it as a moulding originally of plain geometric contour, sculptured on its surface,—one that if used in its plain state would still harmonise with the other mouldings of the group. The ball-flower, the dog's-tooth, and trailing foliage, in plain uncut contours, would produce forms unknown as Gothic mouldings.

If in the Westminster cloister doorway, or similar examples, the contours of the enrichment were kept plain, the form of the group of mouldings would appear lumpy and out of concord, and the Gothic character would be destroyed. It is no reply to this to say, that "the enrichment formed part of the original design." This undoubtedly was the case; but the point worthy of attention is, that wishing for enrichment, the architect did not seek it by carving the mouldings themselves, but superadded or superposed it in a manner unused by the classic architects. Mr. Caverley gives a drawing of this doorway; and singularly illustrative of the suggestion which I have made, he gives the plan of the arch mouldings, with the hollow, as a complete and perfect group, without indicating the enrichment over it, though he shows it in the elevation.

With respect to the other illustration from the same doorway, consisting of detached flowers laid in a hollow, which Mr. Colling calls an "enriched hollow moulding," and an instance of "carving on a moulding," such a description appears to me a perversion of architectural nomenclature. An enriched hollow moulding should have the carving follow the contour of the hollow, and not, as in this case,

follow the reverse or convex contour. This is, in fact, an instance of what I regard as applied ornament: it is an ornament masonically laid in a hollow.

The idea that the deep undercutting in Gothic ornamentation was solely to give effect in light and shade, though often stated, cannot, I think, be maintained, when in every instance we perceive that the true forms of the plain mouldings are preserved or indicated beneath the foliage. The effect of deep shadow might have been obtained without the labour of working the mouldings beneath.* The ground, also, was not invariably a hollow, as many instances can be produced where the enrichments cover houts and fillets. An indication of this method may also be found in the late Norman style, where the chevron is relieved from, and zig-zags over the other plain mouldings, whose lines are preserved below it. The fine effect of this mode of using ornament may possibly have induced the early English architects to adopt it as a principle, as it seems to have obtained in all their subsequent works.

I beg to hint to "W. H. B." that the investigation of dry matters of fact, like the present, is not forwarded by drawing inferences and suggesting imputations unwarranted by my expressions. I am willing to believe that his object, like mine, is not controversy, but the elucidation of what he himself admits is a curious question in architecture. He seems also to think that I have started a new theory of the origin of Gothic architecture: this is not the case. I fully agree with him in the theory of progressive development, but maintain that throughout the whole series of changes, from the decline of the Norman to the introduction of the Renaissance style, a peculiarity of ornamentation was preserved as regards its use, which, differing from all preceding and succeeding architecture, entitles it to be considered a principle.

T. L.

FIRST ORIGINATORS.

MR. D. WARREN'S claim to be regarded as "the first originator of the idea of a submarine electric telegraph" is untenable. About a century ago an embryo electric telegraph (so to speak) was laid down in the Thames from Somerset-house to the opposite bank. It was a single wire, was laid down for a day, and was used only experimentally; but that was done which Mr. D. Warren, a hundred years afterwards, only proposed to do. The experiment was, I think, conducted by either Dr. Franklin or some of his friends.

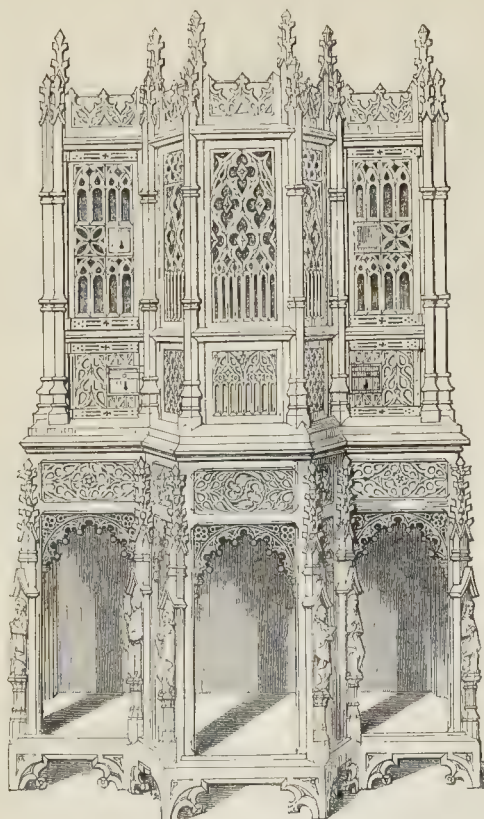
Without intending to deny Mr. D. Warren's right to claim any amount of credit for having fruitlessly suggested a submarine telegraph, it may be observed that these claims, which are every now and then put forward, for the credit of being "the first originator," or "the first inventor," of something important, ought not to be admitted too lightly. It is probable that scores of men have often, independently of each other, hit on the same invention; but surely the only one of them who can ask his fellow men to reward him, either with "solid pudding or empty praise," is that inventor who has so persevered as to bring the invention to a practical and useful result, or who has so published the invention as to afford to practical men the means of reducing his theory to available practice.†

An inventor who has not done anything by which mankind are benefited, ought to be satisfied with the reward of his own self-congratulations. No one else owes him any thanks.

N. R.

New Saw.—We understand that Mr. Ralph Steel, of Melbourne-street, Red Barns, Newcastle, has invented a saw capable of cutting timber to any given shape. It can also be applied to cutting straight. A saw of this kind, we are informed, will greatly facilitate ship-building operations.—*Gateshead Observer.*

* That they are so worked gives evidence, to my mind, that the architects would not disturb their contour by carving, but obtain richness by superposed decoration.
† It might happen, however, that but for the crude suggestion thrown out by one mind the complete invention would never have been made by another.—Ed.



MEDIEVAL CABINET.



ANCIENT LANTERN, FROM SEVILLE.

SALE OF THE COTTINGHAM MUSEUM.

AMONG the lots sold last week by Messrs. Foster was the large altar-piece (lot 463) to the Rev. Dr. Dale, vicar of St. Pancras, who has also purchased several other works. Mr. Rogers has been a large purchaser of models and casts, including lot 712, the life-size figure of our Lord appearing to Mary Magdalen in the Garden; a portion of the series of bas-reliefs from the north transept of Westminster Abbey; also (lot 833) a doorway, with figures, canopies, &c., for the sum of 36l. Mr. Purnell, of Stanscombe-park, Gloucestershire, who is forming a comprehensive museum illustrative of art from the earliest period, secured the fac-simile of the tomb of William de Valence, half-brother to Henry III., for the sum of 21 guineas. This gentleman also purchased lot 1531, a fine specimen of mediæval furniture, of which we give an engraving. Mr. Leake, well known for his works in stamped leather, bought several lots appertaining to his branch of art; and, in addition, lots 1497 and 1498, figures of Henry VII. and his Queen in painted glass, for the sum of 15 guineas. The processional cross (lot 1409) found at Glastonbury Abbey, was purchased for the British Museum, as also was lot 1398, the Seville lantern (see woodcut). The Rev. J. F. Russell, of Enfield, secretary to the Ecclesiological Society, in addition to other purchases, bought lot 1461, a processional cross of copper, silver plated, of the fourteenth century.

PROPOSED NEW TERMINUS IN THE CITY FOR THE NORTHERN RAILWAYS.

LET any man step over the ground proposed to be traversed by the City Solicitor's projected railway, and he will witness a scene of desolation and wretchedness, such as it would be difficult for either tongue or pen adequately to describe.

In the very midst of this great and wealthy city, and within a few yards only of one of its chief and densely-thronged thoroughfares, a region of the most abject and doleful poverty presents itself, reeking and festering with every social and moral evil, the hotbed and haunt of all that is vicious, disgusting, and unclean, and exhibiting on every hand nothing but the most frightful aspect of squalid dilapidation and ruin.

At the same time there is one anomaly connected with this dismal spot for which it seems difficult to account. While land in the neighbourhood of London is increasing in value every hour, and every spot for miles round is eagerly seized upon at almost any price for purposes of building, nobody has thought of purchasing and clearing the whole of this area with a view to turn it to a more profitable account than it can possibly command in its present state.

It is upon this in every way most eligible but hitherto neglected site, then, so contiguous and convenient to the City, that Mr. Pearson now proposes to erect a series of markets, storing warehouses, and railway termini, which, while

it will improve and renovate the entire vicinity will, at the same time, be of the greatest commercial value and importance to the citizens of London for all time to come. Without going into the merits of this particular plan, its promise to effect so much general good for the miserable locality through which it is intended to pass, as well as aiding other highly valuable and long-desired metropolitan improvements, should alone strongly commend it to public patronage and favour. This principle should have been adopted from the very first with regard to all the London termini. Instead of having been kept at a distance from the chief centres of business traffic, they should have been encouraged to come into as intimate connection with them as possible. Advantage should have been taken of the large requirements and resources of the railway companies to effect desirable public improvements, especially in the poorer and more neglected neighbourhoods.

For instance, one of the greatest and most important projects ever devised for the benefit and embellishment of the city, was that of throwing open the south front of St. Paul's to the river, communicating with the opposite or Surrey side by a handsome and stupendous bridge. To have brought some of the chief southern railways to this point, allowing passenger trains only to pass the bridge, would have been of immense convenience to the public, while, by this assistance, the corporation, aided by the Commissioners of Metropolitan

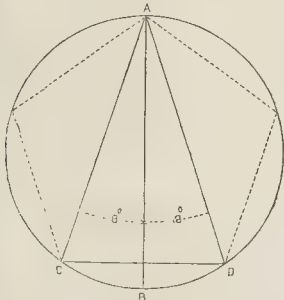
Improvements, would easily have been enabled to accomplish the rest.

Next in point of interest and importance to the above magnificent as well as useful design, this of Mr. Pearson's appears to present the greatest claim to general attention. Nay, should it be found worthy of support, and the plan of passing the river by the southern railways, at the point and in the manner referred to, be at some time adopted—an event than which many things are less probable,—then it would seem that the advantages and accommodation of both schemes would be greatly augmented.

WATCHMAN.

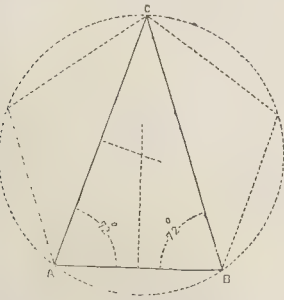
TO CONSTRUCT A PENTAGON WITHIN A CIRCLE.

IN THE BUILDER of September 13th, a method of constructing an equilateral pentagon within a circle, is given, which I think is rather complicated, and I beg to submit the following:—



Describe the circle and its diameter AB by a scale protractor, with its centre at A: set off 18° on each side of this diameter, and draw the lines AC and AD: the base CD of this isosceles Δ will be one side of the pentagon required, and CB would of course be one side of a decagon.

To describe an equilateral pentagon whose sides shall be of any proposed length, is quite as simple an operation:—



Draw a line A B, whose length is = that of one side of proposed pentagon: draw A C and B C at an \angle of 72° with A B; then A, B, and C will be three points in the circle. The centre is of course easily found by bisecting any two of the sides of the Δ , and drawing perpendiculars thereto: the point of their intersection is the centre required. (Euclid, Prop. xi. Book. iv.)

S. CLEGG, jun.

THE PERPETUAL MOVEMENT.—A civil engineer of Bordeaux, named De Vigneron, according to the *Courrier de la Gironde*, has discovered a perpetual motion. His theory is said to be to find in a mass of water, at rest, and contained within a certain space, a continual force [in alternate decomposition and recombination?], able to replace all other moving powers. The *Courrier* declares that this has been effected, and that the machine invented by M. de Vigneron "functions" admirably. A model of the machine was to be exposed at Bordeaux for three days, previous to the inventor's departure with it for London.

CONDITION OF LAMBETH.

It is very well to talk of improving Kennington-common, but that might well give way to the removal of all those stench factories situated between Lambeth Church and Vauxhall, such as the bone burners, the potteries, and various others of like nature, which ought not to be allowed in such a locality, and are abominations of the vilest nature. How all this could have been tolerated so long in this age of improvement is a mystery,—nearly opposite, too, to those costly Houses of Parliament. The volumes of black smoke issuing from the potteries and factories make strangers hold up their hands.

It is high time that a general clearance should take place at that part, from the river's edge back to the railway, and in its place should be erected a handsome terrace, with carriage-drive in a line with the Bishop's-walk, with squares or streets leading from the river to the railway at back at stated distances. These buildings would form pleasant residences, and would let as fast as they could be finished, and thereby greatly increase the value of property in the parish, as well as add materially to the appearance from the river, and to the general respectability of that part of the parish, as well as the increase of the health of the inhabitants.

R. M.

ROMAN REMAINS RECENTLY DISCOVERED IN LEICESTER.

WE mentioned the discoveries in Leicester last week briefly. The locality is a close called the Cherry-orchard. A letter in the *Gentleman's Magazine* of 1786 had pointed out the existence of a pavement here, and it was in searching for this that the present more extensive discoveries have been made. Mr. T. L. Walker, the architect, who has superintended the excavations, has favoured us with some notes, from which we learn that a pavement was based on the first day of the operations, about 15 feet square, consisting of tessellæ about 1 inch square, of two colours,—grey and red; the centre representing two interlaced squares of four courses of red tessellæ, within two larger squares—one of five, the other and outer one of four courses—of red. This not agreeing with the one given, a further search was made, and to the north of this, at about 24 feet from its axis, a very beautiful semicircular pattern was disclosed, executed in very small tessellæ of four colours, viz., blue, red, brown-pink, and white, representing in the centre a shell pattern, in the two divisions of which, next the line of the diameter of the semicircle, are dolphins swimming towards the centre. This shell pattern is bounded all round by the guilloche ornament, outside of which is a vandyke of black and white, bounded by stripes of grey and red tessellæ, about 1 inch square. On the southwestern side of this pavement a stone pedestal was laid carefully down on the tessellæ, which were uninjured under it: this pedestal seems to be executed in Ketton-stone, and is 3 feet 5 inches high, and consists of a quasi-Attic base 9 inches high, a shaft 1 foot: 6½ inches high, diminished upwards, an astragal and neck together about 4 inches high, and a capital with square abacus 8½ inches high: in both the top and bottom bed is a dovetail-hole about 2 inches square. This pedestal has been presented by Dr. Noble to the Museum, where it is now deposited. Eastward of the semicircular pavement, and about 16 feet from its centre, a rich border in fine tessellæ was discovered, which seems to have been the boundary of this apartment, making the whole length about 28 feet, and the whole width about 18 feet. A little further to the north another pavement was found, consisting of a chess-board pattern of red and grey, bounded by two squares of red; the whole pavement being 14 feet square.

Still the pattern described not having been found, the excavations were continued, when several other pavements were discovered.

It is rather remarkable that no foundations of either main or partition walls have yet been found, except one of an angular shape to the north of the main line of apartments, near to

which a hollow pipe, 15 inches long, filled with concrete, and of an oblong section, the corners being rounded off, was found standing on end, and it is considered *in situ*, with two oblong holes in two of its sides, the other two sides being scored diamondwise in stripes about one inch broad.

Mr. Walker is now preparing to remove three of the best portions to the local museum, which he intends to effect bodily and without pouring a false matrix over the surface, as is usual in removing, by which the colours are often ruined. It will require great care, as the concrete on which the tessellæ are laid is very thin, 1½ inch only, and has been spread on the soil.

SCULPTURAL DECORATION IN THE CITY.

ON the occasion of the annual festivities at Guildhall in November, the City architect has usually gathered together some choice specimens of modern sculpture to adorn the adjacent apartments. On the last occasion, the arrangement was particularly successful, and did honour to a sculptor to whom England may point with great satisfaction, we mean Mr. Lough. At the end of an apartment constructed for the purpose, amidst floral decorations, was placed a copy of Shakespeare's Monument at Stratford, displaying the bust of the immortal teacher; and on pedestals on either side were ranged Mr. Lough's fine embodiments of some of his wonderful creations,—Macbeth; Lady Macbeth; Hamlet, the Dane; Portia, the ingenious; the villain Iago; Edgar; gentle Ophelia; Titania, the fairy queen; mischievous Puck, and "tricksy" Ariel. It was an excellent idea, and was carried out most successfully. The whole of these statues, by the way, with the exception of the last three, have been executed by Mr. Lough, in marble, for Sir Matthew White Ridley. The Ariel is in marble in the large banquetting-room at Stafford House. In another part of the Guildhall Mr. Bunning had set up a clever modelled representation of Thorvaldsen's noble Lion, in the rock at Lucerne.

THE OLD COLLEGE OF PHYSICIANS.

TYLOR'S BATHS AND METAL WARE.

"Not far from that most celebrated place,
Where angry justice shows her awful face,
Where little villains must submit to fate,
That great ones may enjoy the world in state,—
There stands a dome, majestic to the sight,
And sumptuous arches bear its oval height;
A golden globe, placed high with artful skill,
Seems to the distant sight,—a gilded pill."

THIS is the old College of Physicians, in Warwick-lane, Newgate-street, which was built about 1680, from the designs of Sir Christopher Wren, and is now a meat market, and the manufactory of Messrs. Tylor and Sons. The street, like the building, has seen some strange changes, between the time when, as Stow says, the "king-maker," Warwick, "came with 600 men, all in red jackets, embroidered with ragged staves before and behind, and was lodged in Warwick-lane; at whose house there were often six oxen eaten at a breakfast,"†—and the present day, when oxen are sold there instead of eaten.

A search for a good bath apparatus led us to penetrate its encumbered recesses the other day, and we found much to interest us.

The circular vestibule of the college, now surrounded by meat-stalls, is 40 feet in diameter. The theatre, octagonal in plan, is above that. An elevation, section, and two plans of this portion of the building are given in Elmes's "Life of Wren" (p. 450). The dining-room, now Messrs. Tylor's show-room, has a handsomely-decorated ceiling in panels, formed of plaster foliage and flowers, and here too are the gallery and other fittings of the library, removed when the latter apartment was cleared out for the formation of the market. The staircase to this gallery is a good piece of work.‡

Messrs. Tylor, the proprietors of the manu-

* The Old Bailey.

† This residence gave the lane its name.

‡ The college continued to hold its meetings here till 1825.

factory here exhibited some excellent specimens of "raised" copper work, in the shape of urns, vases, and other vessels, at the Great Exhibition, and these have been purchased by the Government for the Museum of Economic Geology. In these works the varied size of the vessels is produced wholly by the hammer, instead of by brazing parts together, which in bronze work causes a mark. Their bath, for which they received a prize medal, is very complete: it can be fitted up for about 20*l*. with boiler and everything necessary, and is heated, they say, with about two-penceworth of charcoal. Some of our readers may find this intimation useful. Their valve "closets" are also worth consideration: the introduction of vulcanized Indian rubber has rendered them very efficient.

FIREPROOF HOUSES.

THE account in your last number of *Boydell's Fireproof Construction* has called to my mind a very similar method which I saw adopted for the floors of many houses in Paris, in the autumn of 1847. The system of M. Vaux, to whom the invention is attributed, consists in having joists of wrought-iron about $\frac{3}{4}$ inch thick, the depth from 4 to 7 or 8 inches, according to the bearing: these joists, which are slightly arched, are placed from 2 feet to 2 feet 6 inches apart, the extremities resting in the walls, having a termination thus —: connecting these are short interties of bar-iron $\frac{3}{4}$ inch square, placed the same distance apart as the joists, which run in a transverse direction, the ends being bent to lap over the joists, thus forming a species of iron netting over the whole floor. Lastly, between each of the joists and parallel with them, two bars, $\frac{3}{4}$ inch square, are laid resting on the interties.

An account of M. Vaux's system was published in Jan. 1848, in No. 18 of the *Moniteur des Architectes*, a species of French *BUILDER*, which ceased soon after the revolution. In this article is given an account of some experiments made before a commission of architects appointed by the Minister of Public Works, which appear to have been highly satisfactory. E. H. M.

REVISION OF THE METROPOLITAN BUILDINGS BILL.

JUDGING from the quiet that prevails, little seems to be thought of the necessity for any alteration of the Metropolitan Buildings Act, either as regards such of its provisions and rules as have for their immediate object the regulation of the use and construction of buildings, or those which relate to owners of adjoining properties, and to the constitution of the tribunal for the superintendence and administration of the Act. I presume, however, that in the ensuing session of Parliament the chief commissioner of works, &c., will bring forward his Bill of last session; and such, probably, being the case, I would take this mode of suggesting that the different interests concerned, if they are dissatisfied with the Act now in force, should at once ascertain from Lord Seymour whether it is his lordship's intention to take any further steps with his Bill, and in the event of its being intended to re-introduce the Bill, that the several parties should, without further loss of time, proceed to meet and examine the Bill, and make known by publication or transmission to his lordship their views and suggestions thereon. It is only by some such mode of procedure as this that we can expect to have matters settled next session, and I think that it is as much to the interest of the parties concerned as it is due to Lord Seymour that any objectionable matters should be pointed out to his lordship in such time that his lordship may have a sufficient opportunity for a full inquiry into and consideration of the subject; for it can hardly be expected of Lord Seymour or any other minister that he should be possessed by inspiration of sufficient practical knowledge of, or sufficient information on, the several matters dealt with in and by the Metropolitan Buildings Act, to enable him to frame such a set of provisions as are either requisite or would accomplish their purpose with certainty or satisfaction. I would also take the liberty to suggest

that the appointment of a committee of such, or nearly such, a constitution as the one appointed by the Earl of Carlisle to inquire into and report upon the present Metropolitan Buildings Act, might, with advantage, be at once made by Lord Seymour to sit and report upon his Bill. I would, however, before I conclude, beg to make another suggestion, and that is, that it does not follow, as a matter of course, because an Act of Parliament has been in operation some five or seven years, that it requires amendment, nor because it may be faulty in parts and require repair, that therefore the whole structure should be demolished and reconstructed from a totally different design. A. B. C.

Miscellaneous

Vauxhall-Bridge Company.—On 6th inst. the half-yearly general meeting of this company was held. Mr. Parnell took the chair. The report announced an increase in receipts of tolls during six months ending October, 1851, of 2,193*l*. 12*s*. 5*d*., the tolls in last year being 5,006*l*. 11*s*. 8*d*., and the present 7,200*l*. 4*s*. 1*d*. This increase was attributed principally to augmented traffic to and from the Exhibition. The receipts from the piers for the same period had amounted to 383*l*. 5*s*. 1*d*., and their expenses for repairs, &c., were 131*l*. 17*s*.; leaving a profit of 251*l*. 8*s*. 1*d*. The financial statements showed the total receipts from all sources for the half-year, including a balance of 1,683*l*. 14*s*. 3*d*., amounted to 9,591*l*. 4*s*. 2*d*.; while the expenditure fell short of that amount by 4,264*l*. 14*s*. 2*d*. The report was received, and unanimously adopted. The chairman said that they had lowered the tolls on two-horse carriages, and the result was favourable. The condition of the bridge itself was all that could be desired. All the abutments had been built upon piles, and in order to make the bridge perfectly secure, Mr. Walker, the constructor, had resolved, as if he anticipated what had since happened to the other bridges, to go down with the foundation to the blue clay, which had accordingly been done, and the bridge was as sound now as the first day of its erection. The fault of the other bridges was, that their foundations did not go down to the blue clay. Until they reached the blue clay they could not stop the sinking of the pier at Blackfriars-bridge: when it did, however, they expected to be able to save the structure, but he thought their chance of so doing was extremely problematical. The rapid rush of the water and constant passing and re-passing of steamers, had also an injurious effect upon the piers of bridges, and at Waterloo-bridge they had been compelled to sink round some of the piers a great quantity of stones. The resolution for giving a dividend of 18*s*. per share was then carried *nem. con*.

Edinburgh Philosophical Institution.—The session of this popular institution has just opened under highly favourable circumstances. The opening lecture was delivered by Sir David Brewster, in the Queen-street Hall, to a crowded audience, on 11th inst. In course of a rapid and comprehensive glance throughout the regions of science and art, not forgetting that with the "ill-chosen name, electro-biology," now exciting great interest in Edinburgh,—not exactly the electro-biology of Smee, but that of the mesmerists, zoo-magnetists, diamagnetists, or whatever they may yet turn out to be,—Sir David referred to the merits of such associations as that he was then addressing. It was not till the beginning of the present century, he remarked, that measures were taken to extend institutions for the advancement of science, literature, and art. This arose from the urgencies of the war having previously absorbed much of the national genius. These institutions had done much to prepare the public mind for that display of the industry of all nations recently afforded in the Great Exhibition. That was not the place nor the occasion to do more than allude to this matter; but he was certain that the result of it would be to impress the necessity of a more general cultivation of science and art upon thousands

whose minds could only be reached through their eye, and who never before felt a sympathy for the inventor's genius and the artist's skill. Then advertising to the importance of some comprehensive plan for imparting popular instruction in science, literature, and art, he gave it as his opinion that every city and provincial town should have its philosophical institution and school, with its museum and collection of models,—to the latter of which he thought that great national depository, the British Museum, might contribute its duplicates, which neither added to its beauty nor increased its interest.

Water Supply.—Notices have been served, in name of Government, on all the different water companies who now supply the metropolis, that a Bill will be introduced in the ensuing session of Parliament, to repeal the whole of the Acts whereby they are constituted. The Bill to be introduced provides, it appears, for a constant supply to every habitation on the principle of high-pressure, under the control of local boards, elected by the ratepayers; the cost of the supply and management to be borne by a rate on house property.—The Henley-on-Thames and London Aqueduct scheme is also announced for renewed discussion in Parliament.—Similar notice has been given of application to Parliament to incorporate the Lee River Water Company for service of the metropolis north of the Thames; and the New River Company are in the field with notice of their Bill to improve supply, and to alter river courses, make reservoirs, &c.

Omnibus Reform.—It seems to be more reasonable that the public should be charged according to the length of distance they go (either a penny or twopence per mile,—the former is quite sufficient), instead of from place to place. Some will ask how is your distance to be known? Why, in this way. In the omnibus should be an apparatus for recording the distance travelled. Then let every conductor be furnished with a number of "dial tickets," as they may be called, with a dial printed thereon, the same as the dial in the omnibus; and there may be also marked on the ticket the name and number of the omnibus and of the conductor also; as each passenger gets in, let the conductor mark on the ticket the position of the arrow as it stands on the dial of the omnibus, so that by comparing one with the other when the passenger arrives at his destination, the distance may be instantly ascertained, and no cheating whatever can be carried on.—*Sid*.

Rating of Railways.—The parish of St. Pancras, under the direction of Mr. Penfold, and other practical gentlemen, are, it appears, determined to try their strength in the enforcement of a rate against the London and North-western Railway Company, upon an estimated rateable value at the Euston and Camden stations of 34,000*l*.—*Railway Record*.

Metropolitan Sewers Commission.—A court was held on Wednesday last, in Greek-street, Mr. Lawes in the chair, when tenders were opened for sewage works in Shrubland-place, Dalston, for which Mr. Hill's tender for 352*l*. was accepted. Other works were referred to the engineer, in consequence of the close approximation of the amounts of tender. Capt. Dawson's motion, that the expenses of the sewage works in Dacre-street, Lee, Kent, should be wholly charged upon the district rate, was put and carried. A large number of works were then ordered.

Road-making.—The following tenders were received in answer to an advertisement in *THE BUILDER*, for roads at Bromley.—J. Y.

Clark	£480	0	0
Moore	272	0	0
Colson	244	10	0
Waller	240	0	0
Seymour	210	0	0
Stevens	180	0	0
Hardland	187	4	0
Beckles	185	0	0
Lovett	173	0	0
Murray	148	0	0
Morum (accepted)	145	0	0
M'Kay and Morgan	117	17	6

(and extra for gravel)

N.B. VULCANIZED WASHERS and SHIFET RUBBER on Steam and Hot Water Pipes, and Packings for Pistons and Gland-Boxes of Steam Engines, cut any size to order.

The Builder.

No. CCCCLX.

SATURDAY, NOVEMBER 29, 1851.

AUTUMN usually brings other falls besides the "fall of the leaf." We have before us the particulars from various quarters of chimney-breasts that have split, party-walls that have slipped or sunk, and houses that have doubled up just as the roof was being put on. Nor will any one be surprised to hear of these occurrences whose attention is given to the proceedings of speculative builders, in the suburbs of London especially. We were going to call them *accidents*, but the expression would not be correct. Accidents are explained as "chances;" accidental, as a "quality non-essential;" whereas, in truth, with many of the buildings to which we are alluding, that they stand is the accident, instability is a quality not separable from their constitution. In many cases, the bricks are bad, the mortar is bad, the work is bad, and the disposition of the supports is bad: what keeps them together until the work sets can scarcely be pointed out, and the fact that falls only occur occasionally (much oftener, though, than some think, because, unless life be lost, they seldom come before the public), serves to show what may be done with good materials properly placed. Of course, there are many exceptions, and those builders who do their work well, and strive to produce houses not merely to sell but to last, as the witnesses we would call to prove the extent to which rubbish such as we have pointed to is prepared for the market.

The removal of the brick duties has not yet produced that improvement in the make of bricks which we ought to find: large quantities of the worst description are at this time being sold at prices for which a good material ought to be provided. The Great Exhibition shewed, what every one knew, that bricks of the most admirable quality, bricks far exceeding stone in hardness and durability, could be obtained in various parts of the kingdom; but as bad bricks can be obtained for less than good bricks, so long as houses built of the former will sell as readily as if the better had been used, especially if bedizened with a little compo, the knowledge is of very little use, and builders for the market will continue in their present course. It would be useful to inquire into the circumstances which enable M. Miesbach to produce in Austria the singularly fine bricks exhibited by him in Hyde-park, at the very low price which was mentioned for them. We must repeat the expression of our disappointment that so little advantage has yet been taken of the free course for industry now open in brick-making. Processes should be sought to cheapen and improve, and no bad bricks should be allowed to leave the field. Such a regulation as this would soon get a maker a reputation and a fortune. There is nothing that a good brick is not capable of: if we may laugh on our road, we would say that the multitude, when they term the best of fellows "a regular brick," show an appreciation

of this fact. There are some bricks that will bear anything, and that too without a wince,—look, for example, at the lower courses of some of our monstrous chimney-shafts, higher than St. Paul's,—while others yield unconditionally to a shower of rain. To put a less extreme case: we tried one morning the bricks that were being used in two neighbouring buildings, one resisted uninjured fifty tons, the other was crushed by three!

It is a common practice with "cutting" builders to compound the mortar with the earth dug out of the foundations, in lieu of sand. The surveyor for the ground landlord, should he employ one, may beg that this be discontinued, may swear, may threaten that he will withhold his certificate for a lease; often wholly in vain, the builder trusting to the good nature of the ground landlord, the desire of the solicitor of the estate to issue leases, or unwillingness on the part of the surveyor, when the house is up (and has not tumbled down), to punish him with what would in many cases be ruin.

We have in our own practice wrongly yielded often enough, and permitted leases to be granted where intreaties have been in vain, and the houses insufficiently built. But in two or three cases we have been forced by considerations of duty to refuse a lease, and the result has necessarily been very serious. We should be glad if the mention of this led some to reflect upon the matter, and spare us and others the necessity of a similar step.

The opinion seems to be general amongst the bricklayers employed on the class of houses to which we are alluding, that headers are quite unnecessary; that if the walls be built of whole bricks and bats to look like headers and stretchers, any tie between the outer face of the wall and the inner is quite uncalled for. We have several houses in our mind at this moment where the facing of the walls being a better sort of brick, is, from bottom to top, simply tied to the inner part of the wall by headers 4 feet apart every way! The men know better, spite of all that has been done to destroy the race of skilled bricklayers: they know perfectly well that the wall is unsound, but if they are not building for themselves, in which case desire to save leads them to the evil, they are forced by the instructions of their employer to act as they do.

Add to what we have been pointing to, imperfect foundations, sham arches, pockets in the chimney-breasts filled with rubble, the absence of even timber bond (bad in the long run, but useful in the first instance when hoop iron and cement are not used, as they should be), and our readers will agree with us that the *accident* happens when a house so built stands.

For much of this, house-buyers are to blame: they look at the outside with eyes that see not, found their calculations on the rent which by some means or other has been obtained for the frail tenement for which they are in treaty, and discover too late that they have bought a constant source of expense and annoyance. If in all cases an architect or other competent person were called in previously to the purchase, to examine the house, the buyer might be spared this loss, the honest and able builder would be protected, and those who have practised the "cutting" system would find it necessary to mend their ways and build better.

MINERAL PRODUCTS RELATING TO THE BUILDING ARTS IN CLASS I. OF THE GREAT EXHIBITION.*

OLITES.

No. 29 contained several specimens from the great or Bath oolite of Combe Down near Bath, Corsham Down between Bath and Chippenham, and from the Box tunnel near Bath. The Combe Down stone, in the commissioners' report, is set down as weighing 116 lbs.—but Mr. Howard, the exhibitor, gives the weight at 125 lbs.—per cubic foot. Besides its use as ashlar in the works of the Kennet and Avon canal, in the Somerset coal canal, restoration of Henry the Seventh's Chapel, Westminster Abbey, and many other works, this stone is extensively used for ridges and troughs. This stone by means of the Great Western Railway ought to be supplied in London for about 1s. per cubic foot. The specimens from Box and Corsham weigh about 122 lbs. per cubic foot, and have been used in Laycock Abbey, Longlat, Bowood, south front of Wilton House, Windsor Castle, &c. These, and all the stones from the neighbourhood, ought to be supplied in London for something less than the Combe Down stone, the price of scabbled blocks at the quarries being only 6d. or 7d. per cubic foot. Besides these there are several specimens from Pickwick and the north end of the Box tunnel, one of which is described as "a good weather stone," and the weight of different specimens is said to vary from 124 lbs. to 140 lbs. The Box stone contains 9½ per cent. of carbonate of lime, and the disintegration is considerable, being equal to one grain in 377.

No. 29 also contained a specimen from the lower oolite of Dundry, a remarkable hill of lias in the neighbourhood of Bristol, capped by a patch of lower oolite. The Dundry stone is not so light a cream colour as the stones which have been described from the middle oolite; nor is the grain so fine: its weight is 135 lbs. This stone was used in the construction of Bristol Cathedral and the splendid pile of St. Mary, Redcliff.†

Nos. 181 and 193 both contained specimens of stone from the lower oolite of Ham-hill, Yeovil. This stone is not so light-coloured as those from the neighbourhood of Bath, and may be described in the words of the commissioners as a light ferruginous brown: used very extensively throughout the neighbourhood: weight 141 lbs. 12 oz. per cubic foot. Its composition varies considerably from that of the other olites, principally by containing silex and an admixture of carbonate of magnesia and iron alumina. The analysis is as follows: silica, 4·7; carbonate of lime, 79·3; carbonate of magnesia, 5·2; iron alumina, 8·3; water and loss, 2·5; bitumen, a trace. The disintegration nearly as great as in the Bath stone, being 1 grain in 500.

No. 193 and No. 160 had also specimens from Monkton Farleigh Down, the great oolite near Bath. It was used in parts of Buckingham Palace, in Hoare's Banking House, and in building St. James-square, Bath.

No. 193 further contained specimens from the great oolite of Langton Herring, near Weymouth, and from the lower oolite of Douling, near Wells, Beaminster, Crewkerne, and Bothenhampton, near Bridport, the latter of which is also used for paving-stone. Neither of these stones is in great repute except that of Douling, which was used in all the surrounding churches, and in Wells Cathedral, the quarry from which the stone was procured still bearing the name of St. Andrew, to whom the cathedral is dedicated.

The oolite of Tisbury, Wilts, is remarkable for a bed of flint, which presents beautiful sections of madreporas belonging to the *genus astrea*, the hexagonal sections of which appear wherever the stone is cut and polished. The hexagonal cells also appear on the rough, undisturbed exterior of the flint stones, the centre of each cell being hollowed out as in a recent sponge.

* See p. 715, *cont.*

† An account of the quarry appeared in our pages some time since.

THE PORTLAND STONE.

This formation, as well as the Purbeck stone and Sussex marble, to be hereafter described, although generally ranked in the upper part of the oolitic series, have been separated from the true oolites for the sake of simplicity, and because they are not continuous, like the ranges of the middle and lower oolite, but are confined to particular districts, or feebly represented in other parts of England by rocks whose constituents are widely different. Thus the calcareous beds of the Isle of Portland, to which the name of Portland stone is confined, do not appear in any other part of England, except in the vale of Aylesbury, where they are not worked to any great extent. The Kimmeridge clay, however, which represents part of the Portland formation, namely, the clay on the north side of the island which underlies the Portland stone, is met with in the vale of Pickering: it also borders the chalk and lower green sand of Lincolnshire, and with the Portland oolite already mentioned, fills a considerable breadth in the vale of Aylesbury. Capped occasionally by irregular patches of oolite, the clay goes on following and underlying the green sand of Oxfordshire, Berkshire, and Wiltshire, where it disappears near Wincanton. It appears again under the South Downs of Dorsetshire, and in the Isle of Portland, where it is overlaid by that great mass of oolite so well known under the name of Portland stone.

There are no less than fifty-six quarries in the Isle of Portland, and the stone produced from them may be divided into three distinct varieties, namely the *cap*, the roach-stone, and the freestone beds in common use for architectural purposes. The *cap* occurs in one or more beds of whitish cream-coloured very hard limestone, with partings of clay, and generally occupies a thickness varying in different quarries from 5 to 12 feet. This stone is seldom used for building purposes, but is extensively burnt for lime.

The roach beds are very peculiar in their structure and appearance, being almost entirely made up of the casts of molluscous animals, both univalve and bivalve, united by an earthy and sometimes slightly crystalline cement. The material of the shell in this stone has been generally destroyed, so that there is a hollow lift between the casts and the matrix in which they are embedded. This gives rise to a very peculiar appearance in the stone, which is not deficient in strength, but is seldom used for the exposed faces or parts of buildings. The roach is usually about 2 to 4 feet thick, although in some of the quarries the roach-stone replaces one of the beds of freestone; in which case it sometimes reaches ten feet in thickness. The freestone beds are a light cream colour, fine grained, generally with an oviform structure, mostly fossiliferous, the cement of the stone being semi-crystalline in the best specimens, and in others somewhat earthy, and decomposing much faster than the imbedded fossil shells, which are seen in some buildings standing out in relief. The thickness of the freestone beds is generally from 7 to 10 feet. The cost of the best stone at all the quarries in 1839 was 1s. 4½d. per cubic foot and about 2s. 3d. in London.

No. 180 contained specimens of Portland stone dressed in a variety of ways, and showing its applicability to ornamental carving. The roach stone is dressed with hollows to imitate rock-work, so that the natural hollows in the stone do not appear as a blemish, but rather as intentional and ornamental. There are several ingenious contrivances for dressing this stone in such a way as to neutralise the unsightly appearance of the hollows; such, for instance, as representing the stems of ivy climbing up a wall, and producing other varieties of rugged surface.

No. 160 contained numerous specimens of the Portland freestone of a light cream colour, fine grain, and compact structure. These represent the material used in the Royal Mint, the Bank of England, British Museum, Fishmongers' Hall, Bethlehem Hospital, and Bridgewater House, among modern buildings. The employment of Portland stone in St. Paul's Cathedral, the Monument, Westminster

and Blackfriars Bridges, the Horse Guards, and nearly all the metropolitan buildings of corresponding age is well known.

No. 160 also contained a specimen of roach stone from the Portland quarries. This stone contains numerous casts of fossils, with hollows between the casts and the matrix; the part surrounding the hollow being hard and semi-crystalline. In some cases the substance of bivalve shells is left. These are frequently large species of oyster or mytilus, and probably serve to strengthen the stone. The specimen has a dingy cream colour, and represents the stone used in the piers of Blackfriars-bridge, Dover-pier, Weymouth-bridge, &c.

No. 173 and No. 193 exhibited specimens of Portland stone from the freestone beds, about which there is nothing particular to notice.

Although this stone has been a general favourite for many years, it seems now to be less thought of. No doubt a great deal of the modern prejudice against it has arisen from the deception practised by parties connected with the quarries, and the neglect of care in selection. The stone from Waycroft Hall quarries, on the east side of the island, was used for Goldsmiths' Hall, the Reform Club-house, and some other buildings of note; whilst no one can doubt for a moment that the Grove Quarries at Redcroft and Bowers, which supplied the stone for St. Paul's Cathedral, and many other metropolitan churches, are still capable of yielding good stone. To show however with what care and judgment the particular beds should be selected, it has been found that the upper bed of freestone is the best in some quarries and the worst in others. The present condition of St. Paul's Cathedral is exceedingly good, the carvings of flowers, fruit, and other ornaments, although blackened, being as perfect as when first executed. In fact, the black appearance of the stone is a sure indication that no decay is in progress; whereas, when the Portland stone looks white, the appearance is probably caused by slight decomposition of the surface.

The weight of the Portland stone varies from 135 to 147 lbs. per cubic foot, and the stone from Waycroft was particularly examined by the Royal Commissioners in 1839. It consists of 95 per cent. of carbonate of lime, being a larger proportion than any other stone which they analyzed: the other principal mineral ingredients were silica and carbonate of magnesia, of each 1·20 per cent. The disintegration of this stone was only 1 grain in 1,600, being very much less than in any other limestone that was tried.

THE PURBECK STONE.

This formation overlies the Kimmeridge clay in the Isle of Purbeck, and probably overlies and conceals the Portland oolite there. It also appears at Chicks Grove, in Wiltshire, filling up the Vale of Nidder towards Salisbury. It consists of various beds of stone ranging in colour from a light cream to a very dark grey, and sometimes a brown, several beds being used for flag pavement, others being freestone used as ashlar, alternating with inferior beds of stone, clay, &c.

The principal quarries in the Isle of Purbeck are in the neighbourhood of Swanage, where the stone is shipped in large quantities.

No. 160 contained several specimens of Purbeck stone from the Swanage quarries, namely, a whitish cream-coloured stone, with a slightly oolitic structure from the Purbeck Portland quarry at Swanage. This is the upper bed, and is used for troughs, sinks, and steps. This stone has been employed for the lighthouse at Margate, the clock-house of Dover Pier, the prison at Winchester, the West India Docks in London, the lighthouse at the Isle of Wight, the obelisk at Encombe Park, and numerous churches, bridges, &c., in the neighbourhood. Weight per cubic foot, 151 lbs. Price in London, 1s. 9½d. per cubic foot. A block from the third bed from the top in Swanage quarries is also a whitish cream-coloured stone, not so oolitic as the last, and with somewhat more crystalline structure, owing to the abundance of fossil shells, frequently intersected by narrow fissures filled with pure carbonate of lime about one-eighth of an inch

wide. Specimen from Swanage Downs vein, being the fourth vein from the top, a very light greyish stone used for paving. Block from Swanage Quarries, being the fifth vein from the top, a dull brownish grey-coloured stone, containing probably more alumina than some of the former varieties, moderately fossiliferous, intersected in many directions with very minute cracks filled with crystallized lime. This stone is much used for ashlar, and for the curbs of foot pavement. Specimen from the fifth bed, sixth vein from the top in Swanage quarry, a compact greyish limestone, very fossiliferous, used for paving, steps, and ashlar. Block from Feather Quarry, Swanage, a darkish grey-coloured limestone, very fossiliferous, used for ashlar, curbstones, steps, &c. Specimen from Leaning vein, the next below the Purbeck marble, a cream-coloured, very compact, fossiliferous, and moderately crystalline stone used chiefly for pavements, curbstones, and steps.

No. 160 and No. 193, contained specimens of Purbeck marble, a dark grey-coloured limestone, almost entirely composed of univalve shells of the genus *Paludina*, cemented together with an argillo-calcareous basis. This stone takes a beautiful polish, and was formerly much used for slender columns and shafts in our cathedral churches, few of which, in the south of England, are without specimens of this marble. Even now it is used for hall and library tables, slabs, mantel-pieces, &c., the sections of the shells on the polished surface being very ornamental, and sometimes grotesquely fanciful.

No. 193 contained one or two other specimens of Purbeck building stone, which do not differ from those already described.

No. 135 contained a very handsome block of Purbeck marble 4 feet long and 18 inches square, polished on several of its sides. This specimen was from Woodyhide, near Corfe Castle, and was used in decorating the interior of the Temple Church.

No. 202 contained two specimens of Purbeck stone from Chicks Grove, near Tisbury, Wilts. These are both of a whitish cream colour, fine grained, and are much harder than the other. The hard variety is used for steps, pavements, monuments, tablets, &c., and occasionally for troughs. The soft is used for fronts of houses, cornices, and general building purposes.

No. 152 contained a specimen of Sussex marble which very closely resembles the Purbeck marble, except that the prevailing fossil is usually a larger species of *Paludina* than in the Purbeck. Beds of Sussex marble, seldom exceeding a foot in thickness, range for long distances in nearly parallel courses throughout the weald of Kent and Sussex, and the variety called the Petworth marble is almost as well known and as extensively used as the Purbeck marble. The wealden beds of Kent and Sussex are supposed to occupy geologically a higher place in the oolitic series than the Purbeck oolites. The wealden formation of Kent and Sussex, consisting, in its upper part, of a thick mass of bluish clay, called by the older geologists the oak-tree clay, and in its lower part consisting chiefly of arenaceous beds, contains few building stones of much consequence. A species of very shelly limestone, termed Sussex marble, much resembling the Purbeck marble, occurs at Petworth, and numerous other places in the weald clay chiefly in thin beds a few inches in thickness. In the arenaceous part of the formation as at Horsham, Hastings, and Tilgate Forest, beds of sandstone occur suitable for building, and occasionally flag stones are met with. Ironstone is disseminated throughout the lower part of the wealden formation in the shape of irregular concretions, and also in laminated buff-coloured beds.

No. 50 contained specimens of a white siliceous stone termed locally Hastings granite. This is a mere stratified aggregation of pure siliceous particles, with a calcareous cement, and bears no resemblance whatever to granite. It also contained a specimen of grey calcareous rock from Tilgate Forest, which is used for a building stone at Hastings, and particularly in the new houses at St. Leonard's.

BUILDING STONES FROM THE GREEN SAND FORMATION.

This name is assigned to a well-marked series of arenaceous and argillaceous deposits, which everywhere accompany and pass under the chalk of this country. The series is usually arenaceous in its upper and lower members, the upper green sand consisting of siliceo-calcareous beds, which furnish a valuable freestone, the middle part consisting of a thick argillaceous deposit, provincially termed the gault clay, and the lower part consisting frequently of elevated hills of sand indurated occasionally into stone, sometimes highly arenaceous and sometimes containing carbonate of lime in a considerable proportion. Other products of economical value in the green sand formation are fuller's earth, scythes, iron pyrites, sand for moulding purposes, glass making, &c. Throughout the whole elliptical basin of the weald of Kent and Sussex the green sand accompanies the chalk from Hythe on the coast of Kent, to Petersfield in Hampshire, whence it returns to accompany the chalk of the South Downs to the Sussex coast at Pevensey and Beachy Head. The green sand of the West of England, which yields all the specimens of this stone in the Exhibition, excepting those in the weald, again accompanies the irregular outline of the chalk in the counties of Wilts and Dorset by Warminster and Shaftesbury, passing round to the coast between Weymouth and the Isle of Purbeck. Another and a detached mass of the green sand formation constitutes the Black Down hills in Devonshire and occupies the country about Chard, Honiton, and Sidbury. The whole formation takes its name of green sand from the presence of a peculiar green mineral, which occurs abundantly in the indurated beds of the series. This mineral, which is so plentifully disseminated in some of the beds as to give them a decided green tinge, occurs in small crystals, and is now generally understood to be a green silicate of iron.

No. 160 contained a block of freestone from the upper green sand of Godstone, Surrey. This stone is a very light grey coloured stone, tinged with green and abounding with mica, and was formerly much used as a building stone, having been so employed in Westminster Abbey, and the cloisters and other old buildings, also in Hampton Court, Windsor Castle, numerous churches in Surrey, the Town-hall and almshouses at Croydon, and several modern houses in Gattin, including Gattin House, the seat of the Countess of Warwick. The Gattin freestone, which was used for some of these buildings, does not differ from the Godstone, so that it is unnecessary to make any distinction between them. The weight of this stone is usually about 103 lbs. 1 oz. per cubic foot. It is the common hearth-stone of London, so extensively employed for cleaning hearths, door-steps, stone stairs, &c., for which purposes it is daily hawked about the streets. The fire-stone is also very much used for lining furnaces, stoves, bakers' ovens, and for every purpose to which fire-brick is applied. This stone was formerly conveyed by a tram-road to Croydon, and thence by canal to London, the price there being 1s. 6d. per cubic foot. It ought now, by means of the London and Brighton Railway, to be delivered for about 1s. per cubic foot.

No. 160 had also a block of Kentish rag-stone from Boughton quarry, near Maidstone, being a light-coloured greyish somewhat crystalline conglomerate of quartz, with occasionally green particles of silicate of iron imbedded in a calcareous cement containing shells. This stone is very like the Calverley stone from Tunbridge Wells, which was examined by the Royal Commissioners in 1839: weight, 118 lbs. 1 oz. per foot; price, delivered in London, 1s. 2d. per cubic foot. This stone is very extensively used for church building in the present day, and is believed to have been much employed in building Westminster Abbey.

It also contained two specimens from the Iguanodon quarry at Maidstone, namely, a rag-stone similar to the above, being a con-

glomerate of quartz grains, with a crystalline calcareous cement, and the other being a soft freestone termed hassock. The rag-stone of this quarry has been used in many ancient and modern churches, in Harwich breakwater, and in Her Majesty's dockyards at Woolwich and Chatham. The hassock is a soft stone unfit for exterior work, but is much valued for the interior of walls on account of its absorbent properties, and the dryness of its surface. It was used in the walls of Westminster Hall, and of All Saints College, Maidstone. The following analysis is given by the exhibitor:—Carbonate of lime, 53; alumina, 4; oxide of iron, 8; silica, 32; phosphate of lime, soda, magnesia, and sulphuric acid, 13.

FINE ART CRITICISM.

THE office of the art critic, as I take it, is to estimate art-productions,—the *works*, not the persons, of the artists, by the test of a rationally deduced æsthetic standard; to pronounce whether the subject of his criticism, be it architecture, painting, or sculpture, is good or bad, and how far it is either. With the controlling circumstances of the author he has nothing to do: he will commiserate as he best can the pressure of adverse circumstances, or of moral weakness, that may lead the hand of the artist practically to belie the conviction of his heart; but he cannot on this ground conscientiously ignore the faults of his work: there let the artist or architect speak for himself,—let him say, if so the case be, "This work of my hand has many faults, but here I was coerced by such and such unavoidable circumstances; here I gave in to ignorant clamour; there I was seduced by fashion and succumbed to the taste of the day." Whether architects or artists of the present time are in any numbers inclined to use this form of open confession, I am not prepared to say; though I believe that at all times, from the dawn of art till the present moment, true artists have frequently said something like this to themselves, with all sincerity of sorrow, and with all following of amendment.

The intellectual structure of the true artist (to borrow a term from science) appears to me to be endogenous (growing from within outward): like a monocotyledon, the germ of his intellect has but one seed leaf, that, namely, of art-production: to produce, or, as in the highest instances, by foresighted evolution to create, is the direct tendency of his energy,—the vital atmosphere of his existence; and to all objects of his thoughts, on all subjects of his reflection, the question put is (according as his particular branch of art may be), will it paint? will it build? will it rhyme? will it sing? The intellectual structure of the true critic (to continue the same mode of comparison) is exogenous (increasing from without): like a dicotyledon, his intellectual germ bears two seed leaves; leading him, on the one hand, in the spirit of love, to surround himself with the productions of art; on the other hand, in the spirit of knowledge to arrange, to compare, to classify. Like the royal preacher of old time, all things which lie within his intellectual sphere "are full of knowledge: his eye is never satisfied with seeing, nor his ear with hearing;" range beyond range, like the ever-increasing circles in water, the facts of art-production surround his central consciousness, from whence shoot forth the radii of soul-perception, dividing, estimating, and apportioning up to that outermost rind of vital power, beyond which whatever the soul may feel "the mind cannot utter it." Were artists plants, and critics botanists, the question between them would be soon settled; for nature's system of science or of art is always right, and wherever error exists it is always chargeable to the intellectual short-comings of man; for man's destiny is to be the free-willed and faithful friend of Rectitude, and not its natural slave, and therefore in the way of Wisdom as in the path of Peace, man is "made perfect through suffering." But while artists and critics resemble plants in their intellectual structure,—whilst, like them, their growth is liable to accidents of situation and

circumstance,—whilst, like them, they have a natural opposing energy to adverse action,—they have, in addition, what neither plants nor aught else but man has,—a moral consciousness,—an intellectual perception, which enables them so to comprehend their exact position, as most certainly to ensure their ultimate safety; giving them power, either by manly energy of opposition to break the fetters of circumstance, or by the wise humility of prudence to elude them.

If the comparisons I have here drawn be correct, it follows that no man can be at the same time artist and critic; for the proper task of either occupies the full sphere of the soul's energy, and we know that "two equal bodies cannot at the same time occupy the same space." It may be asked, "Does not the artist, then, in his working, employ the faculties of judgment, comparison, and arrangement; and is he not, therefore, inasmuch as he uses these, a critic also?" I reply, he does use these faculties, but as an *artist*, not as a critic: the tenor of his judgment, his elections of comparison, his preferences of arrangement, issue primarily, not from external reflections of the art-mind, but from the internal instincts of the art-soul, or nature. Like potassium, which, when dropped on wetted paper, follows with eager rapidity every line and streak of moisture, so intense is its affinity for water, the soul of the artist, in the hour of his inspiration, follows, with the eager affinity of love, the ethereal tracks of beauty, and the ready hand records the prompt judgments of the fervent heart. But in all this there is no criticism (properly so called), and in the hour of his greatest triumph the artist, if asked, as was once Mozart, "Why did you go so and so, in such and such a way?" can only reply with him,—"I did it so because it was best so."

"Work of his hand,
He nor commends nor grieves;
Pleads for itself the fact,
As unrepenting Nature leaves
Her every act."

The full-powered artist, who should assume the critical function,—the full-powered critic, who should attempt artistic production,—would equally end in failure. The art-canon of the former, grounded too much on individual predilections of style, would want the broad basis of well-considered generalization: the art-productions of the latter, confused by conflicting eclectisms, would result in an example of the exaggerations of all styles, but the beauties of none. Writers without the pale of the profession, it is evident, must take wider views, while action in one particular department has a contractile power on the mind; and we may apply to art what was said by Goethe, in reference to the drama, "thought expands, but lames; action animates, but narrows." Let me not be misunderstood: I mean not absolutely to deny, at all times, and under all circumstances, the capabilities of critical power to the artist, or of artistic power to the critic: to do so would be, not to compare, but to identify their nature with that of plants; making the primary structural nature absolute throughout, which in man it is not: he can modify, control, direct, and change, to a greater or less extent, his mental constitution; but what I contend for is this: 1st. That neither artist nor critic can, as such, become the other; 2nd. That the greatest range of power lies in the direction of the natural psychical tendency; and if we run directly counter to this, we acquire but a secondary advantage, at the expense of a primary one. Whenever, therefore, artist and critic oppose their natural tendencies, and force the tides of energy into each other's domains, they may justly be compared to one who, being naturally gifted with acute powers of vision, should bandage his eyes, and endeavour to define objects by his inferior sense of touch: what his fingers gain, they gain at the expense of his eyes; and so in like manner, in proportion as the artist becomes a critic, he ceases to be an artist. The only way in which either safely can, or does, use the function of the other is in subordination to his own; and, as in all cases, the greatest power, *ceteris paribus*, effects the most absolute

result, the artist is the best art-producer, the critic the best art-judge.

But what are the qualifications of the critic? for qualifications he must possess, as well as the artist. I have attributed to him the spirit of knowledge and of love,—and these every genuine critic of art must possess,—a profound knowledge of its principles, to which every opinion should be referred, and some technical and practical knowledge of it also, with “no obscure notions gleaned from the past,—no popular maxims cherished as truths.” He should be capable of understanding general and abstract truth; susceptible to the impressions of nature, and to all the mighty influences of life; fully alive to beauty, and capable of discerning and of disentangling it, however involved amid defects. Every reader of a poem, or spectator of a building or picture, should seek to imbibe the spirit of the work before him if he would derive the utmost profit from it: by so doing he may rise for a moment to the same eminence, and be wrapt into the same sphere of thought as the author in its conception. But he may be incapable of doing this: if so, he is not qualified to be its critic; its light has not yet reached him; his perceptions are not educated up to it, or it is beyond his intellectual powers. The fine arts are dependent on many sciences—as painting and sculpture on anatomy, architecture and music on geometry,—and these a writer must know something of before he can be a critic of art; and such acquirements, moreover, should be engrafted on, and adorn and strengthen, a mind acute and observant; that adores the beautiful, and is sensitive to the throbbing life around. Great knowledge, also, of extant art is necessary to the critic, that he may be able to detect plagiarisms; as well as an intimate knowledge of the elements, and an acquaintance with their capabilities of producing beauty; as a want of them must lead to error, and he will attribute beauties to the artist that belong to the elements he employs, and which he could not possibly have avoided; or, in the case of architecture, may be deceived by a mechanical excellence traceable no higher than to the mason or joiner: critics do not always distinguish between the design of the architect and the mechanical merit of the execution.

There are things it is important should be kept in view by the critic: he must never forget that art—the spiritual expression of nature and of human history and life,—is an infinity; and that the artist is all his days a student; that the happiest execution of the loftiest genius is but approximation. He must remember that, where the conception is great, little errors of execution may be pardoned; that great beauties should hide a multitude of small faults; a maxim that has been acknowledged and acted upon by great and genuine critics in all times; the origin of many figures of speech being found in the desire to cover such unavoidable errors or deviations in the writings of the great poets. “The more original,” says a last century writer, “any performance is, the more it is liable to deviate; for cautious stupidity is always in the right.” He should not overlook the fact that the artist works under certain restrictions; that every medium of human utterance is necessarily imperfect; that no artist can give us his idea in the full power and beauty of its conception, but his thought, weakened or defaced in its execution by his vehicle of expression: there is no language, it is said, that can fully and perfectly express all the ideas and sensations of man, so numerous and imperceptible are their shades; and the observation may be extended to the expression of the fine arts: besides, many a great art-soul may have a natural impediment in its utterance, for which allowance must be made in judging of its works. Among the best judges some difference of opinion will inevitably prevail upon great works of art. “Where art is concerned,” observes Mrs. Jameson, “the faculty of seeing becomes itself an art.” The faculty of delight in beauty needs to be educated like all our faculties; and unless under equal culture two men can scarcely see the same object; their constitution and relationship with

nature are different; and according to their sympathy with nature, and the strength of their mental faculties, is its effect upon them: they see it through unequal media,—visions influenced by different degrees of mental culture and original power.

From our sketch of the true critic let us turn to the critic of the day. It is a self-evident, and we might almost say, a geometrical fact, that no man can be fully estimated but by his equal or superior; yet men have pronounced judgment on works of art whose minds never dwell for a moment in that region of thought to which they belong, and who can no more comprehend them than the lesser body can contain the greater. Men who are naturally deficient in feeling and imagination can, of course, have but small appreciation for anything beyond mechanical dexterity; and the higher the quality of the work the more likely is it to be lost upon them. Works are preferred in which the higher qualities have been sacrificed to the lower, intellectual to mere sensuous beauty, true grandeur to magnificent display; and the tendency of their strictures would at first sight appear to be to strangle genius in its birth; for on such, of course, the finest strokes of nature and passion are lost. Such must judge by rule; and anything out of the beaten track they will not recognise. They must prefer the laborious compositions of study to those of true genius. Commonplace, unimaginative, and cold correctness they will applaud; but the man who hangs a fresh garland on the shrine of art, or plants a new stem, they cannot understand; for the more original any work of art the more liable is it to transgress their boundary and go beyond the horizon of their intellect.

Not only is defective nature, want of largeness and comprehensiveness of soul, evinced in art criticism, but even ignorance of the grossest kind. How often does the critic find fault with a work because it has not the qualities belonging to some other and higher walk of art, thus running counter to the first principle of criticism, which, as Pope says, is to consider the nature of the piece and intent of its author. They resemble some critics of Homer and the great poets, who blame their author for not doing what he never designed to do, and which was inconsistent with the nature and scope of his work. Too often they go further, and rail at him for his choice of subject, the walk of art which he pursues; forgetting that most men succeed better in one department than in another, and that each man's task allotted by heaven is to do that which he can do best.*

S. H.

OUR FEMALE POPULATION.

DOMESTIC SCHOOLS.

It was with much pleasure that I read a letter which appeared in your journal of October 11, from “C. M. E.,” on the condition of the poor, especially of the female population. The writer well insists on the necessity of “making the poor fit” for those dwellings which, in the form of the Model Lodging Houses, are now in every direction being erected for them. The education of our female poor is a matter of such vast importance, that the subject should be pressed from all sides, and brought, if possible, under the immediate notice of our gracious Queen and her philanthropic consort, that some decisive and effectual steps may be taken to carry out so desirable an object. In some countries, the youth are educated at the charge of the Government, to do their duty in that state of life to which it has pleased God to call them. In our own land (blessed above others in many respects) this point is as yet neglected. Feeble efforts to supply this want are made by a few individuals in some of our provincial towns, where the girls are more than commonly felt evils, resulting from the number of young girls leaving schools without employment, and hopelessly ignorant how and where to obtain any. We have our infant and national schools for the instruction of children, poor houses and prisons for the aged poor and criminals. These institutions are established

* To be continued.

and supported by Government. To these may be added those objects which a benevolent public are ever ready to promote,—Ragged Schools, for gathering in the most destitute of our children for instruction,—female penitentiaries, to receive those who have destroyed their own happiness. But where is any effort made commensurate with these undertakings to educate and train our young scholars in habits of practical usefulness? Surely at that most critical period of life, when our youth begin to be conscious of their own independence, and struggle to assert it by a more self-willed line of conduct,—surely, then, more than ever should we, as a nation, endeavour so to educate them, that they may, by God's blessing on the effort, prove useful members of the great human family, instead of walking our streets cursed and cursing, ending a short existence, either in the bitterness of penitence in a penitentiary, or in starving misery at home.

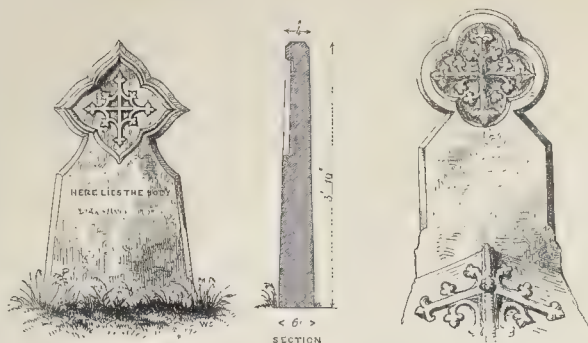
If others would bear their testimony, and raise their voices in behalf of this neglected portion of our female population, some plan for the amendment of the evil might be effectually furthered.

In this town (Southampton) a large sum is talked of as the probable cost of the erection of a gaol. When erected, the country must be further charged for the maintenance of prisoners lodged there. Consider also the money expended upon the erection of poor-houses, and the charge upon every parish for the support of the infirm sick and vicious sent there. It will be urged that these are necessary burdens; but if our Christian land can testify its spirit of forgiveness by doing so much for the vicious and criminal, might we not reasonably hope that it will be ready to spend what would be necessary for the purchase or erection of a suitable home, in which girls might be received and trained for domestic service, and rescued from the prison or the penitentiary? Let such a home be procured, and such an institution be established, and I hesitate not to say that it will support itself. No supplies from Government, no rates from a parish, will be required to keep a training school of this description at work. A small effort at a domestic school has been made for young girls in this town, and the effort has been blessed beyond expectation, as far as those it is intended to benefit have been concerned. Parents are willing to part with the weekly sum of two or three shillings towards the maintenance of their children in the school. The benefits of the school are so prized that they consider it a privilege to gain admittance for a child, and joyfully and regularly pay the sum required. These payments, added to the earnings of the girls in school by industrial occupation, would, without any doubt, support the institution; but it must needs be launched into existence. What is required for the efficient working of such an institution is a conveniently arranged building. The subject is of too much importance to be discussed in one letter, but if any read this who have hearts to feel and money to give to those who will heartily and conscientiously use their bounty for the honest test of a most important principle—i. e. the education of young girls in industrial and domestic employments—let them pity and help these young ones in a town where vice abounds, and temptation besets them at every step; let them have compassion on their mothers, and save them from the bitterest agony a mother's heart can know.

F. M. R.

WRITING AND DRAWING PAPER. — A medal was awarded to Mr. Joynton for his writing papers; and Mr. Wetton, of North Audley-street, having consideration for the quantity of paper we are weekly obliged to spoil, has sent us some of it to try, including a portion of an enormous sheet of double elephant. Sir Toby Belch speaks of a sheet of paper “big enough for the bed of Ware.” But here was a sheet in which a hundred such beds might have been tied up and sent home. It was 2,500 yards long, 46 inches wide, and weighed nearly seven hundred weight. It is only just to say that the paper seems excellent.

CHURCHYARD MEMORIALS.



CHURCHYARD MEMORIALS.

It is scarcely possible to walk through a churchyard without feeling the importance of inducing the selection of proper sepulchral memorials and epitaphs. There has been melancholy work done both in the churches and the open grounds; in the former positive damage to some of the finest buildings, and in the latter opportunities for useful teaching not merely missed, but so used as to do mischief and give pain. Since Dr. Markland published his excellent "Remarks on English Churches, and on the expediency of rendering Sepulchral Memorials subservient to Pious and Christian Uses,"* a correcter feeling on the subject has become more general than it was, though we still too often see the walls of our churches plastered with

"Moral Monuments, every size,
That woe could wish, or vanity devise."

We once met with an epitaph as nearly as we can remember like the following:—

"Underneath this ancient pew
Lie the remains of Jonathan Blue:
His name was Black, but that wouldn't do."

That any man could have set to work to cut this deliberately into stone, letter by letter, is surprising, but that his courage lasted him out is more so.

What shall we say, too, to this at Winchester, put up at the end of the last century:—

"Here sleeps in peace a Hampshire grenadier,
Who caught his death by drinking cold small beer.
Soldiers, be wise from his untimely fall,
And when you're hot, drink strong, or none at all."

"Affliction sore
Long time I bore," &c.,

so often met with, and such as

"Here I lie, and no wonder I'm dead,
For the wheel of a waggon went over my head,"
seem inoffensive after such ribaldry; and one can almost excuse, on the ground of its purpose, the American tomb-stone, which is inscribed,—

"Sacred to the remains of Jonathan Thompson, a pious Christian, and an affectionate husband. His disconsolate widow continues to carry on the tripe and trotter business at the same place as before her bereavement."

As a contribution towards the improvement of our rural churchyards a small volume has been recently published by the Rev. W. Hastings Kelke, rector of Drayton Beauchamp. It is entitled "The Churchyard Manual," and contains, with remarks on churchyards, showing the importance of giving them a true Christian character, a collection of 501 epitaphs, not all such as we would choose, but mostly good, and many excellent.† An epitaph should be "simple, monitory, scriptural,"—the "epitome of a sermon teaching the most useful truths in the most comprehensive form." "An epitaph," says Wordsworth,

"is not a proud writing shut up for the studious: it is exposed to all, to the wise and the most ignorant: it is condescending, peripatetic, and lovingly solicits regard: its story and admonitions are brief, that the thoughtless, the busy, and indolent may not be deterred nor the impatient tired: the stooping old man cons the engraven record like a second horn-book: the child is proud that he can read it; and the stranger is introduced by its mediation to the company of a friend: it is concerning all, and for all:—in the churchyard it is open to the day: the sun looks down upon the stone, and the rains of heaven beat against it."

It is not an easy matter to write a good epitaph. "Dear little child," at Westminster, and *Miserrimus*, at Worcester, are touching brevities, not without useful suggestiveness.

Wordsworth, who wrote a charming essay upon epitaphs,* has received one which does not seem to us satisfactory.

"To the Memory of William Wordsworth, a true philosopher and poet, who, by the special gift and calling of Almighty God, whether he discoursed on man or nature, failed not to lift up the heart to holy things. Tired not of maintaining the cause of the poor and simple; and so, in perilous times, was raised up to be a chief minister, not only of noblest poetry, but of high and sacred truth. The memorial is placed here by his friends and neighbours in testimony of respect, affection, and gratitude."

"Some monuments are covered with such extraordinary epitaphs," says Addison, "that if it were possible for the dead person to become acquainted with them he would blush at the praises which his friends have bestowed upon him." Who does not remember the inquiry of the little girl while walking through a churchyard,— "Mamma, where are the naughty people buried?"

Mr. Kelke has illustrated his book with several sketches of simple sepulchral memorials contributed by architects (Mr. Scott and Mr. Slater), and of these we give two examples.

NOTES IN THE PROVINCES.

Bury.—The Guildhall coffees have granted a site for a museum. The old "kitchen," adjacent to the Guildhall, will be pulled down, and a new building erected on its foundation. The committee, it is said, have already a much larger collection than belonged to the Ipswich museum when it was first opened.

Doddington.—Mr. G. K. Jarvis, of Doddington Hall, has contributed a memorial stained glass window to the church. This window contains figures nearly life size: in the centre is our Saviour, with St. James and St. John on one side, and St. Peter and St. Andrew on the other. There are, also, some smaller figures in the upper part, representing the Saviour seated on the throne of glory, in the midst of angels in garments of light; while others wing their flight thither, bearing scrolls. The window is supplied by Wailes.

* Printed in "The Friend;" also prefixed to snow's "Lyra Memorialis."

Hatcham.—In respect to a former statement as to the balance of 300*l.* required for the new church, the architect, Mr. Granville, informs us that the deficiency has reference to the school account. The amount raised out of the 6,000*l.* required for the church is only 1,200*l.* The schools cost 1,200*l.*

Margate.—Damage has recently been done to the jetty, to the extent of 150*l.*, and it is said that of late years it has caused continual expense in keeping it up, to the amount of 300*l.* a-year. A new one is projected, and powers will probably be applied for in the ensuing session of Parliament.

Wells.—A stained glass window, by Mr. Bell, artist in glass, is to be placed in the choir of the cathedral, as a testimonial by the clergy of the diocese to Archdeacon Brymer. The window is of considerable size, and comprises large figures of St. Ambrose, St. Augustine, and St. Athanasius, all of them placed in niches on inscribed pedestals, and surmounted by canopies.

Durrington, Wills.—The parish church in this village being dilapidated and too small for the accommodation of the parishioners, has been almost entirely rebuilt under the superintendence of Mr. Hugal, architect, and was consecrated by the Bishop of Salisbury on All Saints-day. In removing the old whitewash from the walls many traces of colour were discovered, and on the north wall especially, where a portion of the figure of St. Christopher, a mermaid, some fishes, and a broken wheel were very distinct: tracings were taken of them. In the walls which have been removed several fragments of Norman stone-work were found: these have been preserved in the new walls into which they have been inserted on the outer faces. The old oak pewing has been cut down and formed into open benches, and the nave, with its two aisles, are now filled with these seats. A new font of Norman character has taken the place of the defaced perpendicular one. The chancel has been partly restored, but the fittings, it seems, are of the worst possible description, for which, however, we are told, the architect is not responsible. On the south door is some modern ironwork in character with the Norman doorway, which has been restored to its original position, and the Norman arcade now cleansed from generations of whitewash, stands a perfect memorial of the ancient church.

Weston-super-Mare.—Building operations are in an active state in this thriving watering-place. In addition to a crescent and several villas about to be commenced on Weston-hill, a large piece of ground on the northern division of Locking-road has been broken on for the erection of forty houses, to be called "the New Town." They are designed for small tradesmen and mechanics, and will be rented at from 12*l.* to 15*l.* a year.

Kingscote (Gloucestershire).—The church here has been recently restored. Its condition was so dilapidated as to involve the necessity of new roofs, and a rebuilding of part of the walls. It consists of a chancel, nave, north transept, and western tower. The south windows, with that of the east, have been entirely reproduced. The nave has an open frame roof with the chancel. The church has been re-seated with oak, new pulpit, brazen desk, and stall seats also of oak. The whole of the chancel windows have been fitted with painted glass by Ward and Nixon. The tower and the other parts of the church have been completely restored. The expense has been partly borne by Col. Kingscote and the parish; the chancel having been done at the expense of the rector, the Rev. A. G. Cornwall. The works have been performed by Messrs. Whitfield and Son, of Wotton-under-Edge, under the direction of Mr. Teulon, of London, architect.

Bath.—The Assembly Rooms have been recently painted and decorated. The vestibule is of a cheerful colour. The columns, &c., are painted a Sienna marble: the cornices and enrichments are relieved with deep tones: the doors are of oak colour. In the ball-room the style of decoration is more elaborate: the walls are panelled, of an apricot colour; the enrichments in Arabesque frieze; entablature and parapet, in various colours. The columns

* John Murray.
† The Churchyard Manual, intended chiefly for Rural Districts. By W. Hastings Kelke, A.B. London: C. Cox, Strand. 1861.

supporting the frieze have the appearance of ivory: those under the organ are painted an Italian marble. The doors of the room are maple. The whole arrangements have been executed by Mr. Bussell, under the superintendence of Messrs. Manners and Gill, city architects.—On the completion of new warehouses last week, Mr. Titley, instead of a supper, gave to each man that had been employed on the work one month, a fore-spur of bacon and a 6 lb. loaf of bread. Not a bad idea; for the wife and the "childer" would thus come in for their share of the good things. Messrs. Manners and Gill were the architects for the building: Mr. S. Mitchell, contractor: contract, 1,090*l*.

Rotherham.—The completion of a new building for the Savings Bank here was celebrated by a public breakfast at the Town-hall. The Earl of Fitzwilliam, president of the Bank, was present, as were also the Earl and Countess of Effingham and the ladies Charlotte, Dorothy, and Albretha Fitzwilliam.

Mackworth.—The parish Church of Mackworth was re-opened on the 13th inst. by the Bishop of Lichfield. The edifice, according to the *Derbyshire Advertiser*, has been thoroughly repaired, and many of the architectural discrepancies which had from time to time accumulated in its structure removed. As seen externally the alterations consist chiefly in the substitution of a high pitched roof over the nave and chancel, instead of the flat roof which formerly covered them, giving at once greater elevation interiorly, and exteriorly producing a finer harmony with the spire and general design. Where the tracery of the aisle windows had suffered dilapidation, that has been replaced by new mullions, and tracery consonant with the original. The eastern window has been renewed. On the north side of the chancel, a new vestry has been added, but with this exception the alterations have been strictly confined to a repair and restoration of the original features of the edifice. Interiorly the whole of the old plaster work has been removed, and the inside faces of the walls, piers, and arches have been re-hewn. The plain flat ceiling has been replaced by an open roof. The nave and aisles have been fitted with open seats. The chancel has been repaired, the floor having been laid with encaustic tiles, and the sides being furnished with two double rows of stalls in carved oak: the step up to the chancel floor, and the two steps from that to the altar are of highly polished Derbyshire grey marble. The floor within the altar rail is of mosaic, executed in Minton's encaustic tiles.

Lichfield.—Notice has been given that application is to be made to Parliament in the ensuing session for the better supplying with water the city and county of the city of Lichfield, and also the borough and foreign of Walsall, and the adjacent parishes and places, all within the county of Stafford. It is proposed to authorise the construction of water-works and of a reservoir near Trunk-fields, in the parish of St. Michael, Lichfield, and the compulsory taking of all springs and streams arising in and passing through meadows called Pipe-green and Trunk-fields, and all other springs or streams within the parishes and townships of St. Michael, St. Chad, Pipe-hill, Burntwood, Edjall, and Woodhouses, Hammerwich, Farewell and Chorley, Curborough and Elmhurst, in the county of Stafford, and in the county of the city of Lichfield, one or both of them, or any of them.

Huddersfield.—It has been resolved by the Huddersfield Improvement Commissioners to confer with the Ramsden trustees as to the necessity of erecting a suitable townhall for Huddersfield.

Stanley.—The alterations and improvements in Stanley Church are now completed. The expenses, amounting to between 1,000*l*. and 1,100*l*., have been defrayed by Mr. John Maude, of Moor-house. The columns and arches, according to the *Leeds Intelligencer*, have broken the echo, and thereby considerably diminished the difficulty in speaking and hearing. The ceiling has been completely remodelled with timbers of a dark colour. A

chancel has been formed out of the body of the church, which is elevated between two and three feet. The whole has been completed by Mr. Moffatt, of Doncaster, architect. The windows have been beautified and improved. The east window of four lights, is occupied by figures of the Evangelists. The figures stand in niches, with diapered grounds, surmounted by canopies and pinnacles, with coloured crockets and finials resting upon blue diapered ground. The tracery lights are filled with architectural foliage in various coloured grounds, two of which are vine-leaf scrolls encircling the medallions. The large west window is obscured glass, with a coloured border to all the lights. The windows and tablets have been executed by Mr. Heald, of Wakefield.

Hull.—The project of erecting a statue to the memory of the patriot, Andrew Marvel, is revived. The directors of the Hull General Cemetery Company, says the *Eastern Counties Herald*, have resolved "that in the event of no better site being found the directors will recommend to their shareholders the grant of a site in the grounds of the cemetery, and, if accepted, a donation of twenty-five guineas to the fund." Other gentlemen, it is stated, are prepared with subscriptions, and Mr. Thomas Earle, a Hull sculptor, has prepared two designs representing Marvel treading on court corruption.

Ormskirk.—The streets have been in total darkness since 4th instant. The gas company require 7*s*. 6*d*. per thousand, and the inspectors offer to pay 6*s*. per thousand. The Board of Health and the public generally have taken part with the inspectors.

Edinburgh.—The John Knox free church, High-street, close beside the house of the Reformer, is progressing, but any effect of the building, it is said, will be lost from its situation, amidst old and unseemly tenements. This has been the fate of the college belonging to the free seceders, from the edifice being wedged in amidst houses, closes, courts, &c. The operations immediately under Shakespeare-square, connected with the North British Railway, include a large flight of steps and piece of road. The steps are nearly constructed, and strong iron girders are being erected to sustain the footpath. The work is raised to some elevation close to the vaulted apartments of the bridge, formerly used as hay lofts. Building operations, too, at Spittal-street, on the ground formerly belonging to the Improvement Commissioners, are being extended. The buildings are of freestone. The new buildings in Preston-street are finished, and by far the larger portion of the north side of this street is now completed.

Brechin.—The new united Presbyterian chapel, in Mill-street, according to a local paper, has been opened. The architecture is by Mr. J. D. Peddie, of Edinburgh. The building presents a front to the street of about 60 feet in length, consisting of a huge central gable and two side ones, with buttresses and towers, containing mouldings. The interior presents a cruciform appearance, having a central nave and side galleries in the transverse. The house is heated and ventilated by a heated air stove, fitted up by Mr. Smibert, of Leith. The contractors for the mason work were Messrs. Brand and Taylor, and for the wright work Messrs. Gordon and Scott.—There is a new paper work in course of erection in this town: it is to have a chimney stalk 106 feet high. The builder is Mr. Baxter. A coach factory of three stories is also in course of erection.

Paisley.—A Glasgow paper says that, notwithstanding the depression in trade, laboured under for several months, there is scarcely a single house usually occupied by the better class of operatives to be obtained at this term. Even matrimony itself had to be eschewed for want of a dwelling. This is accounted for chiefly from a large influx of block printers, who, as a rule, generally inhabit the better class of working men's houses. Many of the houses, as they presently stand, are said to be a disgrace to the town.

Golspie.—A monument in memory of the late Duchess Countess of Sutherland, erected

by tenantry and others connected with the county, at a cost of about 700*l*., has just been completed. The fountain is of blue granite, the vase over the upper basin and the ball on the top being of polished red granite. The roading from the fountain to the village, a distance of about 300 yards, has been improved and widened. Water is to be introduced immediately into Golspie from the fountain. Pipes from it are to be brought to the village, and laid along the street.—The parish church of Golspie, it is said, is to be shortly improved.

THE INTRAMURAL INTERMENT QUESTION.

On Monday last a deputation from the Metropolitan Sanitary Association (which, by the way, ought to receive more support from the public than it does), had an interview with Lord John Russell and the Chancellor of the Exchequer, to present a memorial "calling his lordship's attention to the continuance of interment within the metropolis, notwithstanding the existence for more than fifteen months of an Act of Parliament passed by unusually large majorities, by which her Majesty's Government were empowered to remedy the evils and guard against the dangers proved to attend the burial of the dead among the living."

The memorial (which was of considerable length) further set forth—

"That the difficulties which have prevented the execution of the Interment Act might have been obviated by provisions which cannot in any fairness be considered extraordinary, since they need be such only as would carry into effect the evident intentions of the Legislature as indicated by that enactment. The difficulty as to the security of mortgages of the rate would have been met by providing that the authority empowered to levy that rate should have perpetual succession. It appears absurd to suppose that Parliament, which provides a rate as a collateral security for moneys to be borrowed, would object to making that security valid.

The other difficulty that was raised, viz., that persons might evade their contributions towards the general expense of the scheme by interring their deceased friends in places of interment just outside the metropolitan district, other than those to be provided by the Board, might have been met by providing, as was evidently the intention of Parliament, that no new cemeteries should be established within the immediate neighbourhood of the metropolis, except by authority; and it cannot be supposed that Parliament would refuse to guard against the creation of fresh nuisances, which, without such a provision, might be expected.

The association trust that your Lordship will recognize the justice of the complaint of those who, having taken an active part in endeavouring to secure a remedy for what they knew to be enormous evils, and having, as they conceived, succeeded, by obtaining a statutory provision adequate to put an end to them, now find, that by the questions which have been raised, and by the delay consequent thereon, the law has been rendered a dead letter.

The Board appointed to administer the Act have repeatedly stated that the difficulties by which it is beset are not insurmountable; and your memorialists deeply deplore that the means for carrying its provisions into execution should be withheld, and that it should be set aside without trial, and, so far as the public are aware, without inquiry, after so much time, labour, and public money have been spent in maturing such a scheme, and after its deliberate and almost unanimous adoption by Parliament; while the evils for which it seems to provide a sufficient remedy are permitted to go on, and do go on with undiminished intensity."

The Bishop of London (who headed the deputation) presented the memorial, and addressed the Premier at some length, pointing out the evils that were caused by the delay in carrying out the measure, and the necessity of coming to a decision some way or another. One great advantage of the plan proposed by the Board of Health, and, as had been supposed, sanctioned by the Government and by Parliament, was, that the poor would be able to bury their relatives decently and with proper solemnity at an expense not much exceeding one-third of what was now paid for that burial which could not be called duly solemn or even decent. It would appear that towards the conclusion of last session the Chancellor of the

exchequer threw a certain amount of dismanagement—to use a popular phrase, "threw cold water"—upon the plan, and led the Board of Health to fear that they could not be able to carry it out; and was intimated that another measure would be brought forward, more in accordance with the views of those who had always opposed this great sanitary measure. His opinion was, that it could never be effectually dealt with except by the Government, and that a board not acting with the authority of the Government, and responsible to the Government, could never carry into effect the complicated and delicate measures necessary. He hoped he should be excused if he mentioned a rumour which was abroad, that it was the intention of the Government to constitute a new board for carrying into effect the object of the extramural interment, such board to have so the control of the sewerage and water supply of the metropolis. Surely these were matters which ought to be kept distinct and separate from one another. It was difficult to conceive anything more calculated to offend a people—who had been going to say to disgust them—to wound some of their best feelings, and placing under one body the interment of the dead and the sweeping of the streets and cleansing the sewers, to say nothing of the subject of water supply. He hoped the rumour was not true, and that the interment of the dead—probably in itself nearly, if not quite sufficient to occupy the whole attention of a board—would be placed under men who would deal with it with the seriousness and consideration which its importance required. For himself, he must say, too, he should be pleased to see the conduct of it taken out of the hands of gentlemen so highly qualified to manage it as the members of the Board of Health.

Mr. Godwin, F.R.S., followed with some observations upon the extreme importance of discounting the burial of the dead in the midst of the living, and the impossibility of preventing the escape of the deleterious gases thus generated. It was not to be supposed that because we had not had cholera the graveyards were not doing their worst work: low fever and typhus fever were for the most part preventable, and a serious responsibility rested upon those who by exertion had the power very much to prevent them and did not do so. It could not be necessary now, when scientific men had proved the evils, when the Legislature had said by Act of Parliament, "it is expedient to make better provision for the interment of the dead,"—to point out the crying want; and yet here we were, fifteen months after the passing of the Act and positively nothing real had been done. The speaker alluded to the surprise expressed out of doors that the Government should be willing to allow money to be borrowed from assurance companies at five per cent. when they could obtain it for half by exchequer bills; and discussed briefly the plan proposed by the Board of Health.

Mr. C. J. F. Lord, Mr. Walsh, and others having made some brief observations, Lord John Russell said, that the difficulties which had occurred were very much difficulties of detail; and questions of this kind, where all might agree upon the principle, depended very much upon the details. The Board of Health had gone into great detail, and it was said their scheme was a very good one. But he found that, when they tried to follow it out, so as to make it practically work, they could come to no other conclusion than that the body entrusted with interment should entirely make it upon itself. Government had a great deal to do, and undertaking to be answerable for the removal and burial of every dead body in a population of 2,000,000, was really a serious matter. With regard to the cemeteries, he believed those which they had engaged to buy, in order to meet any great calamity or pestilence that might befall us, were calculated to inter about 6,000 in a year; it was stated that the whole mortality of London amounted to 58,000 or 60,000, and, therefore, they would evidently not supply the means of burial for the whole, and it would be necessary to go much further, and buy all the cemeteries. It was asked, why was not something immediately done? He would say the Government had not the power to do it. The Board of Health had supposed they should be able to procure money immediately to purchase the whole of the cemeteries: they found themselves mistaken in that, and that it could only be done by applying to the credit of the Government. No power had been taken to purchase more than the

two cemeteries, and it would require an Act of Parliament to enable more to be procured. He would now ask Sir C. Wood to state the way in which the question stood at present.

The Chancellor of the Exchequer observed, that in the beginning of the year, he believed, the Board of Health sent in a proposal to the Treasury, whose consent was necessary, to buy all the existing cemeteries, and an estimate which seemed to be very small. He (the Chancellor of the Exchequer) made some inquiries through the Woods and Forests, and satisfied himself that the sum required would be three or four times as much as this estimate. It was, however, stated substantially that no good could be done unless the whole were bought. Then came the question how the money was to be provided. The whole matter having gone upon the principle that the Government was not to advance sixpence—there being no power in the Act to do so—the question was how the board could borrow. They said they could borrow from assurance companies. They had proceeded all along with the full knowledge that the Act contained no power for the Government to make advances, that that was not the principle of the Act, and that they were not to have Exchequer bills, but to get the money from other sources. Well, why could they not borrow? Because they had no power of insuring the payment of a fee; and they came to this conclusion—"Unless we have the management of all the burials in London, and within fifty miles round it, with a power of charging a fee upon every death, whether the corpse is buried by us or not, we cannot borrow money." Now, that was a very serious power. It was near the end of the session, and he (the Chancellor of the Exchequer) thought it was a power which it was not reasonable, at the end of July or beginning of August, to ask Parliament to give. Unless they had that, the board said they were not sure of a sufficient income to enable them to borrow the money. However, power was applied for to warrant an advance of money to buy two cemeteries, for which the board had engaged in negotiation; and either or both might be taken. He might remark that in Edinburgh no one was buried within the city, but the whole was managed by cemetery companies; therefore it did not seem so absolutely impossible to be done by private parties.

In reply to Mr. Godwin, who asked how long the question was to remain in this unsettled state, and whether or not the deputation might give assurance to the public that the Government saw the importance of carrying out the measure.

Lord John Russell said that the matter must remain till next session; that they felt the importance of the object; but that the manner of carrying it into effect was a matter for consideration.

The inference we are compelled to draw is, that the Government do not intend to enable the Board of Health to carry out the present Act. It certainly seems strange for a Government to say, fifteen months after passing an Act to settle how a desired object shall be carried out, that the mode of doing this has yet to be considered. We shall not be much astonished, however grieved, if the whole fight has to be fought again.

THE PROPOSED ARCHITECTURAL EXHIBITION AND COLLECTION OF INVENTIONS.

As a well-wisher to the efforts now making to establish the Architectural Exhibition on a lasting basis, permit me, through the medium of your widely-circulated journal, to draw earnest attention to these endeavours. The committee may make all exertion, and their officers may spare no pains or trouble, but the whole will be comparatively in vain, if the profession linger in apathetic indifference, careless as to the result, and unmindful of their own advantage.

While it has always been calculated that an exhibition of this kind is calculated to improve and extend public taste in this branch of art, and so to benefit its professors and raise them in public estimation, the cause suffered some injury from the erroneous impression that to support this Exhibition was necessary hostility to the Royal Academy. That idea is now happily exploded: the fact is, that if all the architectural works done in each year were brought before the public, they would fill all the galleries in Trafalgar-square, and it would be preposterous to suppose that the finding the necessary accommodation elsewhere can be objected to, much less be made an excuse for driving out the one art altogether,

whenever the nation may provide a fitting place of reception for all.

I am glad to observe, by the published circulars, that the committee are not looking for elaborate pictures; that clear intelligible drawings are all that are wanted; and how easy would it be if, when a set of designs were made, one fair view was executed with a little increase of care, and set aside "for the next Exhibition;" there would be no extra labour or expense; and if I may judge from the amount of building carried on in this great country, we might fill the Portland Galleries three times over. Again, I hope we shall see a goodly number of competition drawings. A competition never occurs but we hear complaints of unfair usage: here there is an open court in which the proofs may be brought forward: let them be hung in sets: let us have all the designs for the numerous competitions during the past year, and let the public and the profession judge the right and the wrong: without doubt, if this be followed out, it will be a most important auxiliary to the competition committee.

The committee have conferred a great boon on all by endeavouring to unite a museum of inventions and all other things connected with building matters to the exhibition: how inventors and others will respond to this important appeal remains to be seen. We have always wanted some place where such things could be collected together for deliberate inspection: a detailed description should be inserted in the catalogues, and they would be preserved for future reference. Will the committee admit lithographs? I think they should, if printed privately only and not published: they might easily be kept by themselves and would assuredly be of public interest: they are but drawings on stone instead of paper and ought not to be shut out. I have heard it is also contemplated to have a table set apart for architectural works, so that many which are little known would be immediately brought into public notice, and their sale no doubt increased.

I trust, Sir, you will keep attention alive to this important subject: let us all do what we can—as well country as London architects,—and those who cannot help in the exhibition may at least send their guinea or half-guinea subscription, for expenses in first establishing anything of this kind are always heavy. But let us, above all, make the exhibition of public interest, and in a year or two it will support itself.

A SUBSCRIBER.

THAMES BRIDGES.

If we are to have a new bridge at Westminster, is it not of the greatest importance that both those disgraceful erections, Putney and Battersea bridges, should be cleared away as soon as possible, and others substituted? One is doomed; but since the volume of water, and its direction, will be affected by their removal, whenever it may take place, it appears to me very desirable that there should be a united effort to get rid of them altogether, and at once.

That the bridges in question are a great hindrance to the free navigation of the river all will allow, and no one feels it more than myself. Were they removed, I should not hesitate to fit vessels to bring direct to my wharf heavy building materials such as slates, Portland and Caen stone, &c., instead of having to unload below bridge, and lighter them up.

The poor river stands very little chance of competing with the rail unless every improvement that can be effected is promoted by the Thames authorities, and other interested parties. You will see that it is a question of vital importance to the owners and occupiers of wharves within reach of the tideway; for, clear away the bridges in question, and we can have up, direct, coals and every other description of heavy goods.

But the great question now is,—what will be the effect upon the foundations of the present bridges, and those to be erected, by the removal of those at Battersea and Putney? B. E.

THE OXFORD DIOCESAN TRAINING SCHOOL.

The Oxford Diocesan Training School, founded at the end of October last, at Culham, as we mentioned at the time, is in style Late Decorated, and in plan is quadrangular. The range forming the south front is bounded at one end by the chapel, which stands out from the chief line of the building, and is connected with it by a corridor and cloisters. The interior of the chapel is to be arranged stall-wise, the seats fronting north and south. The principal front on either side of the central entrance consists of a great dining-hall and schoolroom, each 58 feet by 20 in dimensions. The dining-hall will be fitted up with large fire-places, and the apartment lined with oak. The eastern wing of the building is to consist of three large class-rooms and the master's sitting-rooms: the western wing is to be appropriated to the principal offices of the establishment. The second floor will consist of dormitories for 100 pupils, the space devoted to this purpose extending throughout three sides of the entire building, and a separate dormitory being provided for each individual, with a window. The staircases are to be of stone, and the floors formed with Messrs. Fox and Barrett's patent. The walls are constructed of Marcham stone, backed up with brickwork. The windows of the south front will be trefoil-headed, in accordance with the general character of the design. Over the principal entrance the arms of the See of Oxford will be placed, as expressive of the character and destined purposes of the building.

The centre of the building is to be laid out as a large open square, with an ambulatory on three of its sides. It is designed to occupy the fourth side of this square with the Practising Schools, and a Yeoman's School.

A terrace, 36 feet in width, will extend along the entire south front of the building, and will be reached by a carriage-way from the Abingdon-road.

The building is adapted for the accommodation of 100 students, and four or five assistant masters, besides the principal, for whom, as indicated in the above sketch of the arrangements, a separate residence will be provided in the interior. The estimated cost of the work is 16,000*l.*, of which the larger portion has been raised by diocesan subscriptions, assisted by the Committee of Council on Education and the National Society.

The architect of the building is Mr. Joseph Clarke, of London; and the contractor, Mr. George Myers.

THE RECORDS OF THE GREAT EXHIBITION.

Great Exhibition of the Works of Industry of all Nations, 1851. Official Descriptive and Illustrated Catalogue. By authority of the Royal Commission. In three volumes. London: Spicer, Brothers, Wholesale Stationers: W. Clowes and Sons, Printers, 1851.

It is almost a pity this unprecedented work has been called a catalogue; indeed, it is a sort of anachronism to term it so; considering that the Commissioners are only placing it before the world with one hand, while closing the Exhibition gates with the other. A perpetual memento—a standard "official record"—it is, however, of the noblest effort—the highest reach—the grandest display of human progress ever made. And this it is, not merely as a matter-of-fact enumeration of the world-wide wealth of which it contains the inventory; but as a work of reference and instruction, taste and invention, the fruit of thousands of brains—nay, the composition of thousands of pens; for this is a cosmopolitan production, which the commission and its editors, annotators, and compilers have only aided in ushering into the world in orderly unity and condensation. The labours of these latter, however, have contributed immensely to its value; and the importance of the whole compendium could not be otherwise than vastly enhanced by a list of labourers on it such as the following:—

"ANNOTATORS OF THE CATALOGUE."

"Professor Owen, F.R.S.; Baron Justus Liebig, F.R.S.; Professor Lindley, F.R.S.; Professor Forbes Royle, F.R.S.; Professor Bell, F.R.S.; Sec. R.S.; Professor E. Forbes, F.R.S.; Professor Ansted, F.R.S.; Professor Hosking; Professor A. De Morgan, M.A.; Philip Pusey, M.P., F.R.S.; Rev. J. Barlow, F.R.S.; Rev. J. Booth, F.R.S.; Capt. L. L. Boscawen Ibbetson, F.R.S.; James Glaisher, F.R.S.; J. E. Gray, F.R.S.; Robert Hunt, Keeper of Mining Records; Robert Ellis, F.L.S.; Samuel Clegg, Jun., F.G.S.; W. De la Rue, F.R.S.; J. Spurgin, M.D.; John Wilson, F.R.S.E.; Henry Diddim; W. C. Aitken; H. Maudslay, C.E.; Robert Hendrie, Jun.; J. A. Nicholay.

Official revision and sanction for publication by Lieut.-Col. J. A. Lloyd, F.R.S. Scientific revision and preparation by Robert Ellis, F.L.S. Historical introduction by Henry Cole. Construction of the building of subjects in the thirty classes into which the Exhibition is divided, by Dr. Lyon Playfair, F.R.S. Compilation and preparation of the Abridged Catalogue by G. W. Yapp.

Technical information and assistance have also been rendered by Mr. G. Taylor, Mr. T. Batnam, Professor Wallace, M.A., Mr. C. Tomlinson, Mr. John Graham, Mr. E. H. Denison, and other gentlemen. Much valuable information and assistance have also been kindly furnished by the Royal Commissioners for several of the Foreign States exhibiting. Their contributions have been inserted partly in the form of notes, and occasionally in that of a short introduction."

In a modest essay on the "Scientific Revision and Preparation of the Catalogue," Mr. Ellis gives an account of the circumstances under which the work was published. Amongst these circumstances not the least remarkable is the fact that the greater portion of it was actually in type before the opening of the Exhibition on the 1st of May. The Catalogue then published was but an abstract of this work as it then stood, without the bulk of those labours which have been ever since in course of expenditure on its collaboration. Into these circumstances and labours, however, we cannot enter further yet.

To one peculiar feature of the work attention ought to be specially directed. This is the fact that it embodies, to a large extent, the *Science of Commerce*. In this first edition we have already a comprehensive and so far successful endeavour to convert the changing and inaccurate conventional terms of trade into the precise and enduring expressions of science. As an instance, we may mention the words employed for furniture, which are enumerated, with their commercial names, their Latin names, their native habits, and the uses to which they are applicable. Mr. Ellis, in the essay just referred to, while remarking on this peculiar feature of the record, says:—

"In the present edition of this work, prepared as it has necessarily been under highly unfavourable circumstances as to accuracy and correction, this attempt may not be as successful as in future editions; but such arrangements are made, in order to obtain this important and valuable result, as will render future editions of this Catalogue permanently valuable in this respect, not only to the naturalist but also to commercial men. That this feature of the Catalogue will not be without its fruit in the promotion of the objects of industry, may be expected from the knowledge of the fact, that hitherto, in consequence of the absence of such information in a collected form, the greatest difficulties have been experienced by commercial men in their endeavours to introduce into trade any new material of industrial importance, or to obtain adequate supplies of materials already known, but known under a variety of changing, local, and unintelligible terms. In the seventeenth century, Robert Boyle perceived the important results likely to arise from the 'naturalist's insight into trades.' It may be hoped that such results will not fail of their accomplishment."

As to accuracy and correction, these are but relative terms: so long as human nature has not reached the pinnacle of perfection, absolute accuracy and immaculate correctness in such a work never will be reached. Moreover, the most likely of all to reach the farthest towards so unattainable a point are precisely those who will be most diffident of their own abilities and success. The present edition of this great design is in itself a great work, whatever

shortcomings it may display to the eye of minute criticism. We, for our own part, would have certainly desired to have seen every illustration of such a work worthy of the work itself; but we suspect that imperfection in this respect, at least, was necessarily and unavoidably involved in the very rules and arrangements the strict observance of which alone rendered its existence possible at all. The illustrations, no less than the Catalogue, may be said to be the work of the exhibitors themselves, though subject, like it, to the decision of the executive commission and the other authorities engaged in the preparation of the whole: this will more clearly appear from the following regulation:—

"Her Majesty's Commissioners have consented to allow illustrations of articles exhibited to be inserted in the large Catalogue, after approval by the Executive Committee. Exhibitors desirous to avail themselves of this privilege must communicate their intention of providing the illustrations, and state their character, whether engraving on wood, on steel, or lithography."

More than one-third of the first volume is devoted to various preliminary subjects, though followed up by nearly 500 pages of the Catalogue and its annotations, some of the latter of which are complete essays in themselves. Following on the Preface and General Contents, an immense List of Illustrations, and other matters, is an Alphabetical and Classified List of the Articles described in the Catalogue, which must prove of important service in consulting the great body of the work. Then follows an index of the names of exhibitors and others; and next the Introduction, in which Mr. Henry Cole enters at large into the history of the great idea of the International Exhibition. The next essay is one on the Construction of the Building by Mr. M. Digby Wyatt, with illustrations. There is also a classification of subjects in the thirty classes into which the Exhibition is divided, and a directorial list of commissioners, jurors, &c.

Besides the briefer annotations in the body of the work, as already remarked, there are entire and valuable essays, as on iron, on mineral fuel, mining and mineral products, and various other subjects, including formal introductions to different sections and nations, and a vast mass of other matter, the whole constituting a body of *Commercial Science*, such as must prove to be not only invaluable, but henceforth indispensable to men of all branches of trade, art, science, and industrial pursuits in general, throughout the whole world, and vastly promotive of all the ends and objects of industry in art and science themselves. Translations of the work into every language in which commerce is more or less extensively carried on, we should think, must eventually be demanded and supplied, and, spite of the extent and cost of such a work, we should not wonder to find it sold in thousands of copies abroad as well as at home.

THE POTTERIES SCHOOL OF DESIGN.—

The fourth annual meeting of this school was held at Stoke-upon-Trent on Monday in week before last, Mr. J. A. Wise in the chair. The master's report stated that the school made good progress. The number of students on the books for the present month of November was as follows:—At the Stoke school, 69 male students, and 42 female; total, 111. At the Hanley school, males, 75,—females, 23; total, 98; making the entire number of students in the two schools, 209. It was thought there was every prospect of the school's attaining an increased development. The number of pupils was on the increase, and Government had liberally appointed an assistant master to each school. The report of the council of management, however, complained of the state of the finances, the institution being 100*l.* in debt. An appeal was made to the public of the district for increased support. The chairman in his address recommended to young artists the perusal of Mr. Wornum's late essay on "The Great Exhibition as a lesson of taste." The meeting was afterwards addressed by Mr. Child, M.P.; Mr. Ridgway, and other gentlemen.



THE OXFORD DIOCESAN TRAINING SCHOOL.—MR. J. CLARKE, ARCHITECT.

SIGHTS AND SCENERY.

The Haymarket Theatre.—Mr. Webster has strengthened his company by the addition of Mrs. Stirling, Mr. L. Murray, and others. Mr. Vandenhoff and Miss Vandenhoff are to come. At the present moment, opera, with Miss Pyne for a charming *prima donna*, and roaring Buckstone-farces, alternating with some of the comedies of last season, fill the house. The scenic artists here should rub-up a little.

Princess's Theatre.—The production of the "Merry Wives of Windsor," in the costume of the reign of Henry IV., is a novelty. This play, for which, by the way, we care less than for any other that Shakespeare wrote, is essentially an Elizabethan play, and has always been dressed as such, notwithstanding that the "fat knight" had been assigned by the author to an earlier reign in other plays. As at the Princess's Theatre, however, one of these earlier plays is running alternately with the "Merry Wives," the management were led to change the conventional period of the latter, and make it accord with the first. This has been done with very considerable success, although it does not follow that the date now given to the play will be retained in future when revived elsewhere: the construction and characters of the drama unquestionably belong to Shakespeare's own time. It is the same in some other of his plays, but a proper consideration of the subject would involve a longer disquisition than we may now attempt. Mr. Kean plays *Ford* well. For a pleasant little comedy, called "Tender Precautions, or the Romance of Marriage," capably acted by Mr. and Mrs. Keeley, and Mr. and Mrs. Wigan, a very complete room scene is provided, with all the fittings and elegancies in the way of decoration which belong to the residence of a man well to do in the world.

Jullien's Concerts.—A rare sight is Drury-lane Theatre every night,—filled up to the ceiling in every available corner to listen to good music at small cost. Preparations for the decoration of the house for the ensuing campaign are being made, we understand, in various workshops.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Opening of the Cité Ouvrière (Napoleon) Paris.—This new undertaking, conducted by M. Aubled, architect, was opened on the 17th inst., with some appropriate festivity. The financial means have not been obtained but with some difficulty, and the part inhabited consists of 96 lodgings and some shops. The rents have been fixed at a little less than the usual price of similar dwellings in the neighbourhood, although the arrangements are much better; hence it appears to what undue height the whole present rent system has been pushed. The yearly rent of a lodging varies from 60f. to 180f. (2l. 8s. to 7l. 4s.). For the latter sum the accommodation consists of two rooms, well lighted and aired—in fact, comfortable and healthy—together with a small passage, where the kitchen is situated. The staircase also is laid out without stint of space, and affords a comfortable communication to all parts of the house. At present the Cité Ouvrière contains about 250 lodgers. The works of the other parts of the building are progressed with, and will contain a lavatory, baths, and other conveniences for the number of 500 lodgers, which is the full complement calculated upon. Those establishments founded in England on philanthropical grounds, seem to be a good speculation, and to yield an ample profit. The Cité Ouvrière of Paris will cost 650,000 francs, and will make an annual return of 40,000 francs. But our French contemporaries observe that in such cases, where the income is certain, and subject to no chance, Government should not allow the societies or companies, erecting such houses to charge more than the usual interest of 5 per cent., whereby either the rents would become lower than they are now, or the accommodation superior, &c. After all, the Cité Ouvrière in Paris has contributed to the solution of a great

social problem, hitherto considered quite out of the reach of possibility, viz., that such and similar popular establishments will, if judiciously undertaken and honestly administered, yield an adequate return for the capital employed therein; and the sentiments pervading the speeches delivered at the opening of the Cité Ouvrière in Paris were to the purpose that such establishments may soon extend to Lyons, Bordeaux, Lille, &c., in fact, to all places where hitherto the people had to live in localities unfit and unworthy of men.

Florence.—*Discovery of Frescoes by Giotto.*—Professor Charles Morelli, of Florence, having received from the friars of the church of Santa Croce, the order to execute some paintings in the chapel dedicated to St. Francis, belonging to the Giucciardini family, found under the layers of whitewash which he had to remove, the traces of the work of the above great master. This discovery was immediately communicated to the President of the Academy of Fine Arts, M. del Monte, as an event most propitious. In the meanwhile M. Morelli succeeded in disentombing, as it were, about twenty full length figures and several heads of saints, all bespeaking the character and genius of Giotto. What increases the importance of this discovery is the circumstance, that *Vasari* has accurately described this fresco, which represents scenes of the life of St. Francis. The work of completely uncovering this fine relic is in active operation.—M. Durand, a skilful French designer, is preparing an Archaeological Album of Tuscany, which will comprise the finest monuments of the Florentine Commonwealth, designed in a superior style. It is the Russian Prince Demidoff, under whose patronage this gem of art-production is undertaken.

The New "Granarium," Frankfort-on-the-Maine.—This new edifice, destined as a general entrepôt of the German and Dutch English corn trade, is in a fair progress. The Chamber of Commerce of Frankfort have proposed to the Senate to guarantee the loan of 300,000 florins (28,000l.) at four per cent. for the erection of this great building. M. Rigaud, the projector of the Granarium, has just published a pamphlet, explaining the advantages of position, &c. Frankfort lies in the axis of the whole German railway net not distant from the Rhine, as well as near the Maine and Ludwig's canals, whose shippers will find a return-freight at Frankfort, this being a great entrepôt for British and colonial goods. The building is to be erected on the bank of the Maine, near the Western line terminus.

THE STATIONERS' COMPANY'S ALMANACS.

LAST Saturday (22nd) was what was called "Almanac Day" at Stationers' Hall, when thousands upon thousands of those useful companions were sent off east, west, north, and south; and by this time have been distributed amongst gentle and simple far and wide. For a long time this company had nearly a monopoly of learning, but are now only publishers of almanacs, and even as to these have not the exclusive privilege. Charles Knight, who has sketched the history of the company in his "Cyclopædia of London," tells how that one Carnan, in St. Paul's-churchyard, at the close of the last century, would insist upon his right to publish an almanac in spite of the company, and was annually thrown into prison for so doing. This became so regular a thing that he always kept a clean shirt in his pocket, ready for a decent appearance before the magistrates and the keepers of the gaol at Newgate. Ultimately he gained the battle, and opened the trade.

The company, however, still remain pre-eminent in this department, and their publications command an enormous sale, and bring a large revenue. The number of freemen is between 1,000 and 1,100; of the livery about 450. The proprietary consists of a portion of the latter, who hold shares, about 350 in number, representing a capital of about 40,000l. A share may be bequeathed to a widow, but no further. As the shares fall in, they are ap-

portioned nominally by election, but virtually in order of seniority.

We have before us a bundle of their new calendars, "The Englishman's and Family Almanac" (containing much useful information), "Goldsmith's Almanac," "The Gardener's Almanac" (a capital publication, edited by Mr. G. W. Johnson), "Moore's Almanac Improved," and last, not least, no doubt, in their estimation, Moore's "Vox Stellarum." We should scarcely have expected to have found in the 19th century an almanac put forth by a grave City company, containing such predictions as we find therein; but we suppose the company take a business view of the question, and that the enormous sale of the almanac, about 400,000 copies, is their excuse for so doing. With this blot we find much that is useful, especially to our country readers.

EXPERIMENTS ON THE STRENGTH OF WROUGHT OR ROLLED IRON JOISTS.

MESSRS. FOX AND BARRETT have just introduced rolled iron joists as a substitute for cast-iron in the construction of their fire-proof floors, designed with a view to bring the expense to the same as those of cast-iron, and thus render fire-proof construction with joists of wrought-iron as inexpensive, according to their statement, as the ordinary timber floors.

On the 25th, some experiments were made on joists of two sizes, at the Baths and Wash-houses which are now being erected for the parish of St. James, in Dufourea's-place, Poland-street. The weight was applied through a lever. The following particulars have been furnished to us.

The smaller of the two joists was 5½ in. deep, and ¾ in. thick, with flange top and bottom, 1½ in. wide.

Length of joists.....	17 ft. 0 in.	
Width of bearing	16 0	
Weight per foot run ..	10½ lb.	
Load on Centre.	Deflection.	Weight per sq. ft. of floor which the load is equivalent to.
12 cwt.	65.....	112 lb. per ft.
15	8	140 "
18	10	168* "
28	14½	260† "

The larger joist was 7 in. deep, and 1 in. thick, with flange top and bottom, 2½ in. wide.

Length of joist.....	17 ft. 0 in.
Width of bearing.....	16 0
Weight per foot run ..	16½ lb.

Load on Centre.	Deflection.	Weight per sq. ft. of floor which the load is equivalent to.
12 cwt. ..	0.42	112 lb. per ft.
28 .....	.785	260 "
32 .....	.9	300* "
40	1.1	370† "

HARRISON'S ELECTRO-MAGNETIC ENGINE.—This patented engine is said to act "on the principle of the induced magnetic power of a compound coil or coils of insulated wire conveying a current of galvanic electricity, which acts upon and draws within a suitable aperture, or repels therefrom, a plate or a series of plates of soft iron, or a body of wire, or permanent steel magnets." Two important advantages are said to be gained by this arrangement. 1, in altogether avoiding the retarding influence of electro-magnets acting on each other after the battery current has been cut off; 2, that the effect of secondary currents is very much reduced; and where permanent magnets are employed to pass within the coils, the induced current augments the primary current, and thus a considerable saving in the consumption of the materials of the battery is effected. The patentees point out other advantages, and they assert that they obtain motive power at as cheap or cheaper a rate, and much more advantageously, than by steam.

* Up to this point the elasticity of the metal was unaltered.

† Permanent set on removal of load, .075. A load of 18 cwt. on the centre was left on 18 hours, but produced scarcely any perceptible difference.

‡ Permanent set on removal of load, .062.

OPEN PARAPETS.

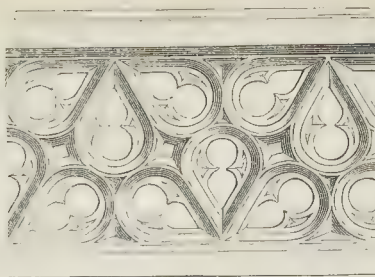


FIG. 4.

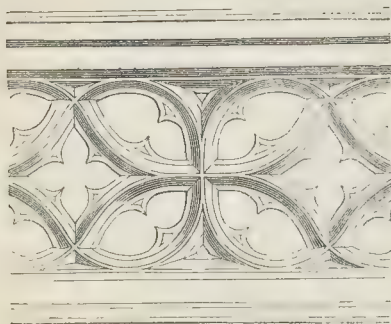


FIG. 5.

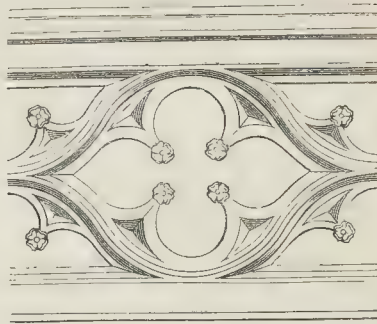


FIG. 6.

C.D.L.

OPEN PARAPETS.

We this week give some specimens of open parapet, in addition to those engraved in a recent number.

No. 4 is from the cathedral of Evreux, and Nos. 5 and 6 are from the churches of St. Gilles and St. Pierre, at Caen, that Oxford of archaeological France.

The province of Normandy abounds with this beautiful ornament, which Rickman, with his usual acumen, pronounced to be characteristics of French architecture.

There is a fine early specimen at the interesting ruins of the Abbaye d'Ardennes, and a later one at the church of St. Michael, at Vancelles, both near Caen. J. G. H.

LONDON CHURCHES RE-OPENED.

CHRIST CHURCH, SPITALFIELDS.

Your correspondent, Mr. Parry, in giving a description of six churches in London, which have been either lately reopened, or are now under repair, has omitted a *seventh*, which claims an equal, if not a more extended, notice with those which he names; not only on account of its merits as a piece of architecture and as being the best specimen of the peculiar style of its architect, but from the nature and amount of the works being executed in improvements and general repairs, and that at no inconsiderable expense. I allude to Christ Church, Spitalfields, one of the fifty-two churches, built in the reign of Queen Anne, designed by Nicholas Hawksmoor, pupil of Sir Christopher Wren. In most of his works, the element of power is strongly developed, arising from the ponderous masses of masonry, extensive flat surfaces, mixed with intricate multangular figures, and minute perforations which are their characteristics. But in Christ Church, the influence of his master's mind is very strongly to be noticed: with an exterior massive and commanding, it possesses a striking interior; with a grandeur of proportion, propriety of distribution, and an

elegance and variety of decoration which render it the most pleasing and elegant church which he erected. A thorough internal restoration has been made, the stone work (of Portland) has been cleaned from the paint, rubbed down, and reworked to a fair surface. The innovations made at various times in the oak fittings have been removed, and the original character of the screenwork restored.

Great improvements are being made in the chancel, the walls of which will receive a decoration in colour. The wooden altar-piece, which consisted of Doric columns and entablature, painted and grained in the most approved imitation marble fashion (evidently subsequent to the erection of the church) has been removed, and will be replaced by a reredos of Caen stone, highly enriched with carvings emblematical of the Eucharist, and having a basso-relievo of the Lord's Supper, taken from the celebrated cartoon of Leonardo da Vinci.

A considerable outlay has been made upon the organ, which will place it upon an equality with any in London.

So much zeal has been manifested in carrying out these works, by the rector and the churchwardens, that it appeared a want of recognition of their disinterested services, if in an account of London churches under repair, the works in progress at Christ Church were omitted from the list. T. Y. jun.

As to Mr. Parry's paper on "London Churches re-opened,"* I would say two or three words:—

St. Andrew's, Holborn.—The altar table, of marble and iron, in steps or stages, was not "placed here some six years ago," but is of the age of Sacheverell, who is buried below the altar. The "steps or stages" are not "strange," but are the ordinary super-altar, arranged for candlesticks, &c., which formerly stood here.

* See p. 719, ante.

St. Luke's, Old-street, has not had "some old stained glass placed in the chancel window." This glass—a very clever imitation of the coarse Dutch School—is by Mr. Clutterbuck. In justice to Mr. Parry, I must say that I shared in his belief, and I took this performance for Flemish glass; the more so, as by some unaccountable blunder the dimensions of the window were mismeasured, and the glass has been cut down in every direction. There are not "five other churches in the parish of St. Luke," but only three.

Hoxton.

W. SCOTT.

P.S.—A repetition of the marble and iron altar table of St. Andrew's, and of the same date, is in St. Clement Danes. From my earliest years I have been familiar with St. Andrew's, Holborn. I think that my childish recollections do not deceive me in recalling some frescoes on the western wall of that church, prior to the repairs and erection of the little galleries about the year 1820. Can any of your correspondents give information on this point?

DR. SPURGIN'S BRIDGE.—SIR,—I am somewhat surprised that the bridge invented by Dr. Spurgin, and shown in the Great Exhibition, should have been unnoticed by the jury,—an invention which one of our most eminent architects pronounced to be the *chef d'œuvre* of a bridge, and which he should be proud to see thrown across the Thames at Westminster,—a bridge applicable in its principles to the long-sought desideratum in architecture—a flat roof. There is now no reason why the present pointed roofs of our houses should not be converted into useful flat ones. For roofing railway termini and other large covered buildings the advantages of this invention are immense, compared with the so-called self-supporting roofs now in use. This bridge is constructed upon principles derived from the animal fabric, as presented in the vertebrate series.—WORKING MAN.

STEWART'S HOSPITAL, EDINBURGH.

Of all the cities in the United Kingdom none are better supplied with charitable institutions, for educational purposes, than Edinburgh. Numerous as are these institutions, continual additions are being made to their number: but two years ago one was put in operation, the erection of which cost nearly 150,000*l.*; and now another is approaching completion, which, though of smaller extent, aims at an equal, if not greater, attempt at architectural effect.

This structure is raised from funds left for that purpose by the late Mr. Daniel Stewart, of the Exchequer. The style is Elizabethan, with a dash of the domestic castellated, but with none of the richness of detail generally found in the former, nor the picturesque effects of the latter: it bears aloft a multitude of little turrets and cupolas, which are presided over by two towers of larger dimensions, reminding one of a box of toys arranged by the hand of a child at play. It is surely the height of absurdity to apply what was intended as a means of warlike defence, to a structure the object of which is of so peaceful a description, the more especially as the turrets are neither in themselves beautiful, nor available as a means of outlook. There is, moreover, a want of connection in many parts of the edifice, the cupolas appearing as if they could be lifted off and on at pleasure. Strange that the designer of this structure (Mr. D. Rhind) should have been also the architect of one of the finest buildings that adorn our city: he seems to have so designed it out of rivalry to a recently constructed edifice in a similar style (Donaldson's Hospital), and certainly he has avoided its greatest fault—want of projections, and consequent absence of light and shade, but in attempting to avoid a lesser he falls into a greater error.

In the immediate vicinity of the pile above referred to is another institution of a similar nature, with a frontage of two stories in height, and about 140 feet broad, with a Doric portico of six columns in the centre, suggesting the idea of barracks adorned with the spoils of a Grecian temple. Opposite this, again, is another, very beautiful in design, but disfigured with make-shifts for chimney, but the spectator is supposed not to see them.

Elizabethan seems now to be the prevailing style in Edinburgh, and should it continue so, it will hardly be entitled to the name of the "Modern Athens," but must revert to the more ancient title of

DUN EDIN.

ANTIQUARIAN MATTERS.

Malton.—The excavations near Malton, in constructing the Thirsk and Malton Railway, have disclosed several antiquities of interest. The workmen lately came upon a rough flat stone, on raising which they discovered a cavity, 4 or 5 feet deep, of irregular shape, and much obstructed with rubbish. This is believed to have formed part of the subterranean passage which (tradition asserts) existed between the ancient castle and old Malton Abbey, about half a mile distant. It is intended, we understand, to have this passage cleared out, and its extent determined. The foundations of ancient buildings have been laid bare, and the remains of fires extinct for centuries. Coins, skeletons, &c. have been found.

Athens.—Baron A. de Humboldt, says a Berlin journal, has announced the discovery at Athens of the edifice in which the Council of Four Hundred was accustomed to assemble. Upwards of 100 inscriptions have already been brought to light, as well as a number of columns, statues, &c.

Mount Zakarah.—There exists on Mount Zakarah, in an island of the Red Sea, an emerald mine, which the Pacha of Egypt has for a long time wished to work, and of which he had been abandoned in the latter end of Mehemet Ali's reign. A British Company lately solicited and obtained permission to re-commence the works. In executing some operations lately, Mr. Allan, the Company's engineer, discovered, at a great depth, a gallery of the most remote antiquity. He succeeded in finding ancient tools and utensils, and a stone on

which were engraved hieroglyphic characters in a great measure erased. The nature and form of the tools, utensils, and gallery prove that the ancient Egyptians had made great progress in engineering. It would appear, on studying the stone, that the date of the mine goes back as far as about 1650 years B.C.

SOCIETY OF ARTS.

The Society are carrying out in an admirable manner the idea of Prince Albert, that a series of lectures should be delivered on the Great Exhibition at the Society's Rooms, Adelphi. In pursuance of their arrangements, which comprise a list of first-rate lecturers, Dr. Whewell, on Wednesday evening, delivered an eloquent and excellent discourse on the general bearing of the Exhibition on the progress of art and science, in course of which he expatiated on the unexampled opportunity which it afforded to even the poorest or most sedentary and home-fixed spectator of surveying the whole world's treasures of industry and art, beauty and utility, excellence and luxury,—an opportunity such as never was offered before to any man, either actual or imaginary, except, perhaps, to the latter in some "Arabian Night's Entertainment," of which this may well constitute the thousand and second series of marvels. Without such an opportunity, pursued the speaker, "what time, labour, and perseverance would he have required—what hardships to undergo—what access to great and powerful men—in the accomplishment of such a survey. A life would scarcely have sufficed, with all the appliances and means which wealth and power could give. Like the philosophers of ancient days, he would have had to spend all his years in travel, and yet, after all, how far would such a survey fall short of the simultaneous view afforded by the Exhibition; while, at the same time, but one individual could profit, even from such an undertaking as they had imagined. Here, at one view, they had placed before them the choicest productions of human art in all nations and in all stages of progress, from barbarism to the highest civilisation." The advantage of obtaining a permanent classification of all the objects of men's skill and industry, he afterwards remarked, "were very great, as it gave the manufacturer, the man of science, the producer, and the artisan, a settled common language, in which they might speak of the objects with which they were connected."

PITT'S SELF-ADJUSTING LOCK FURNITURE.

MOST of our readers must have noticed Messrs. Hart's often-repeated advertisement of this patent, and many have tried it. It may nevertheless be useful to some to say that we have had some of the lock furniture in use now for a considerable time, and find it all that can be desired. The improvements in it upon other methods of mounting and fixing door furniture consist in this,—that the spindles are not fastened to the knobs, but drift loosely in them, and will therefore adjust themselves to doors of different thicknesses without alteration, and the objectionable side screw in the neck of the knob is not required. The mountings by which the knobs are secured to the door form bearings for each knob, and consequently there is less friction on the follower: the action also is more pleasant than with ordinary mountings, and that disfigurement of the door which frequently occurs when the common rosette is used, is avoided.

As a mounting, it is certainly superior to any other kind of spindle. The difficulty that the makers have to contend with is price, as these are necessarily somewhat dearer where plain china or hard wood furniture is used than common mountings, but there is little or no increase where ornamental china or glass is desired. When specifications are made out, it is usually thought sufficient to state that china, glass, or hard wood furniture is to be provided, the architect forgetting what rubbish is to be obtained. Some china furniture is now being sold at a less price than tolerable brass, but of such a quality that it would be

far more advantageous to the employer that the latter should be used.

So well do we think of the patent spindles, that we will go to the length of saying, that if architects were to provide in future specifications that the furniture should be "Pitt's patent," the increase of first expense on a house would be but nominal, while it would insure better fittings and the saving of much annoyance and outlay afterwards.

SITE FOR THE NATIONAL GALLERY.

As to the adoption of the site of the cavalry barracks in Hyde-park, for the proposed new National Gallery, in a number of your very excellent periodical, you objected to this plan, on the score of its being too much exposed to the smoke of London. Now it strikes me there are some other serious objections against the scheme. The ground on which the barracks stand is lengthy enough, but it has no depth to allow of ornamental ground in front or rear. Shut up between two roads, the narrow side will be all that can be contrived to front London, which, to assume a dignified and appropriate character, it ought to face.

Walk a little farther (out of the smoke) to the north-west and you will find one of the finest positions which could be obtained near any capital in Europe: place it on the site of old Kensington Palace, looking down from the west through a vista or wide avenue of trees already prepared to the Serpentine, and across the park to Grosvenor-gate.* Fill up that Dutch pond, and in its place make any kind of ornamental garden with terraces which may be thought requisite. Should funds allow, throw a bridge across the Serpentine and make a straight road through Hyde-park to Grosvenor-gate, where should be a handsome arch. On the site of the old palace there is space enough for any extent of building, with approaches ready made, and fitting opportunity of making any further number. Scarcely any trees need be cut down.

A LONDONER.

VALUE OF PROPERTY AT WOLVERHAMPTON.

RAILWAY COMPENSATION INQUIRY.

A FORTNIGHT ago an inquiry was opened before the acting under-sheriff and a special jury, to assess the compensation to be paid by the Oxford, Worcester, and Wolverhampton Railway Company for 423 yards of freehold land, forming part of the site of Mr. Wm. Bailey's extensive chemical works in Horsley-fields, Wolverhampton; and also for 2,011 square yards of prebendal land adjoining the works, and running parallel with the intended goods station of the Stour Valley line.

Mr. Hornblower, architect, estimated the value of the 2,011 square yards of prebendal land at 50*l.* annual rental, and that Mr. Bailey's interest in it was worth about 12½ years' purchase, taking into consideration the ages of the three lives, making its total value 620*l.* 15*s.* To this he added 33½ per cent. for compulsory sale, namely 206*l.* 15*s.*, making the total sum claimed for that piece of land 827*l.* 10*s.* For the purchase of 423 yards of freehold land, near the proposed tunnel, he allowed 211*l.* 10*s.*, to which he added 50 per cent. for compulsory sale, namely, 105*l.* 15*s.* He estimated the cost of taking down and rebuilding the hydrate manufactory, the shed, the smiths' shops, the stoves, with the whole of the plant therein, &c. at 450*l.* Earthwork to raise land in the present works so as to pass over the tunnel, 341*l.* 16*s.* Extra cost of foundations of buildings to be erected and of the retaining wall which would be required in present works, 404*l.* 15*s.* 9*d.* Extra cost of foundations to flues, stoves, &c., 400*l.* Depreciated value of the whole works, 50*l.* per annum, which at 20 years' purchase amounted to 1,000*l.*, making a total sum in reference to the freehold land of 2,913*l.* 16*s.* 9*d.*, and this, added to the 827*l.* 10*s.* for the prebendal land, made the total amount of his valuation 3,741*l.* 6*s.* 9*d.*

Mr. G. Taylor, surveyor, on the same side, brought the value to 3,935*l.* 3*s.* 5*d.*

The jury returned a verdict for 1,705*l.* 4*s.*; assessing the compensation to be paid for the two pieces of land at 705*l.* 4*s.* and for the severance of the freehold, 1,000*l.*

* Our correspondent does not seem to be aware that we originally pointed out and have long advocated the adoption of this site.—ED.

RAILWAY JOTTINGS.

Gloucester.—The long-talked-of docks at Gloucester, it appears, are about to be provided, tenders having been called for by advertisement for works connected with them. The works will comprise the widening of the Gloucester and Berkeley Canal at Lanthony, to the extent of about 60 feet, and for a distance of about 360 yards, and the formation of a branch line, of a mile in length, from the docks to the main line at Over-bridge. The erection of the permanent passenger-station at Gloucester is to be immediately proceeded with. Its site will adjoin that of the Midland station. The Great Western Company have agreed to purchase from the Charity Trustees a piece of land adjoining the workhouse, for the purpose of increasing their goods accommodation at Gloucester. This purchase, says *Felix Farley*, will add about 4,000l. to the funds of St. Bartholomew's Hospital. The works at the bridge at Chepstow, on the South Wales line, are being proceeded with.

Somerset Central.—Application is to be made to Parliament for authority to construct a railway from the Bristol and Exeter, at Highbridge, to Glastonbury, and probably to Wells. The Bristol and Exeter Company have agreed to sell the Glastonbury and Highbridge Canal to the above company, and to take shares in the undertaking in lieu of the purchase-money. The length of the proposed line is 12½ miles, the estimated cost 70,000l., and the gross traffic receipts are estimated at 9,000l. per annum.

Conquest of Difficulties.—"It is well known," says Sir Francis Head, "that one of the results of Mr. Robert Stephenson's elaborate investigation was that the London and Birmingham Railway ought to pass through the healthy and handsome town of Northampton. The inhabitants, however, urged and excited by men of influence and education, opposed the blessing with such barbarous fury, that they succeeded in distorting the line *via* the Kilsby tunnel, to a point five miles off." The Kilsby tunnel is a specimen of engineering which tells with double force after the above relation. Let to a contractor for 99,000l. a quicksand soon stopped his progress, and though the company relieved him from his engagement, the vexation killed him. Mr. Stephenson then undertook the task, and confronted the difficulty with a most inventive spirit. Though the water rose and covered the works, though the pumping apparatus appeared insufficient, though the directors were inclined to abandon the task, the engineer, by the aid of their capital and his skill, with 1,250 men, 200 horses, and 13 steam-engines, raised 1,800 gallons of water per minute, night and day, for eight months, from the quicksand alone, and infused into the workmen so much of his own energy, that when either of their companions were killed by their side, they merely threw the body out of sight, and forgot his death in their own exertions. Three hundred thousand pounds was the cost of this great work. Thirty-six millions of bricks were used in its formation: 177,452 cubic yards of soil were taken from the tunnel in eight months: 286,480,000 gallons of water were pumped from it; and for all this the shareholders of the company are indebted to the "men of influence and education," who excited the people of "the healthy and handsome town of Northampton."—*History of English Railways.*

SURVEY OF MORPETH AND BEDLINGTON.—The Local Board of Health for this district have accepted the tender of Messrs. Hoggar and Rapier, of Wolverhampton, for the survey of the towns of Morpeth and Bedlington, together with the district lying between the rivers Wansbeck and Blythe.

METAL ROOFING.—Mr. C. Cowper has obtained a patent for "improvements in coverings for buildings," dated May 3, 1851. This invention consists in constructing coverings for buildings of plates of iron, formed into the shape of tiles, and furnished with suitable contrivances for fixing the same, and afterwards coated with a vitrifiable glaze or enamel.

Books.

Familiar Letters on the Physics of the Earth; treating of the chief Movements of the Land, the Waters, and the Air, and the Forces that give rise to them. By H. BYRNE, Professor of Physics in the University of Giessen. Edited by A. W. Hoffmann, Ph.D., F.R.S. London: Taylor, Walton, and Maberly. 1851.

THE object of the author of this little treatise is not so much to offer new facts to the man of science as to render to a large circle of readers some assistance towards obtaining clearer views and more precise notions of the processes which are at work on the largest scale on this our earth, as well as of the causes by which they are governed, and of their influences on the condition and the general features of the surface of the globe. There is certainly a large class of readers of good general education to whom such a work will be very acceptable, and we believe that they will find the present book both instructive and entertaining. We would have liked to have had "more precise notions" on some points however, or, at least, happier terms, than we find in the following instance in the outset:—

It is now no longer doubtful, that the primeval shocks and revolutions through which the earth has evidently passed, and to which it owes its present form and state, were manifestations of the same natural forces, whose action, sometimes formative, sometimes destructive, we continue to witness at the present day.

Two of these powers, which work throughout the entire universe, and bring under each other's influence all the heavenly bodies—*gravity* and *heat*—stand out as the mainsprings both of the past revolutions, and of the present changes of the earth. Gravity is the principle of attraction and solidity; heat, of expansion and mobility. All material things bear within them these two sources of action.

Having thus set off with "gravity" and "heat," as the two great cosmical forces, the author proceeds to say that—

General gravity (gravitation)—the mutual attracting power of all heavenly bodies—links the earth with its companion, the moon, and leads the latter in its path round the former, and both in their yearly course around the sun. It maintains the equilibrium of our own solar system, and also that of the whole universe.

Earthly gravity—the mutual attracting power of the atoms of the earth—tends to arrange them about a common central point. . . . The sum of the attractions of all the other particles for any single particle, or for any body upon the earth, is what is called the *weight* of that particle or body.

Admitting that the terms in use to denote the divers regions—if we may so call them—of attractive and repulsive, or at least concentrative and radiative force—such as those of particles in masses, masses in spheres, spheres in stars, and stars in clusters, or clusters in firmaments—are terms very loosely applied even by men of science, still we can scarcely admit of so very unusual and unauthorized an application of such a term as "gravity," to the cause of "solidity." Moreover, although gravity be a term in use to denote certain sections of concentrative power, limited by the region or regions of form—such as mass, stratum, or sphere—to which it has been applied, and although heat be a term in use to denote a certain section of radiative, or repulsive power, limited, though as yet obscurely, to regions of form allowed by chemists, &c., to be *interior to masses*—such as particle, molecule, atom—and never applied to those *exterior*—such as stratum, sphere, star, cluster, or firmament,—it is certainly going too far to maintain that gravity and heat are a couple of terms entitled to denote something like the attractive and repulsive forces in general. This is an abuse of terms not one whit more justifiable than it would be to select the positive force manifested in cold as attractive force, and then to apply "cold" as a sweeping term denotive of attractive force in general. "Magnetism," even, might just as well be made the co-ordinate antithesis of "heat" as "gravity." The force which we really recognize as the cause of *solidity*, men of science call the cohesive force, not the force of gravity.

However, we do not so much blame this author merely, as we do the general looseness with which such terms are applied, though certainly not to so great an extent as in the present instance; imperfect knowledge of the actual organisation and economy of nature is the ultimate reason why such incoherence exists in the use of terms which ought to be definite, and we think could easily be made so, shedding, at the same time, a flood of light upon the nature and the limits of all the recognizable powers and forms—or sections, rather, of power and form—in the universe.

Cyclopædia of useful Arts, Mechanical and Chemical, Manufacturing, Mining, and Engineering: edited by CHARLES TOMLINSON. Illustrated by engravings. George Virtue, London and New York. Parts 1 and 2.

If the two first shilling parts of this work be a fair sample of the whole, it will constitute a very useful book of reference and instruction. The subjects of most interest to our readers in the two parts issued are ABBATOIRS, AQUEDUCT, ARTESIAN WELLS, ASPHALTUM, AUGUR, AWE, and such like. There are also interesting articles on EROSTATION, ANEMOMETER, ANNEALING, ALLOY, and other subjects. The Great Exhibition will furnish materials, it is said, for the work throughout.

The Elements of Perspective, illustrated by numerous Examples and Diagrams. By AARON PENLEY. London: Winsor and Newton. 1851.

THIS is one of a series of useful little books issued by Messrs. Winsor and Newton, the well-known artists' colour makers. Mr. Penley has set forth his knowledge perspicuously, and given a number of carefully drawn examples.

Eliza Cook's Journal. Published by Charles Cook, Raquet-court, Fleet-street.

AMID the host of craft launched on the ever-swelling sea of literature, there are few that are steering more directly for the port of public favour than this unpretending but excellent periodical. In the last volume may be found interesting and instructive papers on all subjects,—history, biography, chemistry, poetry, travels, fiction, &c. &c.—the whole being carefully edited, and forming an admirable family journal. Its typography is exceedingly neat, and the journal is of a nice readable size, and we doubt not the renewed health of its popular editress will tend to infuse fresh vigour into its future numbers.

Bedfordshire.

BEDFORDSHIRE ARCHEOLOGICAL AND ARCHITECTURAL SOCIETY.—A general meeting of this society was held at Bedford on Tuesday in week before last, Col. W. B. Higgins in the chair. The report for 1850-51 was read and adopted; and a letter from the Rev. F. Hose was read as to Dunstable Priory Church, the rebuilding of the south aisle of which was said to be progressing with activity. Discoveries had been made which proved that the external gallery extended all along the west front. The entire columns of one side of another Norman doorway had been found, which had formed the entrance into the aisle now rebuilding. The society contributed 10l. to the restoration. A paper on Bedford Castle, by Mr. Hurst, was then read, and was followed by another on Hawnes Church, by the Rev. B. E. Brydges, in which it was stated that its restoration had been just completed. Various objects of interest were exhibited at the meeting.

EDINBURGH SCHOOL OF ARTS.—A *soirée* in honour of this school recently took place in Queen-street Hall. The *soirée* was got up under the auspices of the students attending the institution; and it was chiefly, it is said, got up to celebrate the advantageous position now occupied by the institution, in the purchase of premises in Adam-square, intended at once to accommodate the school and to serve as a monument to the memory of James Watt. The hall was well filled, and the Lord Provost occupied the chair.

BRUNELLESCHI'S DOME.—Your correspondent, "H. T. B.," has, I think, misunderstood the quotation he gives from the report of Brunelleschi concerning the erection of his famous dome. The quotation ends thus, "adopting the proportions and manner of the pointed arch, this being a form which displays a rapid tendency to ascend;" from whence "H. T. B." concludes that this great architect regarded the dome as an aspiring feature. But what Brunelleschi says is this, "That it was not possible to construct it in a perfect circle, as the weight of the lantern above would soon overthrow the whole." He had, therefore, determined to turn the inner part of the vault in angles, according to the form of the walls, adopting the proportions and manner of the pointed arch, which, having a tendency to rise, and being loaded with the lantern, the one with the other would render the whole durable. This, it will be seen, has no connection with the aspiring character of the dome considered as an architectural feature; and that Brunelleschi did not think the structure demanded an aspiring dome is clear from what he elsewhere says, that he would, if the thing had been possible, have constructed a vault like that of the Pantheon.—R.

SAVINGS BANK COMPETITION, BRIGHTON.—I send you the following account and result of a competition just settled here for a savings bank, about to be erected in Brighton. Five gentlemen were applied to, who, accordingly, sent in designs, which were considered by a sub-committee appointed for the purpose, and one of the number, marked "Justitia," recommended as first in merit, and another, "Delta," as second; but upon the report being presented to the general committee for their approval, it was decided that the plans marked "Justitia" could not be considered, because they were coloured, contrary to the instructions, and that "Delta" should then take the first place, and "Fidelitas," the third in the list, should be placed second. A protest against this decision was thereupon sent in by "Justitia," on the ground that all the plans were more or less contrary to the instructions. Well, Sir, the committee again met and resolved to reconsider the matter, and the plans of "Justitia" were again admitted to stand or fall by their merits; but by this time the names of the authors had been divulged, and the plans of "Justitia," after being declared by the sub-committee superior in accommodation to any others sent in, were recommended to be again thrown out on a question of detail, and this by one of the three gentlemen who formed the committee. This point being carried, it would naturally be supposed that the former decision would stand. But no, it was suddenly discovered that the designs of "Fidelitas" possessed a merit hitherto hidden, and were worthy of receiving the reward due to merit by being placed in the first place, to the exclusion of "Delta," whose plans had actually been accepted and an award made in his favour; both sub and general committees having thus completely reversed their former decisions.—JUSTITIA.

WATER SUPPLY.—Last week, Lord Shaftesbury and Mr. Edward Chadwick went to view the new gathering grounds and works at Woodhead, for the improved supply of Manchester with soft water. The examination of the works for the collection of the soft water, which is mainly derived from soft water springs and from the rainfall upon the formations of the gritstone sand, occupied them during the day. At night, at a meeting of the factory operatives of Manchester, his lordship adverted to the water-works, and said that the working men of that district were to be congratulated, that by the exertions of the corporation, acting upon good advice, they had now the certainty of the blessing of supplies of water of the highest order of purity, fit for their children and themselves to drink, good for making tea, and for saving soap, and pleasant instead of disagreeable to wash with. It was most disgraceful, he said, that with similar means of supply of water of similar quality available, the population of London were debarred from using it, and were restricted to the use of hard water inferior in quality, de-

rived from rivers polluted by sewerage and traffic. We understand that in several other towns under the Public Health Act, the principle had been adopted, which was enforced by the General Board of Health, of abandoning the rivers (the sources of supply hitherto adopted as a matter of course, with large open reservoirs of subsidence or filtration), and going farther a-field to collect springs of the softest water to be found, and leading it in covered pipes, with as little detention or exposure as practicable, direct in a continuous supply to the houses of the consumers. The question is of such great importance to the metropolis that the results in these places should be carefully noted.

ANCIENT STONES AND OBELISKS.—THE SYRO-EGYPTIAN SOCIETY.—At the meeting on 11th, Mr. Bonomi communicated some observations on the ancient mode of setting up stones and obelisks on their pedestals. He remarked that on some of the largest stones in the temples of Greece and Sicily a groove is made in the shape of a horse-shoe at each end of the stone, by which means a rope could be inserted, and the stone suspended and lowered into its place without disturbing its neighbours, and then the rope drawn out. In the great temple of Agriguntum, in Sicily, there is also another contrivance for lifting and lowering into its place large blocks of stone. It consists of a projection at each end of the stone (part of the block itself), round which a rope might be placed in the same way as in former contrivances: it was placed in the groove. In the great blocks of the terrace-wall of the Temple of Baalbek there are some accurately cut square holes of sufficient depth to insert iron pins, by which the block might be attached to the moving power. With us a rectangular hole is cut in the upper surface of the block, which is wider at the bottom than at the top, for the insertion of iron wedges and a ring, by which means the block is suspended and lowered into its place. None of these contrivances are discoverable in Egypt, but Mr. Bonomi pointed out in the pedestals of the two obelisks of Luxor, and in the pedestals of the colossal sitting statues of the plain of Gorna, grooves that extended the whole length of the profile of the square block on which the statue is erected.

THE MELVILLE AND WELLINGTON STATUES AT EDINBURGH.—At a recent county meeting, a report was read on the present state of matters as regards the Melville statue. The total sum raised was 2,027*l.* 19*s.* The committee had resolved to have the statue reduced in size to 10 feet, with a pedestal of polished red granite instead of freestone. The price to be paid to the contractor is 1,850*l.*; and the work, under penalties, is to be done in stages and completed within two years. The model has been completed, and the preparatory work for the full-sized model is being proceeded with. A letter was read from Mr. Steele, the sculptor, in which it was stated that the work would not be delayed as the Wellington statue had been, because the erection of the sculpture foundry, the first of its kind in Scotland, was now completed, so that the Wellington statue itself would be cast in a short time, the delay being solely owing to the want of this foundry.

SLATE ROCKS OF CORNWALL AND DEVON.—In a paper read at the Geological Society on 5th inst., Professor Sedgwick, F.G.S., explained that the sedimentary rocks of Cornwall and Devon are arranged as follows:—1. The culm measures of west Devon form a trough, the parallel sides of which extend from Hartland Point to beyond Bampton, on the north; and from Leenewth to the south of Exeter on the south, interrupted, however, in this southern edge, by the great granitic mass of Dartmoor: 2. The calcareous slates of Barnapste, and the sandstones of Charwood and Boggy Point, underlie the culm measures on the north, and are represented along the south edge of the culm-rocks by the limestone and fossiliferous slates of Petherwin, and, forming with the latter the "Barnapste or Petherwin group," constitute the upper part of the "Devonian system": 3. The "Dartmouth group," or middle Devo-

nian, appear on the north as the unfossiliferous slates and coarse grauwacke of Morte Bay, and on the south of the culm trough as the unfossiliferous slates of the Dartmouth district: 4. The oldest or "Plymouth group" of the Devonian series is well marked on the north by the limestone and sandstones of Linton, and the north coast, and on the south by the fossiliferous slate rocks of the "Liskeard group," and the limestones and sandstones of the Plymouth district. The professor next proceeded to describe a series of slate rocks to the south of the granitic mass north of St. Austell, and occupying Dodman Point and Nare Head.

TELEGRAPHIC BELL BOARDS.—Ingenious bell-hangers and others have of late been pretty frequently engaged in trials of inventive skill in this useful direction. The latest modification of the idea is one recorded by the *Lincolnshire Times*, which describes the apparatus as an extremely simple one, with a single bell and board for each building—such as an inn, public building, factory, &c.,—although it transmits a number of messages, such as may be useful in the building, as well as indicates the apartment whence the message issued. On the surface of a series of balls the messages or notices are written or engraved, and these are suspended so as to communicate with the various apartments by wires passing through holes on a flat surface affixed to the walls, and when acted on from the apartments, each appropriate counter-signal is lifted, the bell is rung, and the ball remains in its lifted position till turned off by a small lever. The mode in which each particular message is despatched in each room to the bell board is described, not very clearly, as "merely pulling a bell-rope;" but we presume there must be a number of bellropes in each apartment. We can readily conceive a single rope and wire, however, to do the whole work, if each signal required a different length of pull, measured out on a board or plate in each apartment, and communicating, by its own single indicator, with one common bell, and with a single line of messages printed on a bell board.

NEW PREPARATIONS FOR BOMBARDING VENICE.—Our readers may rub their eyes; it is indeed scarcely credible; but it is nevertheless the fact: a truly monster battery is in course of preparation in front of the island on which stands the church of San Giorgio Maggiore, so that the guns may be brought to bear on the Piazzetta, the Ducal Palace, the Dogana, and the entrance of the Grand Canal; and the Austrians, at their first discharge, will thus have the satisfaction of reducing the chief monuments of the city to ruins. Venice is not only sacred to the memory of the past, but it is a city in which all Europe is interested, and which may be fairly regarded as the common property of the civilised world, all the more so that it stands in the ocean, which is common to all. It is, therefore, an insult to the general feeling of the nations to threaten destruction in such a way to monuments prized by all, and, if persisted in, cannot but rouse the indignation even of those friendly to Austria and its cause. We owe our knowledge of the fact to the *Times*.

"POWERFUL STRONG."—The American papers notice an invention by Mr. Solomons, of Cincinnati, of what he calls a perfect substitute for steam! From common whitening, sulphuric acid, and water he procures carbon in the gaseous state; and with the power exerted by this gas, he asserts that he now drives a 25 horse engine, and for one-fortieth the expense of steam, lifts and lets fall 12,000 lbs. five times in a minute. This fluid, without any heat applied at all, exerts a pressure of 540 lbs. to the square inch, while water in the same unheated state has no pressure but that of gravity. Water, heated to the boiling point, yields a power of 15 lbs. This fluid, with the same heat, would yield a power of nearly 12,000 lbs.! And what is more, a handful of charcoal, and a boiler, the size of a tea-kettle, will produce, at an expense of a few cents, the whole of this tremendous energy! Fifty dollars expense in carbon will carry one of the Collins steamers from New York to Liverpool. Bravo!

CIRCULAR SAWING MACHINES.—Mr. Robert W. Parker, of Roxbury, U.S., has invented an improvement in driving circular saws, which, it is asserted, obviates much of the friction attendant upon the ordinary modes of running such saws. By a peculiar arrangement of belts and pulley, Mr. Parker states that he can easily get, by hand power, 2,600 revolutions of a buzz saw per minute, cutting through a three-inch plank in that period by the power of one man at the crank.

WALL PAINTINGS ABROAD.—"We learn from Munster, Westphalia," says the *Literary Gazette*, "that some fresco paintings of the thirteenth century have been lately discovered in the church at Serenhorst, near that town, and that a curious specimen of painted glass has been found at Legenwinden. In the chief aisle of Patroklus Church, at Soest, Romanic frescoes and statuettes of the twelfth century have been discovered, and measures taken to remove from them the coatings of lime and plaster which the fanaticism or the ignorance of former years has heaped on them. It has also been discovered that the Nicolai Chapel, in Soest Cathedral, is entirely covered with very curious paintings of the twelfth century."

ISTHMUS OF SUZ RAILWAY AND CANAL.—From Alexandria, the line proceeds in a south-eastern direction to Damanhour, passing at short distances from Salamoun, Nadir, Warden, and Kelouib, to Cairo. The proposed route across the desert from Cairo to Suez, branches off from the Alexandrian line at Bulah, a few miles north of Cairo, and proceeds nearly parallel with the present Great Hadj route, to Suez on the Red Sea. The route of the proposed ship canal commences in the Mediterranean, at the mouth of the Tineh, the entrance to the ancient Pelusiac Canal, and proceeds in a southern direction to Suez, terminating in vestiges of the ancient canal of Sesostria or Necho. Mr. Wyld, of Charing Cross, has published a map, in which these routes are traced out.

DIVIDING AND MEASURING MACHINE.—A new invention has been described to us as exhibited at the Crown Tavern, near the Obelisk, Blackfriars-road. It is the production of a working-man, named Thomas Best, an engineer and machinist at Greenacre's-moor, near Manchester. The body of the machine is described as consisting of a telescope frame of steel, containing a screw, half-an-inch in diameter, and 7 inches long—a wheel, 14 inches in diameter, being affixed to one end of the screw. The edge of the wheel is divided into 500 parts, and as it requires 20 complete revolutions of the wheel to advance the screw 1 inch, the turning it one division will advance the screw 1-10,000th part of an inch. To the wheel-end of the telescope-frame a steel point is attached, the top of which (level with the upper part of the wheel) is the breadth of two of the wheel divisions. On one side the point is divided into ten, and on the other into six parts, so that the turning of the wheel the distance of one of these very minute divisions will cause the screw to move 1-60,000th or 100,000th part of an inch, as may be required. Allowances for expansion or contraction of the metal of the machine are also provided for. For the purposes of dividing, an addition is made on one side of a rest, for the substance to be graduated, and a tool-box is substituted for the face attached to the main-screw. It is said to be capable of dividing the English standard of lineal measure, its component 1-100,000th part of an inch, but as it is regulated in tenths it is more immediately adapted to the division of foreign standards of lineal measure, and the graduation of scales in accordance therewith.

THE BANKING INSTITUTE.—At the Hall of Commerce Chambers, in Threadneedle-street, the first monthly meeting of this institute was held on the 25th inst., when Mr. Dalton read a paper on the question, "How far is the security of Banker's Locks affected by the recent scientific and ingenious experiments on patent locks?" The meeting was addressed by Mr. Chubb and Mr. Hobbs, who had been invited to attend. The proceedings did not exactly satisfy us, although we cannot say why.

THE MARLBORNE LITERARY INSTITUTION.—A new lecture theatre has been built for this excellent institution, and will be opened on Monday, 1st December, with a reading from Shakespeare by Miss Glynn. We will give some particulars. Amongst the lectures announced are six by Mr. Thackeray on the Humorous Writers of the last century, for which, by the way, he is to receive the sum of 150*l*.

NEW BRIDGE FOR WESTMINSTER.—The design for the new bridge is, we understand, by Mr. Hardwick, architect.

TO CORRESPONDENTS.

A Question.—Will one of your correspondents give me the rule by which to ascertain what height an object should be (placed at a horizontal distance of 100 yards, and at an altitude of 50 feet), to appear 5 feet high?—IGNORAMUS.

"S. C. jun.," "G. G.," "Devize Man," "C. B.," "H. A.," "J. W. P.," "T. H. W.," "C. O." (we hope to give details hereafter: the roof at King's-cross Station has no tie-rod), "A Building Operative" (our correspondent draws a wrong inference: we meant no taunt by the quote; referred to), "G. M. H.," "W. R.," "G. D. D.," "Mr. F.," "Moses Adams" (had better hear the writer out first), "Crito" (we have no desire to quarrel; but unhesitatingly decline the alternative), "W. C. jun." (the means of destroying ants were discussed in our pages some time ago), "An Inquirer" (the subjects mentioned are treated of throughout *THE BUILDER*: it is impossible for us to refer), "G. E. L.," "C. B.," "E. J. P." (we shall be happy to see the notes), "R. R." (may discuss the matter with Mr. Wells: we decline correspondence on the subject), "E. A. F." (will appear), "E. L. G." (thanks), "J. B. D." (the letter appeared to be in our correspondent's handwriting), "A Subscriber from First," "W. H.," "E. W.," "G. E. G.," "R. H."

NOTICE.—All communications respecting advertisements should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the Editors, and not to the Publisher.

"Books and Addresses."—We have not time to point out books or find addresses.

ADVERTISEMENTS.

BENNETT'S THERMOMETERS, 65, Chancery-lane. Railways, mills, churches, gardens, and chemists supplied with every kind of THERMOMETER at this manufactory, where 1,000 may be had for 50*l*. or may be selected from, at each, in which is provided frames; largest size to suit every place, purpose, and climate. Barometers at equally moderate prices. BENNETT, Watch, Clock, and Instrument Maker to the Royal Observatory, the Board of Ordnance, the Admiralty, and the Queen. 65, Chancery-lane.

LITHOGRAPHY AND ENGRAVING.—Estimate Plans, Drawings of Machinery, Manufacturers' Patterns, Land-scapes and Portraits, Show Cards, Circular Letters, &c., Bankers' Notes and Cheques, Certificates, Bills of Exchange and Landing Invoices, &c., &c., and every description of Engraving and Lithography, by the use of the private and public hand, at the current rate of charges.—WATERLOW and SONS, 55 to 65, London-wall, London.

BILLS OF QUANTITIES.—DAY & SON, Lithographers to the Queen.—Lithograph Bills of Quantities with the greatest despatch, and at a vast saving on the prices generally charged. 17, GATE-STREET, LINCOLN'S-INN-FIELDS.

TO ARCHITECTS.
COMPETITION AND OTHER DRAWINGS.—Mr. THOMAS S. BOYS, Member of the New Society of Painters in Water Colours, and author of "The Picturesque Architecture of Paris, Ghent, Rouen, &c.," and of "London as it is," offers his services in Tinting Backgrounds, Landscapes, Perspective Views, Interiors, &c., &c., from the long experience he has had in such subjects, he is fully aware of the points essentially necessary to be attended to. Drawings and designs lithographed in a superior manner. Address, Mr. BOYS, 15, Abingdon-street, Regent-park.

DECORATIVE PAINTING.—Mr. FREDERICK SANG, from the Royal Academy of Munich, DECORATIVE ARTIST in FINE ARTS, and in all other manner of Painting; whose works may be seen in the principal public buildings of the metropolis, begs to inform his patrons and Architects in parts of the country, that he has considered his Establishment, and is now enabled to undertake, on the shortest notice, the embellishment of private and public buildings, and any part of the United Kingdom, on the most reasonable terms, and in any of the Classical, Medieval, or Modern Styles.—Apply to SANG, Decorative Artist, 55, Pall-mall, London.

THE DEPOSITORS OF WORKS OF ART AND INGENUITY IN THE GREAT EXHIBITION, and others, are respectfully informed that the ROYAL POLYTECHNIC INSTITUTION, incorporated in 1823, is CLOSED to the PUBLIC, for the purpose of receiving approved donations, for sale or exchange, without expense to the depositors. To see who has been to examine this opportunity should send their works before the 1st of December, and they will then be fully particularized in the Catalogue.

The INSTITUTION will be RE-OPENED on the 8th of DECEMBER.

COLOSSEUM.—The original and extraordinary PANORAMA OF LONDON, painted by Mr. Parris, will be EXHIBITED, with the most splendid features of this city, in a new and entirely new building, from two till four till Four. The grand PANORAMA OF PARIS BY NIGHT, in a new and entirely new building, from two till four till Four, and during the evening, when the conservatories, in which are the most beautiful and valuable plants, will be open to the public, and the children and schools, half-price. CYCLOPAMA, Albany-street, admission 1*l*. A grand moving Panorama of London, painted by Mr. Parris, will be EXHIBITED, from two till four till Four, and during the evening, when the conservatories, in which are the most beautiful and valuable plants, will be open to the public, and the children and schools, half-price.

PUPIL.—A Civil Engineer, engaged in the country on a line of railway, has a VACANCY in his office for a PUPIL, who would have abundant opportunity of learning his profession. Terms, &c., for further information, address to DELTA, Mr. Mead's, Stationer, 15, Chancery-lane, London.

IN a Builder's office there is a VACANCY for a Young Man desirous of IMPROVEMENT, and as he will have many advantages, a small salary only will be given.—Address to G. H. office of "The Builder," 1, York-street, Covent-garden.

APPRENTICE to a Builder.—The friends of a LAD, educated at the Blue Coat School, wish to put him as FELLOW APPRENTICE to a Carpenter and Builder, with whom he will meet with moderate treatment, and acquire a knowledge of the business. Address, with terms and other particulars, F. Post Office, 120, Strand.

TO ARCHITECTS AND SURVEYORS.
A TRADESMAN has a SON, a respectable youth, fourteen and a-half years of age, who has good idea of planning, drawing, and all a young man would be placed in a respectable office as an APPRENTICE for any length of time as may be agreed upon. No premium will be given, as the lad's services may be made good very soon.—Address, A. B. Mr. Spalding's, Stationer, &c., High-street, Nottingham.

WANTED, an expeditious ARCHITECTURAL DRAUGHTSMAN, capable of making perspective and other drawings, with a good knowledge of the Italian style.—Address, A. B. Crawley's, 3, John street, Oxford-street.

WANTED, in a large Building Firm in Town, an EXPERIENCED MAN, competent to take out plans, measure and estimate, and keep office-accounts.—Address, post-paid, to A. B. Mason's-hall, Birmingham-street.

TO BUILDERS.
WANTED, a SITUATION as SHOP or WALKING FOREMAN, by a Young Man accustomed to both duties.—Address, J. E. 10, Isabella-street, Gibson-street, Waterloo-road.

TO ARCHITECTS, BUILDERS, AND OTHERS.
WANTED, a SITUATION as CLERK of WORKS, or to Superintend Building Works for Contractors. The person required is respectable and well-versed in the building business. Can give good references.—Address M. K. T. Office of "The Builder," 1, York-street, Covent-garden.

TO BUILDERS AND OTHERS.
WANTED, a SITUATION, by a thorough Builder's accountant, &c., of some years' experience in the various branches of the trade, also in cost, &c. No objection to a temporary engagement, or upon arrears, in town or country. Address, A. Z. care of Mrs. Lomas, 25, Westminster-bridge-road, Lambeth.

TO ARCHITECTS.
WANTED, by a Gentleman, aged 21 (who has superintended several works on his own account, a SITUATION as ASSISTANT in an Architect's Office, or "The Builder," York-street, Covent-garden.

THE Advertiser is open to an ENGAGEMENT in a builder's office as GENERAL CLERK, or combining the superintending of the erection of buildings, in which respect his experience has been very extensive.—Address A. Z. Mr. R. Stephens, No. 75, Tottenham-court-road.

TO ARCHITECTS, SURVEYORS, OR BUILDERS?
A N experienced DRAUGHTSMAN is open to an ENGAGEMENT in Town or Country. Most respectable and satisfactory references and testimonials can be given.—Address to A. B. 44, Fenchurch-place, 11, Thurland-street, Kingston.

TO ARCHITECTS.
A GOOD and expeditious Draughtsman, who is perfectly capable of getting up working and finished drawings, perspectives, &c., is a self-actor, and understands the routine of an office, is desirous of meeting with an ENGAGEMENT in town or country, at a liberal salary.—Address, A. B. 8, Southgate-road, Kingsland.

TO ARCHITECTS, &c.
A YOUNG MAN is desirous of an ENGAGEMENT on moderate terms; he has good practical knowledge and high reference.—Address to A. Z. Mr. Clapperton's, 11, Mortimer-street, Regent-street.

TO TIMBER MERCHANTS, BUILDERS, AND OTHERS.
A YOUNG MAN of respectable connections, having twelve years' experience in the timber estimating, measuring, and valuing, would ENGAGE himself in the above line, at a moderate salary.—Address, T. H. B. No. 34, Edgware-road, Marylebone.

TO ARCHITECTS AND SURVEYORS, &c.
A YOUNG MAN, respectfully connected, having completed his articles with an eminent architect, is desirous of an ENGAGEMENT as Draughtsman and General Assistant. A small salary would not be objected to, as his desire is to improve himself. Most respectable references can be given. The country not objected to.—Address, C. A. 4, Church-street, Finsbury.

TO ARCHITECTS, RAILWAY CONTRACTORS, AND OTHERS.
A YOUNG GENTLEMAN, who has just completed his articles in an architect's office, and has had considerable experience in taking up an ENGAGEMENT either in England or on the continent; the most respectable references can be given.—Address B. H. W. Mr. Blakeley's, solicitor, Houndsditch.

TO ARCHITECTS AND SURVEYORS.
A GENTLEMAN, fully qualified in his profession, who has been in practice himself, wishes to obtain EMPLOYMENT in London; he is a superior draughtsman, and has had extensive practical experience in every branch of the profession, being also an experienced surveyor and mine surveyor, and a first-class practical draughtsman, and is capable of doing all the best work in the trade, and can be procured at a very low price, per week.—Address G. H. W. Office of "The Builder," 1, York-street, Covent-garden.

TO ARCHITECTS, ENGINEERS, &c.
A THOROUGHLY Qualified Assistant, desirous an ENGAGEMENT in Town or Country. Terms moderate.—Address Z. A. care of Mr. Smith, 10, Chambers-street, London.

TO ARCHITECTS, SURVEYORS, &c.
AN Experienced ASSISTANT and CLERK of WORKS, aged 31, having been in a similar office, and practically in the business, wishes to obtain EMPLOYMENT in the same line, where he would be able to do all the best work in the trade, and can be procured at a very low price, per week.—Address, S. C. R. V. 1, York-street, Covent-garden.

The Builder.

No. CCCCLXI.

SATURDAY, DECEMBER 6, 1851.

FROM all quarters materials are being thrown into the cauldron out of which is to come, ultimately, a fine, healthy, and convenient London:—

"Mingle, mingle, mingle,
You that mingle may."

Projects for new bridges, new streets, new buildings, new parks, new railways have been thrown into the pot, will stew their time, and get out as best they can.

"Double, double toil and trouble;
Fire, burn; and, cauldron, bubble."

Westminster-bridge seems at last in a fair way of being mended with a new one: at all events, the plans have been deposited, and notice has been given of the intention of the Commissioners of Works to apply for an Act in the next session of Parliament, to enable them to proceed with the works. The plans deposited, made, as we stated last week, by Mr. Hardwick, have reference merely to the property required to be taken. The bridge is not yet designed, but we are able to indicate pretty accurately the nature of the structure, from what we believe will be the report of the Commission appointed in 1851 to consider "the best and most convenient site for a new bridge at Westminster, and, at the same time, what will be the best mode of construction with reference both to the traffic over it and to the purposes of navigation."

The report has not yet been presented to Parliament, but we can give what we believe will be the recommendations contained in it. It will be remembered that this subject has already occupied the attention of three committees of the House of Commons, namely, in 1844, 1846, and 1850, and that the last of these advised the erection of a temporary bridge, and an inquiry into the best mode of building another. The present commissioners recommend that the old structure should be used as a temporary bridge, and that a new bridge should be constructed adjoining, or as near as possible to the present bridge on the north side, that is, lower down the river; that it should not be less than 60 feet in width including the footways; that the height of headway of the centre arch should not be less than 25 feet 6 inches above Trinity datum; that it should consist of no more than five arches; and that it should be an iron structure resting on stone piers, as this would require less rise than a stone bridge, admit of a greater span of arch, and throw less pressure on the foundations.

With respect to the height and width, Mr. Barry, in his evidence, stated, as indispensable conditions if the bridge were to remain where it now is, that the roadway should be level from shore to shore; that the width of the roadway should be not less than 100 feet, and that the height of the road should not exceed 20 feet above Trinity standard. These conditions of course had reference to the effect of the New Houses of Parliament, and the commissioners admitted their importance in that

respect; but, considering that a bridge of this limited height and extended width would prove an obstacle to the passage of vessels, they have not adopted them. We may state as data, that the width of London-bridge is 54 feet, Blackfriars-bridge 42 feet, Waterloo-bridge 43 feet, and Vauxhall-bridge 36 feet. The height of headway under the same bridges, in the same order, is,—29 feet 6 inches, 27 feet 6 inches, 27 feet 6 inches, and 26 feet.

A bridge of the width proposed by Mr. Barry would be a fine feature as well as great convenience, and it should be considered whether or not it might be obtained, or, at all events, approximated, without increasing the obstruction in the river, by means of overhanging footpaths carried by cantilevers or balance girders.

The property scheduled to come down includes the houses on the south side of Bridge-street, extending as far as the India Board, and then returns into Parliament-street. On the Surrey side the houses now standing on both sides of Bridge-road are taken as far as Belvedere-road on the north side, and Stangate on the south side, and a few houses on the east side of Belvedere-road, at the corner of Bridge-road.

For Mr. Charles Pearson's scheme for effecting a junction between the centre of the City and the several railways north of the Thames, plans have been deposited preparatory to an application to Parliament for powers. This has been done, as we understand, not by the City authorities, as stated elsewhere, but by Mr. Pearson himself, pending an examination into the cost and practicability of the scheme, on the part of the City, by Mr. Jas. Walker, Mr. Higgins, and the City architect.

On Friday evening in last week, Mr. Pearson laid his scheme before the members of the Institute of Architects, invited by him for that purpose. On that occasion the projector drew a very striking, we may say astounding, picture of London city, with its coal trade, corn trade, banks, Stock Exchange, markets, India House, and other immense establishments, and showed the enormous interests centred in the 620 acres which form it, and contain a fixed property, the assessable value of which is a million and a quarter per annum. The worth of the movable property he called a hundred millions. Aided by Mr. Stevens, who has for some years been working out the plan with him, Mr. Pearson explained the course of the proposed lines of railway, to be constructed in a sub-way beneath a street 100 feet wide (less straight than is desirable) from Farringdon-street to King's-cross, with branch lines to passenger-stations, passing under Holborn-hill and Skinner-street.

We have long said, without reference to this or any precise scheme, that our railways must be connected and made continuous, and we feel satisfied that by one plan or another this will be effected. As to the particular scheme now before the public, there are points of detail yet to be inquired into; but we must nevertheless say we have a strong presentiment that it will be carried out, and shall be disposed, when it is in financial shape, to back our good opinion of it by taking shares.

The railways on the south side of the Thames must be continued to the same point, and there are no insuperable difficulties in the way. We feel perfectly sure that this connection of

the lines will be effected, although as to the "when" there may be doubt. Now, however, is the right time to begin, and we do hope, therefore, that Mr. Pearson's scheme will have the fullest and fairest consideration, and that mere prejudices will not be allowed to weigh against the evidence of facts and figures, if offered.

Within the last few days a printed paper has been circulated, urging the importance of providing for the systematised warehousing of goods on the ground between New Cannon-street and the Thames, with a railway bridge over the river, extended to the South-Western and South-Eastern Railways. We are not certain that this would be the best place for a railway bridge, having the general connection of all the lines in view (a spot nearer St. Paul's would seem to have advantages, and we might clear away the houses on the south side of the Cathedral, and so open the glory of the metropolis to the river), but we mention the proposal to show the direction public opinion is taking.

Mr. Robert Hesketh, architect, has published a plan for the formation of high level streets from St. Paul's-churchyard to Holborn, and Fleet-street.* The street is shown to begin opposite to Hatton-garden, passes behind St. Andrew's Church, through Farringdon-market obliquely, and, crossing Farringdon-street and Old Bailey, opens in St. Paul's-churchyard where Ludgate-street joins it. This would, of course, greatly increase the traffic in St. Paul's-churchyard,—perhaps too much so.

We are glad to see that the City Sewers Commissioners at their last meeting resolved unanimously upon making a fresh application to the Dean and Chapter for the removal of the iron rails around the Cathedral, in order that a portion of the ground may be laid into the public way. The Dean and Chapter have, we believe, already expressed their willingness to negotiate this matter, if the City will buy and pull down No. 1 in the churchyard. Admitting that this is very desirable, should the expense prevent it at this moment, surely the chapter will not say, that because two advantages cannot be had, one shall not be?

Amongst the works of improvement which are certain to go on may be mentioned the completion of Somerset House. All our London readers know the ugly aspect of the west end of this building, and the awkward area in Wellington-street, at the foot of Waterloo-bridge. The new building, designed by Mr. Pennethorne, will face Wellington-street, and will have two projecting wings, which will come out to the line of the street: a porch or portico in the centre will afford a way through, into the quadrangle. The character and details of Chambers's fine building are to be adhered to, and the effect promises to be good. The entrance will be on the level of Wellington-street, and the area beneath will be made use of for dry-stamping. The foundations are already commenced.

In Spitalfields and Shoreditch new roads are commenced, and the market is to be enlarged: new approaches are, we believe, at last to be formed to Victoria Park: notice is given for application for powers for a new park for Finsbury;—and so the cauldron boils and bubbles:—

"Mingle, mingle, mingle,
Mingle you that may."

* Published by Weale, Holborn, 1851.

ARCHITECTURUS TO HIS SON.

THE LAMP OF SCIENCE.

THE artist-architect must possess a certain knowledge of constructive science,—and that by no means superficial or hastily acquired,—as a basis of his art-work;—but this is not the present point. The architect, as a man of business, must be not an artist alone, but a man of mechanical skill no less. The profession of an architect is not mere art; it is science likewise: the architect must be not merely a player of melodies and harmonies to the eye, but a calculator of stability and equipoise,—and not merely such a calculator for the beauty which is in science, but a practical and responsible administrator of its principles for their utilitarian worth, as the master of the builder.

The influence of this question upon the minds of some architects of more practical bent, leads them to deplore so much the scientific shortcomings of the profession of the present day, that they declare for the revival of the ancient system, wherein the architect and the engineer were one. For instance, Bartholomew:—

“Of the injury which has occurred to practical building by the separation of the art into two branches of architecture and civil-engineering.—Formerly every architect was a civil engineer, and every civil engineer was an architect; but from the vast employment in modern times in the making of canals, docks, bridges, and railroads, the profession has become split up into two; and this has tended, perhaps more than any other circumstance, to the ruin of real practical science in architecture. The architect is now rarely able, from the want of an enlarged practical knowledge, to execute a great and extraordinary work,” &c.

And certain it is, that so much higher is the merit assigned in every-day life to the utilitarian than to the beautiful,—so much greater the public appreciation of science than of art,—so much more ready the comprehension of the physical than of the spiritual,—so much greater the esteem for the labour of the hand than for the music of the soul; that between the most vulgar of practical engineers and the most refined of merely artistic architects, the preference, I fear, would be almost universally awarded to the former. At this moment, the profession of engineers is honoured far beyond the profession of architects; indeed, perhaps I ought to say, and with sorrow, the one is honoured, and the other almost despised.

A mighty edifice is demanded as a fit receptacle for a display of all the world's works of industry. A committee of the most distinguished architects are entrusted with the task; and a select few of the most eminent engineers are associated with them, to supply, if necessary (ought it to have been supposed necessary?) the element of mechanical science in perfection. Suggestions of design are gathered from all the states of Europe; honours of the first and second merit carefully awarded by the score as a return; months spent in deliberation and discussion; and what is the end? Knighthood, of course,—knighthood to one engineer, one builder, and one gardener. Has the genius of architecture been troubled with a dream all this time,—a nightmare? or is this strange story true? Ask your friends this question, my son. If the project had been a tunnel through a mountain or under a river,—a bridge to carry railway trains across a strait of the sea,—a running engine to outstrip the wind,—a ship to sail more swiftly than ever ship sailed before,—a wire to lead lightning talk along the bottom of the ocean,—or a road to reach the antipodes in a week,—nay, if it had been the making of a canal,—the ventilation of a mine,—the waterworks of a town,—or the drainage of a fen,—is there ever a gardener in the flesh at whose hands the engineers of England would have taken what we architects have taken at the hands of this new knight? What would Rennie, Stephenson, or BRUNEL say to such meddling with their business? What would Rennie, Stephenson, and Brunel, that are gone, have said? How would Smeaton or Telford have met such a thing? What would WILKINSON have said? My son, if you would have me rest in my grave,

see to it that your generation wipe off this stain.

How sadly deficient is our education of the architect. Not only is there no shame in our profession, so that a man of utter emptiness will no more blush than if he had no cause; but, positively, there is provided in our system no means of acquiring knowledge at all,—perhaps the very reason why there is no shame, as I say. Now, if art may be had by inspiration and a little practice, certainly science can not. A thing of experiment and calculation and memory, it must be laboriously learnt. And really, when we compare with the vast and varied realms of science involved in the practice of the engineer, the single small province which the architect requires, it seems folly to be deficient in one title of this, when the engineer is so perfect in that so much more extended field. It is true that the architect, as I have told you, has so many various subjects of attainment that he may well be almost bewildered to contemplate them; but science is perhaps the most easy of all his subjects, and he need never make a difficulty of that. It is of no more difficulty, as it is also of no less moment, than arithmetic itself; any one may learn it, and every one ought. A man must possess the feeling of the poet—born, not made—who would learn art: delineation demands the ready hand, which is no less a gift of nature; in building, the acquisition of experience takes years, not hours, to gain; while the lamp of learning, if it is to be lit in the caverns of archaeology, involves diligent research, if not a *quisito* for the extraordinary; but science—the plain straightforward matter of university lectures—needs only a book and a slate and an evening hour.

Yet this very subject of science is the one in respect to which the acknowledged deficiencies of the architectural practitioners of the present day are perhaps most observable. It is Precedent that has done it. Some of us have of late contended anxiously against this Precedent, as a bad idol, to be for ever overthrown; and the only defence which could be set up for it, with a pretence of success, has been these claims,—that it is a good thing and sanctified to reverence the relics of departed worth, and that to set aside the attainments of the ages is but the fallacy of him only who forgets that “through the ages one increasing purpose runs.” But this is not the point; these precedents are not the system of architectural design which, but a few years ago, held such high-handed rule. That Precedent, now cast down, and almost forgotten and denied, was a standing order, that he who should refuse to acknowledge what was designated the *authority* of what was designated *antiquity*, or who should bow down before aught else and worship it, was simply lunatic. Extending itself into other systems also, this principle led through imitation to mimicry, and through mimicry to mockery, till the scientific structures of former times became so travestied in modern confectioners' work, and every reference to the science, which was their truthful basis, so utterly forgotten, if not repudiated, that Bartholomew (to quote him again) exclaims, in anger, “We have not a single building, erected in England since the eighteenth century, which exhibits the least approach to the exquisite ingenuity exhibited in the union of outward beauty and innate science by the edifices erected in an age deemed barbarous;” and again, “The science of architectural dynamics, with shame be it spoken, is actually involved in such mystery, that it may be said to be almost dead to the builder, except in great works of engineering;” and again, “There is at present such a gulf cast between architecture and science, that architecture, instead of improving and blending more and more with science, degenerates and becomes every day more and more detached from it.” There is serious truth in the bitterness of this: if our age is to have a new style of its own, by any means or by any accident, it will never be by such means as those employed during the last two centuries in reproducing one ancient style after another in mere pedantry and hollow semblance—dead lions stuffed with straw, or by any accident which

happens to stop short of an occasion for a return to fundamental scientific thought. Oh, that architects had been true to their mission (if they could have been) in respect to this Crystal Palace of 1851! taking candidly the glorious chance—suggestion of the clever gardener—taking it cheerfully and honourably off his hands and out of his hands at once, elaborating it scientifically and beautifully, as the architect alone of course can do. What an opportunity for an epoch! Were this building, instead of a positively unscientific and decidedly unsightly mere leviathan—in- stead of a grand and noble fancy, carried into effect without skill and without taste—instead of a mighty step in art, all profitless and astray, because unguided by the artist's hand—instead of a great Victoria Regia, all baubles, contracted, and awry, because there was no Paxton's fostering hand to cherish it,—were it but a building *architecturally* built, however simply scientific, and however plainly if truly artistic, it would have cost the British public less rather than more of their dearly beloved money, and they would never come to issue the fiat, as assuredly they will do (or lament they have not done), to kill it to preserve its honour—to pull it down to save it from ridicule and wreck.

The science of the architect is the philosophical knowledge of that for which the practical builder depends upon his rule of thumb. Such empirical knowledge is not necessarily erroneous by any means; it is, on the contrary, elementarily sound, as the fruits of observation and experience; but it is necessarily more or less imperfect, indefinite, and uncertain, because unsystematic and incomplete. To collect and systematise the results of observation is the work of philosophy; and the product—clearing itself, by the mutual explanations of its elements, of the errors of empiricism, and completing, by the mutual assistance of its elements, the entirety of a system—becomes a science. A perfect science has no mystery: that there is a cause for everything is its first principle, and it lays bare all causes, and foresees all effects. It is the means by which the Maker of the world gives to man a delegation of his own power.

I have spoken of Delineation as the servant of Art: I cannot speak so of Science. This is no servant, but a master—masculine and immovable. Art is the dress, rather—the garment of beauty and honour, giving majesty to his mien, dignity to his action, elegance to his form. The rude Hercules becomes graceful as an Apollo. But the manly front remains unfeminized, mark you: art drapes the limbs, but their outline is still there. I would give a year of my life, my son, to impress this upon you. For if even I could dismiss the mockeries of counterfeit structure as dissipated and gone, what have we left in this age, tell me, after all? Where is the old-world unmanicured building, where every feature and every limb presented to your eye its uncoiled, undisguised, unhesitating honesty? Beside this draped man of the old Egyptians and Greeks, and the old Christians as well, our figures are but empty effigies,—beside their righteous structure, our work is but mockery,—beside those men of manly speech and doing, we are but monkeys of mere mimicry. And why? Because with them Art was the servant of Science: with us Science is made (as if it were possible) the servant of Art,—or rather Art has been taken to be but a shadow of unsubstantial shape and show, and Science pressed into its service to clothe its deceptive limbs in seeming flesh and blood, and to disend its hollow visage to bear a fallacious bloom.*

K.

GARDEN WALLS OF GLASS.—The *Gardener's Chronicle* mentions a proposal by Mr. C. Ewing, in Anglesea, to construct garden walls of glass and iron only. The plan is, to have iron uprights firmly fixed into the ground, and faced with glass on both sides, the space between the two faces being occupied by trees planted and trained in the usual way. The glass is all moveable, so that perfect ventilation, as well as perfect shelter, is secured.

* To be continued.

DR. PLAYFAIR'S LECTURE ON WATER SUPPLY.

On the 26th November Dr. Playfair lectured at the Museum of Practical Geology on Water Supply, chiefly in reference to the metropolis. The lecturer commenced by reviewing some of the conclusions arrived at in a previous lecture. When heat is withdrawn from water, it diminishes in volume until the temperature reaches $39^{\circ}1'$, when it begins gradually to expand, reaching its greatest expansion at the temperature of freezing, or 32° . The minimum volume of water, therefore, is at a temperature of $39^{\circ}1'$, this being the result of a series of experiments made by himself. The specific gravity of water at 60° being unity that of ice is $\cdot 9184$, as determined by himself, which agreed precisely with the result arrived at by some other experimenters. When water is frozen, the air and salts are expelled, so that ice is perfectly pure solid water. In wells and springs the water contains air and gaseous bodies, besides alkaline salts. The lecturer then referred to the section of a hill consisting, at a certain depth, of a porous stratum like sand or gravel, succeeded by one of clay, by which the water is dammed up, and which will yield water on sinking a well down to it. Under the same conditions water will frequently break out in springs at the point above the clay where the latter crops out on the slope of the hill. The ingredients in water are of three kinds: earthy, alkaline, and organic. There are six different kinds of earthy ingredients, namely,—first, ordinary carbonate of lime, which is not naturally soluble in water, but is so in water containing carbonic acid; second, sulphate of lime or gypsum, which is itself soluble in water; third, chloride of calcium; fourth, carbonate of magnesia; fifth, chloride of magnesia; and, sixth, sulphate of magnesia or Epsom salts. The alkaline constituents are common salt, sulphate of soda, carbonate or bi-carbonate of soda, chloride of potassium, carbonate of potash rarely, and sulphate of potash frequently. Chlorate of barytes discovers sulphuric acid in water. To discover and precipitate the lime, oxalate of ammonia is to be added; and, in hard water, chloride of lead causes a white precipitate. The alkaline constituents are those which chiefly concern hard water. On rubbing a drop or two of water between the finger and thumb, hard water may be readily detected, by observing that it scarcely moistens the fingers, but runs off, whereas soft water sensibly moistens them. The lecturer here drew attention to a large jar containing 1,000 grains of common London pipe-water. On adding to this a solution of soap, in spirits of wine, no lather is produced, and even after considerable shaking the lather still refuses to form; and this absence of lather continues until solution of soap is added in sufficient quantity to decompose all the earthy salts. Soap is an oily acid united with an alkali, generally with soda, the composition being margaric acid + soda. When added to water, the margaric acid leaves the soap and combines with the lime, forming margarate of lime. When the lime is decomposed, then, and not till then, a detergent lather will be produced. In comparing specimens of water having different degrees of hardness, the quantity of a solution of soap of a given strength required to form the lather should be measured, and so the degree of hardness may be determined. The London pipe-water has 14° of hardness. In washing the hands with London pipe-water you get up the lather outside the basin, and never in the basin; but in soft water you form the lather in the water, and, in fact, a detergent lather is immediately produced on the surface. Before 100 gallons of London pipe-water can be made detergent, 30 ounces of soap must be consumed. The average consumption of soap throughout England is $7\frac{1}{2}$ lbs. per head of the population, whereas the consumption in London is 15 lbs. per head. The loss to the inhabitants of the metropolis from this cause alone,—namely, the extra consumption of soap—is probably not less than 200,000*l.* per annum. We try to economise soap in London by adding soda to soften the water.

After boiling, water is much softer than before, containing only 4 degrees of hardness. The value of the soda consumed in London for the purpose of mixing with water amounts to 30,000*l.* annually. The washerwoman is a more important member of society than the wealthy cotton spinner. A dozen shirts may be bought for 4s. and, with economy, will last for three years; and supposing that three shirts are washed per week, at a cost of fourpence for each shirt, the washerwoman's interest in the twelve shirts will, at the end of three years, have amounted to nearly 8s. , while that of the spinner has been only 4s. It may be estimated that persons living in London with moderate incomes, say 600*l.* a year, spend one-twelfth of it, or about 50*l.*, in washing. Supposing that the washing of each individual amounts on the average to 1*s.* per week, the whole cost of washing, as paid by the inhabitants of London, will amount to 4,200,000*l.* per annum. The prices of washing in the country, where soft water is employed, do not exceed one-half of those paid in London; so that it appears an annual outlay of two millions sterling is occasioned to the metropolis by the hardness of the London water. In washing on the large scale, as in the process of washing clothes, you must make the whole of the water detergent, either by means of soap or by soda. The labour also of washing in hard water is much greater. The wear and tear of clothes is also excessive when hard water is used. It has been estimated that in the article of ladies' collars alone a destruction to the amount of 20,000*l.* takes place annually from the employment of hard water. The water at present supplied to London may be rendered soft by very simple chemical means,—namely, by adding caustic lime. The proportions required are one part of lime water to five of common water, and this reduces the hardness to the same degree as that of water after being boiled. In fact, water so treated contains only 4 or 5 grains of carbonate of lime per gallon, instead of 14 or 15 grains. The sharp, pungent taste in spring water is chiefly due to carbonic acid. Many persons complain of the insipid taste of perfectly pure soft water. The freshness may, however, be immediately restored to soft water by adding a little soda water, which supplies the carbonic acid. The annual expenditure or loss to the metropolis from the use of Thames water would, in the course of two or three years, pay for bringing it even from a distance of 50 miles. It was objected before the Parliamentary committee which lately sat on the water supply, that if you remove the saline ingredients from water it would no longer furnish the phosphate of lime necessary to form the bones. The absurdity of this idea was well exposed by Dr. Clarke, of Aberdeen, who said "the water of my native town (Aberdeen) has only one degree of hardness, and certainly the Aberdonians are amongst the largest boned men in her Majesty's dominions." In calico print works hard water cannot be used, and it is highly injurious when employed for steam boilers. The process of softening water by means of caustic lime has been tried and found perfectly practicable at the Chelsea Water-works.* One pound of chalk when calcined will produce 9 oz. of caustic lime, which will make 40 gallons of lime water, and be sufficient to mix with 560 gallons of ordinary London pipe water. From this calculation it follows that 31 tons of chalk daily burnt into lime would be sufficient to soften all the water used in London. It has been asserted that soft water acts injuriously upon lead, and that the presence of lead can be detected in soft water which has been kept in leaden cisterns by the addition of sulphate of ammonia. This latter is a delicate test for lead, throwing it down in a faint black precipitate. In order to test the truth of this assertion, Dr. Playfair had prepared a number of bottles, each containing a piece of lead immersed in water containing specimens of all

the salts found in the London water, and also in water free from these salts, or perfectly soft. These bottles were sealed up in January last, and the action of all the water containing salts was very apparent, while the soft water had not acted on the lead at all.* As an example of those which had no action on the lead, the lecturer specially alluded to the Wandle water, one of those proposed to be brought into London, and well known for its remarkable softness. Where common salt is present in water, the action on lead is considerable. All his experiments tend to prove that perfectly soft water has no action on lead, and that all the solid ingredients of water tend to produce and increase the action of lead. Hard water often produces diseases in animals, and all who have watched the habits of horses and other domestic animals, must have observed how generally they will prefer even a dirty pool of soft water to the clearest and freshest hard water that can be given to them. The same remark applies to poultry, pigeons, and other birds, who all select soft water when left to their own choice. The question of domestic economy, however, is so important to the inhabitants of London, that on this ground the battle of the water supply must be fought in the next session of Parliament.

THE MARYLEBONE LITERARY AND SCIENTIFIC INSTITUTION.

The old lecture theatre of this institution, which was behind the premises in Edward-street, Portman-square, has been reconstructed and enlarged, and a gallery added: the arrangement, too, has been altered, the lecturer being now placed upon a raised platform at the back, and the benches for the auditory arranged concentrically upon a gradual incline in front of it, so that persons in the back seats have a full view of him. The main approach has been enlarged, and increased facilities given, with separate lobbies and staircases for approach to the ordinary and reserved seats, platform, and gallery, which, it is calculated, will now accommodate about 1,000 persons: there are also beneath the theatre four spacious class-rooms, with lecturers' retiring-room and other conveniences. The cost is about 1,200*l.* The interior is not yet complete as respects the decorations. Provision for warming has been made by a Nott's Patent Stove placed centrally, and ventilation is carried on by the introduction of tubes beneath the floor communicating with the exterior, and having outlets in the gangways for the admission of fresh air, the impure being carried off through the upper part of the lantern light, and by means of flues in the walls. Mr. C. Eales has acted gratuitously as the architect, and Mr. Hall, of Orchard-street, was the contractor.

ROYAL SOCIETY'S ANNIVERSARY.—At the anniversary meeting of the Royal Society, on Monday, the 1st (St. Andrew's day falling on Sunday), Lord Rosse, the president, in the place of his ordinary address, read an admirable and interesting memoir on the progress of the science of comparative anatomy, exemplified by the works of Professor Owen, to whom the Copley medal (the highest honour the society has to bestow) had been awarded. The memoir was drawn up by Professor Thomas Bell, and, commencing in 1832, when Mr. Owen took up the mantle of the great Cuvier, recounted and analysed his numerous and important works.

PLAY GROUNDS FOR THE PEOPLE.—A petition to the Commissioners of Works from the clergy and medical men of St. James's parish, is now in course of signature, praying the commissioners to set apart a space in Hyde-park and elsewhere for the exercise of quoits and other athletic exercises.

* We believe that the assertion, or at least the truth is, so far as regards the hard water, not so much that it will not act on the lead, as that, so acting, it forms, with the lead, a crust which protects both the water and the lead from further action. We may also add, that it has been explained by us heretofore that the action of soft water arose, not from the water itself but from free carbonic acid dissolved in it,—perhaps, too, even from ammonia so frequently got in rain water. Thus soft water will not act *per se* on lead; but the free carbonic acid with which it is so frequently impregnated will.

* Dr. Playfair probably refers to the trials made during the last summer at the reservoir in the Green Park, when the water was rendered perfectly soft by the addition of caustic lime. We know of cases in which the same method is now regularly and successfully adopted in household practice—of course on a small scale.

STALL CANOPY, &c., FROM ST. STEPHEN'S CHURCH, MAYENCE.

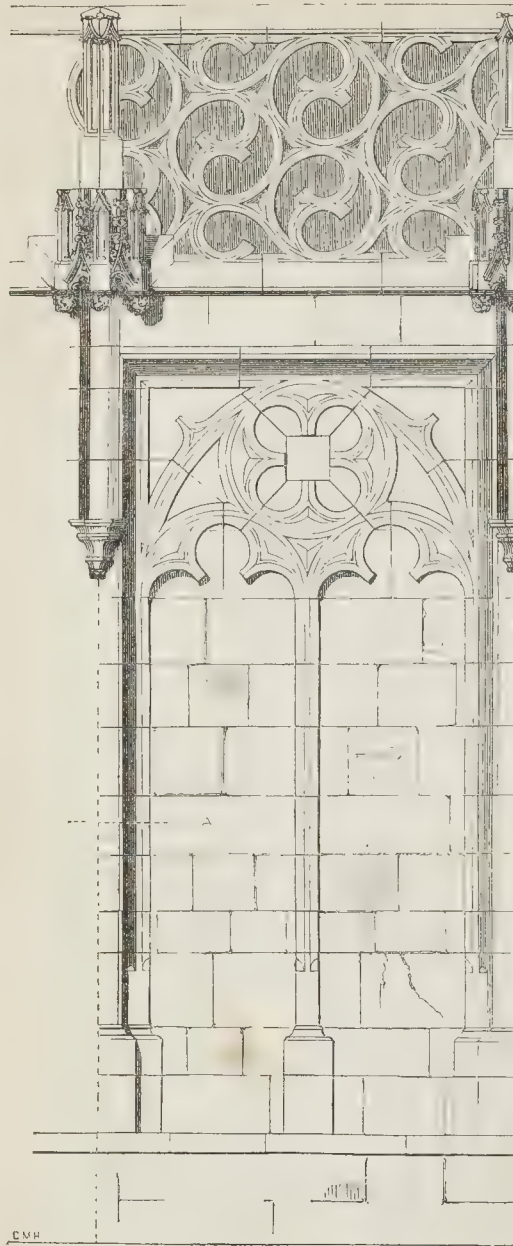


FIG. 1.

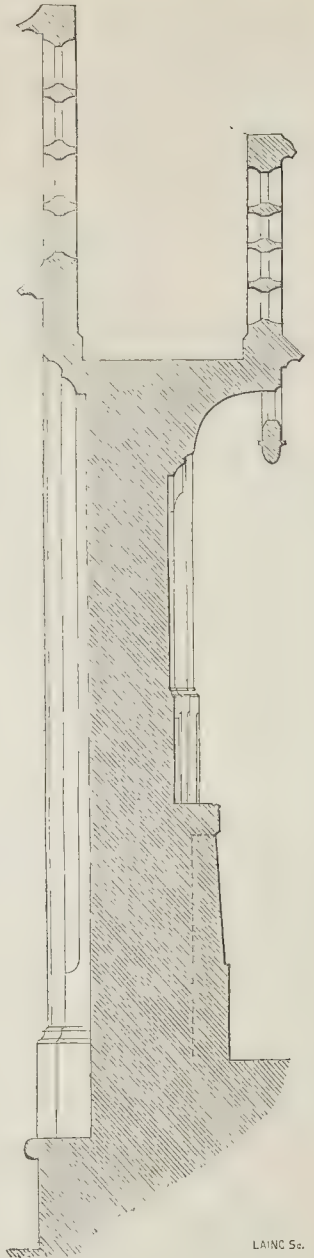


FIG. 2.

3 6 0 1 2 3 4 5 6



FIG. 5.

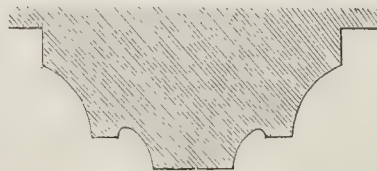


FIG. 6.



FIG. 7.



FIG. 8.

STALL CANOPY, &c., FROM ST. STEPHEN'S CHURCH, MAYENCE.

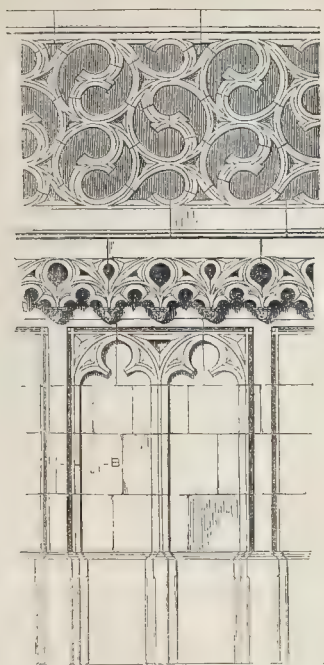


FIG. 3.



FIG. 4.

STALL CANOPY, &c., FROM ST. STEPHEN'S CHURCH, MAYENCE.

THE church of St. Stephen is chiefly a work of the latter part of the fourteenth century, but has many indications of having been preceded by a Romanesque structure. It consists of an apsidal chancel, nave of three bays with aisles, west tower, square below and octagon above, and the nave is continued west of the tower a space about equal to one bay. A small quadrangular cloister attached to the south side of the church leads to the remains of the conventual buildings. The whole contains much good and interesting work, but except the church itself is much neglected, and fast going to ruin. The destruction in the first instance is attributed to the French, who, when the city was occupied by Napoleon's forces, used these buildings as a magazine and barracks.

The engraving represents portions of the stone canopy to the stalls in the chancel. The arrangement and design is similar on both the north and south sides, and extends to a length of ten of the front panels, fig. 3, equal to five of the back panels with their intervening niches, fig. 1. The gallery shown by the section, fig. 2, appears to be for the convenience of arranging tapestry or ornaments at festivals. It can only be gained by means of a ladder over one of the parapets. The open tracery of the parapets is arranged without regard to the spaces of the panels below. The seats are of oak, but are very inferior in character to the stonework, and have therefore been omitted in the drawing. A curious point about them (to be found in the cathedral of the city and in other German churches) is a provision, no doubt convenient enough to the tobacco smokers, but somewhat offensive to the refined delicacy of English perceptions.

REFERENCES.

- Fig. 1.—One panel of side towards aisle.
Fig. 2.—Transverse section.
Fig. 3.—One panel at back of stalls; chancel side.
Fig. 4.—Plan of mouldings at A, fig. 1.
Fig. 5.—Section of tracery in parapet, fig. 1.
Fig. 6.—Plan of mouldings at B, fig. 3.
Fig. 7.—Section of tracery in parapet, fig. 3.
Fig. 8.—Section of tracery to canopy.
Figs. 5, 6, 7, and 8 are shown quarter full size.

FINE ART CRITICISM.*

ERRONEOUS criticism is not always the result of ignorance or incapacity; it is too often the expression of ill-nature, a disingenuous spirit, and uncandid judgment,—a want of charity and humility, on the part of men from whom better things might have been expected; who look down, or affect to do so, on works, to which they should look up and learn. Faults are dwelt upon, and qualities that would more than redeem them are passed over in silence. A work is too often despatched with a disparaging remark, or allusion to some trifling fault of execution, and all its beauties of execution, and, perhaps, grandeur of conception, and truth of expression, its *vivida vis animi*, are overlooked.

Akin to these is an order of architectural critics, who, from perhaps a keen sense of the ridiculous, and a wish on all occasions to say something smart, affect to see in all works of architecture a resemblance to something of ordinary or vulgar use. Many a beautiful composition has been sneered at in this mood. A friend of mine, for whose general opinion on points of art or literature I have much respect, complained to me the other day that he can never look down South Castle-street, Liverpool, with-

out having the idea of a hemispherical wire mouse-trap presented to his imagination through the medium of the Custom-house dome,—the wires being represented by the lines of its covering. The comparison of a domed belfry with a pepper-box has become trite. Now, though this ridicule is not always groundless, yet the principle is unsound. A mouse-trap or pepper-box, or equally mean article may be shaped by its makers into an exact model of some really artistic structure; but would the latter be rendered less artistic? If it would, no "thing of beauty" is safe; and the Greek lyre will for ever resemble a door-scraper, of which it has too often been made the type. This style of criticism, however, I had no idea of noticing till I found it adopted by writers whose respectability might give it effect. In a paper on architecture in "Chambers's Information for the People" I find the following remarks: "Architects require to guard against introducing forms which will revive recollections of unpleasing or mean objects. Fine buildings have been rendered ridiculous by inattention to this point. One structure is defaced by a dome the exact model of an inverted punch-bowl; the pinnacles of another resemble the upturned legs of a footstool; the front of a third is like a grenadier's cap; and the corners of a fourth are defaced by turrets the shape of pepper-casters. The most distant resemblance to all familiar objects ought to be carefully shunned." Now, this is impossible, or at least, if done, all beautiful form might in time be excluded from art; and critics would be better employed exhorting manufacturers not to make articles of mean use like fine buildings, pepper-casters like turrets, or stool-legs like pinnacles. Though the parody does not dishonour the poem, yet such things, generally speaking, should not be done. A man must have but small veneration for "Apollo

* See p. 749, ante.

and the Nine," who would choose to scrape his feet on a *fac simile* of the Greek lyre.*

The most prolific subject of architectural criticism of late years, and which may deserve especial notice, is the so-called Crystal Palace; and among the absurdities ever issued from the public press in the shape of criticism, there have perhaps been none more ridiculous than those to which that building has given rise. On this subject remarks have been heaped on remarks, in the very wantonness of folly, by men profoundly ignorant of those principles of art, an intimate acquaintance with which could alone have enabled them to say anything worth printing. A great portion of the metropolitan press, one would have supposed, had forsworn common sense altogether. A temporary building of an immense size for a new and untried purpose, of small specific cost, and to be ready for use in a few months, is to be erected: that the idea of the aerial glass structure that now decorates Hyde-park did not occur to men whose life had been spent in designing with reference to brick and stone is not at all surprising; and might, one would think, have been foreseen; yet architects have been insulted in the gross, because they did not design it, and by men who know not what architecture is,—as dead to all art-feeling and judgment as to candour in drawing inferences, and good manners in expressing them. Nevertheless, architects may take a lesson from his history: their mistake, if mistake they have made, was in not distinguishing between special purpose and routine material of construction. Reflecting on this subject some time back, the question rose to my mind, "had such a building been wanted two centuries ago in England, or three in Italy, would Sir C. Wren or Michel Angelo have given their attention to such a thing?" At first my impression was, that they would neither have troubled themselves about the matter, nor been expected to do so; but when I considered that they were not only architects, but men of genius and common sense, I was inclined to modify my opinion. When Buonarroti was appointed for the Sistine Frescoes, he began with cartoon drawings, and professional fresco painters—for he was not even an amateur at it himself—smiled in derision; but before long he turned the professional painters out, spread his own plaster, mixed his own colours, and painted himself frescoes that the others seem never to have thought of. Something like this in spirit, though not in exact form, has been the case with the Crystal Palace: a cloud of architects loomed on the horizon of Hyde-park, and the roar of the approaching ocean of brick and mortar was already heard. Fashion trembled for its favourite haunt; the press protested against the social outrage; calculation pointed out the ruinous expense of carriage, erection, and removal; the question was debated through the length and breadth of the land; but still the architectural mind-cloud loomed heavily: Mr. Paxton, who, I believe has never called himself an architect, stepped in and said, in effect, "You want a building waterproof, adapted to a special purpose; quick, easy, and inexpensive in erection or removal, and inoffensive to its neighbourhood: it is here: and now this day in Hyde-park, stands a structure which for magnitude, suitability to its purpose, and celerity of erection, we must all allow has not its equal in the world.

The prediction of its effect upon the architecture of the day is, nevertheless, as senseless as anything that has been said of it. We know to what extent glass can be used. If it had been always as cheap as at present, and

* While admitting this, I would, however, observe, that association is not a sufficient ground of objection in any case: the real objection to a column, for example, standing *solus* as a monument, is not the associated idea of an absent entablature: if it were, there would be nothing absolutely wrong, for no law of art is violated; and the column being in itself a beautiful object, might be used by any man, ignorant of its ordinary purpose. But the fact is, the column not only suggests, from general usage, the idea of its entablature, but its form betrays its original office, the support of shaft, the curves of base and capital, all breathe of a burden,—are taciturn with the sentiment of support; and can therefore have no meaning without an entablature. So that, in using a column as a monument, or rather taking it as a type of the monument, it is not its association with, but its relation to, the entablature that has to be destroyed: we have so to alter its contour and mouldings that it may be viewed as abstract form.

no window duty had existed, twenty-five or thirty per cent. more light would have been secured to our houses; but beyond that the use of glass could not go in domestic buildings, for we not only do not want to live in glass houses, but we could not with comfort. They would be as objectionable to us as they were to Lord Bacon or any of his contemporaries. As to public buildings generally the same objection would hold good. Besides, the art-spirit—the genius of architecture,—looks for a durable material. Stone or brick has been used for fifty centuries; what is there in glass to supply its place? Stone is the material on which the genius of our art has ever stamped its impress, and on which it will continue to put its signature until the end of time. Over the pyramids and temples of Egypt the storms of ages sweep in vain, for what is subject to the laws of gravity only is as durable, or may be made so, as the globe itself.

Much of the bad criticism of the day would fall powerless to the ground and be altogether innoxious did it not come supported by literary power and graced by eloquence of style. Against this the student should be warned: he should be taught that fine writing and correct judgment or prescience in art are distinct things. High literary qualities do not mark a higher degree of perception in colour, light and shade, design, or any other department of art: the art critic may be a man of commanding talent, nay, of a soaring imagination, and possess much poetic fervour: he may write in the most graceful style of composition, and be able to express his opinions with all the beauty and force of which language is capable; and yet withal may not be a judge of art productions. The qualifications named, may render him a very excellent critic in literature, for which literary qualification only is required; but to make the art-critic, powers of literary expression must be combined with educated perception in art: this he may be void of, or he may be under the influence of strong prejudices, blinded by antipathies, or narrowed by bigotry. Locke confirms the common observation that men who have a great deal of wit and prompt memories have not always the clearest judgment or strongest reason. The operations of judgment, as he remarks, proceed in a way quite contrary to metaphor and allusion, in which chiefly consist the entertainment and pleasantry of wit; but, as I before observed, artistic criticism is an art for which special education is required: taste must be cultivated by art; the most (naturally) acute and delicate perception requires to be cherished ere it can distinguish beauty from tinsel, and grace from affectation: the critic must to some extent travel the same road of culture as the artist; he should know the laws by which effects are produced, though unable to exercise them, and thus be competent to trace effect to cause, and fully analyse a work before pronouncing upon its merits.

To say that false or ungenerous criticism should not at all affect the mind or temper of the artist, is to require too much of humanity. It is a real evil, and one grievous to bear. Yet this paper is offered with but faint hope of contributing to its suppression in any considerable degree. Exposing it will never altogether suppress it: it is an inevitable result of a due liberty of the press, and we, therefore, expose foolish and unjust criticism, not with a view to suppress it, but that a knowledge of its shallowness and untruth may render it innoxious,—not to crush the reptile but to extract its sting. There are means of mitigating it, of which popular art-education is the chief; but what the artist has to do is, to render himself superior to it, as well as to stand firm against the corruption of public taste to which it must give birth. I have but small regard for those complaints we so frequently hear, that it keeps down nameless talent and exalts talentless name: the man that is true to himself cannot be ultimately kept down, for wrong is as fleeting as it is false; and we may be assured that as long as we remain true to our good gifts,—to the truths we see within us,—they will remain true to us. Self-pride spurns too often the

safeguards of patience and of faith: but was there ever an artist who, being steadfast and faithful to the high trusts confided to him, did yet lack his reward? Let those who make the complaints just mentioned prove but this,—establish but one absolute case,—and then open wide the flood-gates of querulousness, and drown the universal ear with a torrent of reproach; but till then keep those gates fast shut, and, turning the eye of sensitiveness from such morbid objects of contemplation, look upwards to the goodness of the Almighty Spirit, and the power of the eternal life.

There is no arbiter of the fate of genius: every journalist has a right to give his opinion, or that of his appointed critic, on any given production, along with his reasons for forming it: but it is only opinion, not law, and cannot finally affect its rank. A work of art is virtually its own critic; it judges itself,—stands or falls by its own merit,—proceeds to its true place, according to its native power, by a law of nature as certain—as invariable—as that by which water finds its level. What judgment has ever been passed upon Shakespeare? Have his works been thoroughly investigated, and weighed in the critical balance? I trow not. Yet have they taken their place for ever—deep rooted in the hearts of men; and the case is similar of every genuine artist: he rises over all obstacles to his true position among the benefactors of his species,—the excellent of all time,—

"Like some tall cliff that rears its awful form,
Swells from the vale and midway leaves the storm:
Though round its breast the rolling clouds are spread,
Eternal sunshine settles on its head."

SAMUEL HUGGINS.

STATUES IN ENGLAND.

THE FIGURES AT PORTSMOUTH.

As individuals seldom express, and probably never feel, themselves indebted to those who kindly point out to them any glaring defect in character; so it is that nations, which are but aggregations of individuals, usually entertain towards those who criticise, however gently, a national *foible* or defect, a lasting dislike; nevertheless, the truth must and ought to be told them by some one. It is an ungrateful task, no doubt: it resembles the taking of drugs or physic; seldom agreeable, but often useful.

For some time past the English have been endeavouring to acquire a reputation for statemaking. There never was a more unfortunate mania. Like all other races of men the English (a compound of at least three races) have their good and bad qualities, their *forte* and *foible*. The grand defect of this people, as they are now constituted and amalgamated, is, in respect of art, a total want of taste and feeling; taste for what is noble and great, feeling for what is true and beautiful.* When to this there happens to be superadded an egotism, and a consequent self-sufficiency, unmatched, and, I think, unmatched, in the history of nations, saving always in the descendants of Englishmen in America, it becomes no difficult matter to foretell the course which such a race or nation is certain to adopt in respect of art. This result I have seen gently but firmly stated, or at least, hinted at in THE BUILDER of last week. The subject selected for exemplification was the proposal to erect a statue to a gentleman now alive, and holding a high commission in the military service of the country, lately commandant or governor of the fortified town of Portsmouth, an excellent, honourable man, and a public benefactor to that town, and to the marshy, pestilential island on which the town is built.

A few years ago I visited the district, and was charmed to see the efforts made to improve the place, and to ameliorate the condition of all classes of its inhabitants. Though a military man, and by education and feelings belonging to "the pipe-clay class," who see beauty only in well-dressed battalions of stiff, upright men, troops of cavalry, and brigades of infantry,—a class of men to whom the terms nature and art convey no meaning,—the gentle-

* We allow the writer to speak his mind without comment.—Ed.

man to whom I allude had not laid aside so much of his common nature as to forget that he was also a civilian: though "Mars's man," and a soldier, he had evidently adopted as his motto and standard the grand verse of Terence—"Homo sum: nil humani a me alienum puto."

So far so good. The esplanade on Southsea-common, and numerous other works of charity and good feeling, had been suggested and carried through by him. You may judge, therefore, of my surprise and regret on finding, on my return to Southsea, that some ill-advised persons had recommended the governor of "the place" to set up two figures, of a deformity so startling that no words can well express their true character. The two figures (I must not call them statues) now erected on Southsea Beach are a disgrace to any civilised community. They would be disowned by New Zealanders or Hindoos. They cannot be too soon removed from their present position, and broken up for road metal. I should be sorry were I by these remarks to give any pain to the officer who, by ordering these figures and setting them up at his own expense, sought to do honour to the great naval and military heroes of the country. But truth is truth, and ought to be spoken out.

It is often asked by the truth-speaking part of the English press,—a small part, it is true, of the great mass daily occupied in plastering the people, bespattering them with fulsome praise for qualities they possess not, and never did,—it is often asked by this portion of the press, on occasion of any great failure in art, "What will foreigners think of us?" Now, I am a "foreign sojourner here-in Vienna,"* and I will tell you. They are not so much startled at your failures in statuary as at the want of knowledge of art, shared alike by all classes, nobility and plebeian. The main cause of this national disgrace, for in some measure it is so, rests with the composition of the nobility and of the Court. Take, as a proof, the "figures" on Southsea Beach.

Of all the courtiers who enjoyed the hospitality of the ex-governor of Portsmouth, the aides-de-camp,—men who would fain pass themselves off as men of *haut ton* and exquisite taste, pinks of fashion and of breeding,—was there none whose taste was equal to discrimination between a New Zealand idol or the figure-head of a Dutch galliot and the statue of a man and a hero?

And such, Mr. Editor, will ever be the case whilst your artistic institutions and the conduct and preservation of the materials for art are in their present hands—the nobility,—in the hands of men who see in Parliament-street, as viewed from Trafalgar-square, the "noblest site in Europe."

If the people of England will take the education of their children and youth into their own hands—make of every school "a school of design" as well as a school of general instruction—the defect in national taste will gradually be overcome, or at least rendered less obtrusive—less offensive. Men of taste, who abound in England as well as elsewhere, will regain their status, and their opinions will be listened to: the British Museum will become what it ought to be—a standard of national taste and science, and not a mere refuge for the personal friends and cast-off servants of the Archbishop of Canterbury. Foreigners will cease to be startled on landing in England; and the islanders, in matters of taste, cease to be a laughing-stock to Europa. That there really exist some men of taste in England may be inferred even from this,—that although the mass of the people declined looking at the Richard Cœur de Lion of Marochetti, preferring the Greek Slave and the Crystal Fountain, the commissioners had the hardihood to prefer this neglected Cœur de Lion to the Crystal Fountain, and even to the letter-folder. Through the Raffaele Gallery at Hampton Court, it is true, the London mob still scours as fast as they can, wondering, no doubt, what can detain the half-dozens loiterers whom they find in such a place! Still I have hopes for England. But to effect this, her children must first be taught the difference between nature

and conventionalism; and taught not to despise genius because it is foreign.

With "the figures" on the beach of Southsea-common I commenced, and with these I shall finish. *They must be removed:* it is a national affair: bury them deep in the Atlantic, lest, being disinterred some day, and their data and locality recognised, a future Macaulay might haplessly infer that, during the reign of Victoria, A.D. 1850, the English people "were sunk in the profoundest barbarism, in witness whereof look at these figures." But it may be said, if we remove these frightful figures, what do you propose placing in their stead? Should these observations be favoured with a place in your journal, I shall tell you in my next communication. R.

CHURCH NEWS.

Banbury.—The chief stone of the new church for South Banbury, to be called Christ Church, was laid on Tuesday in week before last, by Lady North. The church is to consist of nave, chancel and aisles to the nave. The length, including the chancel, is to be, within the walls, 90 feet; including the walls, 105 feet. The width of the nave and aisles is to be 57 feet. The west front, towards Newland, will present the gables of the nave and aisles. The latter are to be of somewhat unusual height, precluding the formation of a clerestory. The entrance is to be by a pointed doorway, with recessed mouldings, into the nave. The plans include a tower and spire on the north side: the tower is intended to be of three stages, supported by buttresses of four stages, in pairs, dying into the walls shortly below the base of the spire. The spire is to be a broach, and will spring from a corbel table. Exclusive of the spire, &c. about 700*l.* remain to be subscribed. The architect of the building is Mr. B. Ferrey; and the builder, Mr. Joseph Hope.

Andover.—The parish church of St. Mary the Virgin, Vernham Dean, has been reopened. The church has undergone some extensive repairs, having been repewed, with new vaulted roof, and rebuilt chancel. At the eastern end of the church are five lancet windows. The whole is said to be the design of the curate, the Rev. J. M. Rawlins.

Hillsley.—On Thursday week the consecration of Hillsley Church, near Wotton-under-Edge, took place. The church is cruciform, and consists of nave, north and south aisles, and chancel, with bell turret. The interior is fitted up with low pews of stained wood, carved oak stalls, polished; and the church (which is dedicated to St. Giles) is built of freestone, in the Early English style, from a design furnished by the Rev. B. R. Perkins, vicar of Wotton-under-Edge. The funds, with the exception of 600*l.* given by the Bristol Diocesan Association, have been raised by subscriptions. The church is capable of accommodating 350 persons; the sittings free. The nave is 50 feet long, by 37 feet wide; the chancel 24 feet by 16 feet; the entire length of the building in the exterior is 80 feet.

Bristol.—The church of St. Matthias on the Weir was consecrated on Tuesday week. It is in the Middle Pointed style of architecture. The ground plan consists of a parallelogram, forming a nave, with north and south aisles; the latter abutting on the new street formed by the corporation. A second parallelogram forms a chancel, its east end facing the Public Baths, from which it is separated by another new street, running transversely to the former. The extreme internal length of the building is 136 feet 3 inches, the extreme width 48 feet 10 inches, and the subordinate dimensions are as follows: nave, 80 feet 9 inches by 20 feet 9 inches; aisles, 80 feet 9 inches by 11 feet 9 inches respectively; chancel, 30 feet by 29 feet 9 inches; south porch, 10 feet by 10 feet; western tower, 18 feet 3 inches by 18 feet 3 inches: these are the internal dimensions. The height to the apex of the nave roof is 52 feet; of chancel roof, 43 feet; and the extreme height of the spire, as proposed to be completed by the architect, is 168 feet; only 52 feet, however, of the tower, from which the spire is designed to spring, is now erected. The fittings through-

out are plain, the seats open. The general contractors were Messrs. Wilcox and Sons; carpenter, Mr. J. C. Harris, St. Philip's-plain; smith and founder, Mr. Smith; painter, tiler, and plasterer, Mr. Melsom, St. James's-barton; glazier, Mr. Gay; clerk of works, Mr. George Wall; warming, Messrs. Hadler, of Trowbridge. The church is built of Stapleton stone, with dressings of Bath stone. The warming is effected by hot air from a chamber beneath the chancel. The architect is Mr. John Norton, of London. The whole cost of the building will not exceed 3,000*l.* The architect has rendered his services gratuitously. The edifice is calculated to accommodate 850 persons. A debt of about 150*l.* still remains to be liquidated.

Dundee.—A new Roman Catholic Chapel (St. Mary's) was opened on Sunday week. It is situated in Maxwelltown. The edifice has a rough unpretending exterior, distinguished only by peculiar windows in the sides, and large crosses on the summits of the gable walls. The doorway is 12 feet wide, and consists of a semicircular arch, with walls 12 feet apart, and divided by a cluster of pillars, 2 feet in diameter. Pillars, in the Anglo-Saxon style, on each side, cut off two aisles, giving the whole a cathedral-like appearance. The ceiling of the nave is arched and divided by rib mouldings, while that of the aisles is flat, but divided by semi-circular rib mouldings. The length of the nave from the back of the choir at the entrance, to the back of the chancel, is 152 feet, the width 28½ feet, and the height from the floor to the centre of the ceiling 40 feet. The length of each aisle is 123 feet, width 15 feet, and height 28 feet. The range of arches, seven in number, and semi-circular, are 20 feet 6 inches diameter, and spring at a height of 20 feet from the floor. The pillars, which are 4 feet in diameter, are built of solid blocks of stone 2 feet square, and are 40 feet high—the height of the nave—and at the top are connected by a beam 12 inches square, on which the couples of the roof are supported. The high altar in the chancel is of marble. The windows in the sides of the Church are narrow, and divided into three arched compartments. The glass has a border of various colours. Over the window in the west or chancel end, there is also an oriel window 10 feet 6 inches interior diameter, with mouldings radiating from the centre. The oriel, as well as the window beneath it, are filled with glaringly stained glass, which throws a peculiar shade over the chancel and along the ceiling of the nave. The entire area, it is calculated, will contain about 3,000 persons. The whole building was begun and completed within twelve months, from designs by Mr. Mathewson, of Dundee, architect. The masonry is by Mr. Robertson; plaster-work by Mr. Geekie; carpentry, Mr. Foggie; and glazier-work, Mr. Ower.

Dublin.—St. Patrick's Cathedral, we learn, is about to be restored and fitted up with tabernacle work, similar to that in Chester Cathedral choir; it having been fixed upon, according to a Chester Paper, "as possessing grandeur of design and beauty excelling that of any other Cathedral work in the United Kingdom." Messrs. Bellis and Williams, of Chester, have been engaged to make a full-sized model of one of the stalls, which is to serve as a pattern for those to proceed by to whom the restoration may be intrusted.

SOMERSET ARCHEOLOGICAL SOCIETY.—The second *conversazione* of this society was held in the Museum, Taunton, on the evening of the 10th, when the Rev. Mr. Searche, of Bath, read a paper on Raby Castle, the stronghold of the Nevilles,—now the property of the Duke of Cleveland. The ancient chapel attached to this important castellated remain has been recently restored, and its window filled with stained glass; but the original piscina and font have been cast away into an obscure porch, and no use made of them. Dr. Woodforde followed with a paper on British birds, many cases of which were exhibited to illustrate his remarks. The Rev. F. Warre concluded the evening's discussion with a diary of his explorations on Worle-hill.

* Shakespeare.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Panthéonization of France.—It is by this new-coined word that our French contemporaries hail the ornamenting of the whole land by statutory memorials erected to their great dead—improvement to the living; "objet d'enseignement et de moralisation." Marceau, Jeanne Hachette, William the Conqueror, and others have been monumented this year; and thus even minor towns of France have been adequately embellished, and have acquired additional interest. Especial praise is bestowed on the statue of Jeanne Hachette at Beauvais, which has issued from the sculpture-ateliers of M. Dubay at Paris. It is a drawback on most statues placed in public squares, and where the beholder may pass around, that the rear aspect is mostly insignificant, at times presenting but an amorphous mass of metal or brass. The statue of Jeanne Hachette is said to be an exception. Represented in the act of combatting on the walls of Beauvais, her flying hair and garment, her animated position, appear to advantage from whatever side the statue may be viewed. The Jeanne d'Arc of M. Foyatier, of which the complete model is now exhibited at Paris, is an equestrian statue of nearly 12 feet high. Still, to place a woman on horseback, *en homme*, is always a hazardous undertaking. The strife is at an end, the enemy put to flight, and Jeanne d'Arc, who has accomplished her mission, stops and lowers the sword of St. Catherine, with which Providence has armed her, and the eyes fixed on heaven, gives thanks to the powers on high.

Berlin.—The Prussian minister of commerce and public works has published the following interesting and novel review of the railway operations of the year 1850. The length of the twenty-five Prussian lines in active operation amounts to 394 (German) miles, of which 87 miles have double rails. The total cost of these 394 miles has amounted to 151,559,000 thalers, making an average of 384,600 thalers per mile. There were, however, only 378 miles, containing 146,659,000 thalers in operation during the whole of the year, to which the following data refer. On these lines there were in work 498 engines and 1,248 passenger-carriages, and 6,837 waggons. These locomotives had performed journeys extending to 1,297,444 miles, making an average of 2,605 miles for each locomotive, each locomotive using an average of 155 lbs. of coke per mile. They had conveyed throughout the year 9,241,780 passengers, of whom each performed an average journey of 5.93 miles, together with the conveyance of 45,111,798 cwt. of goods, of which every cwt. was conveyed an average distance of 11.16 miles. The whole activity of these lines is, therefore, represented by a conveyance of 55,291,000 persons, and 503,463,000 cwt. of goods, at the distance of 1 mile. Compared with the year 1849 there was an increase of 17 per cent. in personal traffic, and of 31 per cent. in the conveyance of goods. The total expense of the year 1850 amounted to 13,004,000 thalers, and shows an increase of 20 per cent. The expenses were 6,183,000 thalers, or 47.5 of the whole income. The clear profit of 6,820,000 thalers constitutes, therefore, exclusive of the grants of the state, resulting from some guarantee of interest, a dividend of 4½ per cent. on the capital employed in the construction of these lines, while that dividend amounted in the previous year only to 3.82 per cent. The official document goes on to remark, that the English railroads yield only a profit of 3 per cent., the Belgian very little more than that. The receipts of the current year have, in fine, again so much increased, that a profit of full 5 per cent. is to be anticipated. Lastly, also, the eastern line from Kreuz to Bromberg, about 19 German miles, as well as the connecting line of the Berlin termini, has been opened to traffic, whereby the whole length of the Prussian lines may be now estimated at 415 miles, about 1,660 English miles.

The old Mosaics of Constantinople.—These mosaics have hitherto remained quite unknown, although they are perfect specimens of the skill of those Byzantine artists who, from the 3rd to the 11th century, have preserved

ancient art, and prepared its subsequent restoration in Italy, Germany, and France. It was M. Papety, a painter of Lyons, who, after an art-tour through the classic lands of the Mediterranean, repaired to Constantinople and devoted much time to the exact copying of these mosaics. In this extensive collection the works of *Panselinos* are especially interesting, who was considered the Apelles of Byzantine painters. The French and the Prussian governments have acquired these copies of the since defunct M. Papety, which are now to be found in the collections of the Louvre, and at Berlin.

ARCHITECTURAL INSTITUTE OF SCOTLAND.

THE first meeting of the second session was held on the 27th ult., the very Rev. Dean Ramsay, in the chair. The report of the council, which was read, stated that 267 members had been enrolled, and that the council had commenced the endowment of an architectural chair—a scheme which they recommended should now be opened, and the claims of which they urged on the consideration of all interested in the advancement of architecture in Scotland. They had, accordingly, appointed a committee to receive contributions for the proposed endowment.

The chairman delivered a very interesting address, and the hon. secretary read a paper communicated by Mr. David Laing, Treasurer of the Society of Antiquaries of Scotland, on the disputed question—Who was the architect of Heriot's Hospital? Mr. Laing gives up Inigo Jones, and ascribes the merit of the design to William Wallace, the King's master-mason, who built Wyntoun House, which much resembles Heriot's Hospital. The first entry in the treasurer's accounts of money paid "upon the fabric of the hospital, and provision of materials thereto," under the date 22nd of January, 1628, was given to William Wallace, deacon, for a long line for measuring the ground, 20s.; and to the wright, "for making nyne new spelkis of timber (or splints of wood) to modell the ground, and for the timber itself, 40s.; also, on the same day, to the Maister Mason and Maister Wright, and their servants, to drink when the ground was spelked, 3l.;" and the same sum, four days later, "to drink at the levelling of the ground, when sindry of the Council were present." The wages paid to Wallace was at the rate of 6l. per week, or 14. per day, according as he attended at the work. After all the necessary preparations, the foundation-stone, as already mentioned was laid on the 1st of July, 1628. Wallace died at the end of October, 1631. His death must have been unexpected. It appears from the accounts of that month that his attendance in the work was uninterrupted, receiving four weekly payments of 8l. for himself and his boy, on the 1st, 8th, 15th, and 22nd; and on the 29th, the entry is, "Item to William Wallace and his boy, five days and a half, 7l. 16s. 8d.," in place of "ane hail oulk," or week of six days. He left several young children by his wife, Agnes Blackhall, probably the daughter of Mr. Andrew Blackhall, who, at the time of his death in 1609, had been minister of Inveresk for thirty-six years. Quoting Mr. Laing's paper,—"In the confirmed testament and inventory of Wallace's effects, an item seems clearly to prove that he was the builder of Wyntoun House, being a special allowance granted to him for his services to the Earl of Wyntoun. The office of master mason to his Majesty was conferred on John Mylne, 17th December, 1631; and that of master mason to Heriot's Hospital was given to William Aytoun, junior, both appointments being on the same terms and conditions as Wallace enjoyed. That Wallace is justly entitled to the credit of having furnished the plans, as well as of having executed a considerable portion of Heriot's Hospital, is proved, I think, by the following circumstances:—1. On the 12th of August, 1629, his receipt to the treasurer for the sum of 100l., awarded to him by order of the Governors, bears that it was "for my bygone panes and extraordinary service in the frame and building of the said hospital this year bygone." The word frame

is here evidently used for design or model. 2. After his death, the Governors, on the— of November, 1631, in a special minute, express the sense they entertained of Wallace's services, "by his extraordinary panes and great care he had in that work, built by his advice, and in the building of the same." 3. His widow, in her application to the Governors for some aid to herself, being left, by the death of her husband, "with ane great burding of many young small babies," says, "It is not unknown to your lordships what extraordinary panes and cair my said unquhill spouse had and tuik upon the said work thir diverse years bygone, and at the beginning thair of, upon the model and frame thair of." This was acknowledged by the Governors, who directed the Treasurer "to pay to this supplicant, to the use of her bairns, 200 merks, with the soume content in hir compt, and to ressave the moulds and drawings (?) for her." And, 4. In the contract with his successor as master mason, dated 5th December, 1631, and 18th February, 1632, William Aytoun was expressly enjoined "to prosecute and follow forth the modell, frame, and building of the said work, as the same is already begun; and to devyse, plott, and sett down what he shall think meetest for the decoirment of the said work, and pattern thereof, already begun, where any defect beis (may be) found."

GLASGOW.

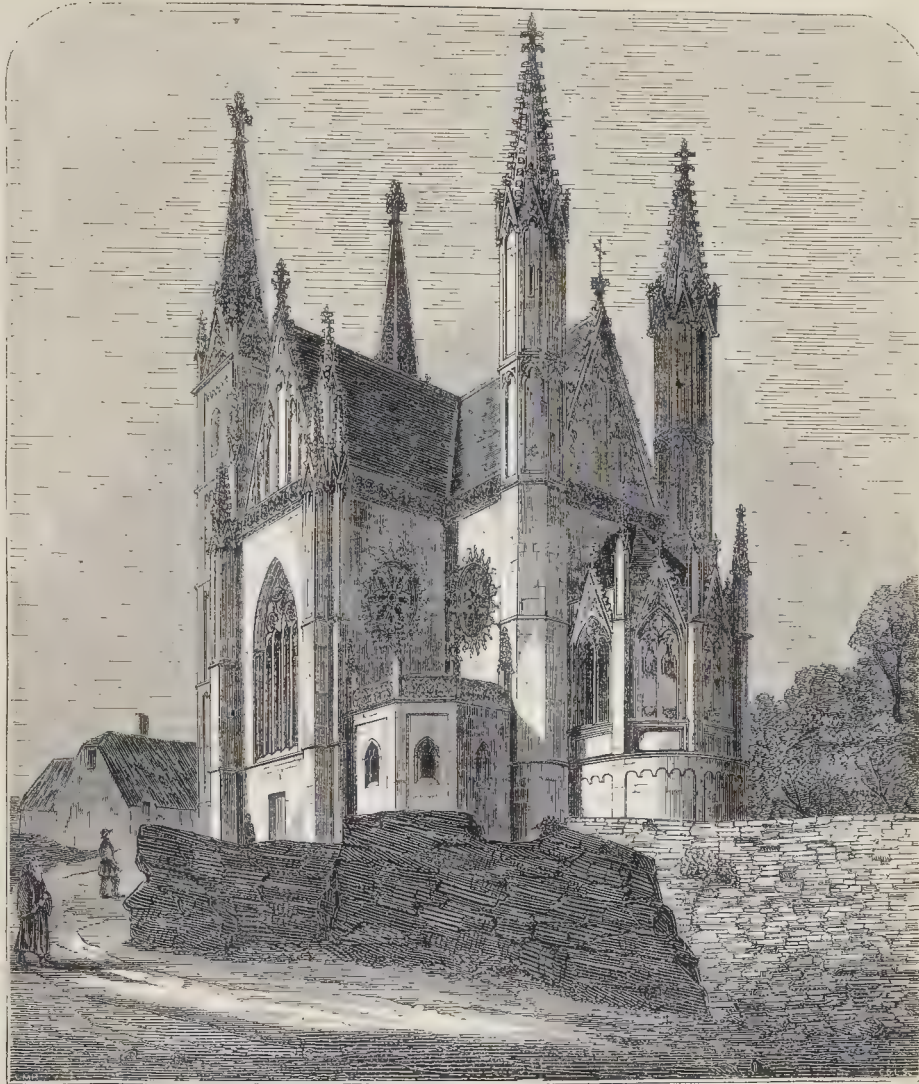
At the request of the town council, the architects here, as a body, are at present engaged in drawing up reports on the sanitary condition of the city, with the view of obtaining a Bill upon that subject during the next parliamentary session.

During the progress of the repairs on the cathedral, and the opening up the new line called Cathedral-street, towards the same from the west, it has been a moot proposition to level, and throw open under certain restrictions, the intervening and enclosed mound fronting the Royal Infirmary. Two circumstances, not to say difficulties, have stood in the way of this desirable improvement, viz., that the design of the building (by Robert Adam, one of the *Adelphi*, and architect-royal of his day) was adapted to the mound, and a removal of which would bring what is at present a sunk-basement into the position of a ground-story; and that the space enclosed is the property not of the public, but of the infirmary. The rational nature of the improvement is now, however, likely to enable it to carry the day; and the respective committees of the Statute-Labour Trust and the Royal Infirmary have conjoined to obtain designs for carrying it into effect, with such screen-walls, terraces, stairs, and other elements as may be necessary and proper. Consisting mainly, as it is understood to do, of the rubbish which accrued from the removal of the ruins of the ancient Episcopal Palace, the predecessor of the Infirmary, and being almost completely isolated, there seems to be no reason why the mound should not be wholly swept away. This matter, we understand, has been put into the professional hands of Mr. James Brown, architect, who, no doubt, will have a due regard for the style of the old master on whose work he is called to operate.

BANK OF ENGLAND LIBRARY AND LITERARY ASSOCIATION.—A lecture was lately given in the library of the Bank of England, by Mr. A. Smee, F.R.S., on electro-metallurgy. The president of the society (Mr. Marshall, the chief cashier) was in the chair, supported by Mr. Cotton, a former governor, the chief accountant (Mr. Smee), and other officers of the association, which has been established for six months; but this was the first meeting of the society, and the first of a series of lectures. The room was crowded with a highly respectable auditory, numbering nearly 400. At the close of the lecture, Mr. Smee showed Mr. Shepherd's electric clock, and Mr. Henley's magnetic telegraph, which, he contended, must eventually supersede every other form of telegraph.

CHURCH OF ST. APOLLINARIS AT REMAGEN, ON THE RHINE.

HERN ZWIPNER, ARCHT.



THE CHURCH OF ST. APOLLINARIS AT REMAGEN, ON THE RHINE.

WHILST in England the revival of mediæval art has produced a host of buildings in imitation of the style of our forefathers; in Germany the revival affords comparatively few works, by which to judge of the practical result of the movement. Of this small number, the building here represented is well calculated to show the degree of success which has been attained. It is from the design of Zwirner, of Berlin, the architect, to whom has been intrusted the completion of Cologne Cathedral.

The new Church, which stands on the summit of a lofty rock, rising boldly from the river, the site of an ancient shrine, owes its

erection to the liberality of the Count of Furs-tenburg. It is in the most florid continental style. A singular feature is the application of the Romanesque style to the crypt and base of the building. However open to question the propriety of the mixture may be, a portion of the crypt, intended for a mortuary chapel, is a decidedly favourable specimen of the adaptation of this last style. The crypt is entered by a flight of steps descending immediately in front of the chancel. In the interior of the Church the architect has fairly yielded to the painter. So important a part in the design does the painting assume, that the circular windows, seen externally in the sides of the nave and chancel, present internally mere blank wall, at the disposal of this

artist. Internally the walls are entirely covered with frescoes by four different hands—Deger, Karl and Andreas Müller, and Ittenbach, chiefly illustrative of the life of the patron saint. The work has been more than ten years in progress, and the internal decoration will not probably be completed in less than two years. A popular German description thus enthusiastically declares its glories. "From afar shines anew on the pilgrim and wayfarer, rising amid its gorgeous towers, a cruciform temple. Enter the sacred building!—what awe! what astonishment! Here, in life-like form and colour, are presented to our eyes the events of ages past, even as though we witnessed the mighty deeds themselves. . . . A lasting monument, which, from the height of

the rock, loudly proclaims, over the great highway of the nations, that, in our age of scepticism, religion has its venerators and faithful supporters." The commanding position, the site hallowed by the veneration of ages, the lavish expenditure of wealth and labour, and unquestionable excellence of most of the workmanship, are points which may well disarm criticism; but it must be confessed that, architecturally, it is only successful as a great step in the right direction; and one is led to regret that so much of generosity and good feeling could not have had the benefit of the more advanced studies and greater experience of later years.

The old chapel having become ruinous, the new church has been raised as a place of deposit for the relics of Saint Apollinaris, who, if tradition be true, was a companion and disciple of our Lord himself, first Archbishop of Ravenna, and a martyr to the faith. A very ancient church at Ravenna is dedicated to his memory. It is related that the relics of the saint were transferred from Ravenna to Milan, A.D. 334, and thence, A.D. 1164, when Frederic Barbarossa ravaged Northern Italy, carried off by the Archbishop of Cologne, and by him presented to the Abbot of Lieburg, who caused the shrine to be erected for their reception at Remagen. The shrine was more than once deprived of its treasures,—on the last occasion in 1793, to escape the French Revolutionary armies. On the return of the relics in 1826, the old chapel was become so ruinous that a temporary place had found for them in the church of St. Martin, at Remagen, where they now await the completion of the new church of St. Apollinaris. G. M. H.

THE STRIKE IN LONDON.

WE are gratified to be informed that this strike is at an end, and that Mr. Myers's workmen have returned to his employment on terms agreeable to both parties. The arrangement, we believe, is—

"That any man may be allowed to lose ten hours in the week, at any time, without losing the privilege of the four o'clock on Saturday; and if any further amount of time is required by him in the course of the week for business, he shall not lose the said privilege, providing he acquaints his foreman of his inability to attend his work; also, if he should lose any time through inclement weather, sickness, or want of material, he shall not lose it; or if he is set on to work at any time in the week, he shall not be deprived of it; and that all past grievances be laid aside."

THE QUESTION OF A DOME IN GOthic ARCHITECTURE.

As to the dome controversy, be so good as to permit me to remind your correspondents who have treated of the subject, that some of the most important points connected with it still remain to be discussed. "R." settles the question by a theory of his own, that in pure Gothic a dome is not admissible; and takes no notice of the other questions bearing upon the subject. He admits that it is a grand and imposing feature, but considers that by carrying out the design on Gothic principles, its magnificence would be marred. "K." followed by "H. T. B.," takes the opposite view as regards the claims of the dome. But I would respectfully suggest to these gentlemen, that none of them have settled the point at issue.

Hitherto they have considered the dome only as an external feature; yet surely that of the Pantheon, the earliest of European domes, one that was doubtless admired by Michelangelo, from his memorable boast with reference to it, when he was employed upon St. Peter's at Rome, should be viewed, and was intended to be viewed, from within. And yet as regards its construction, its actual appearance externally would be greatly improved by a decorative abutment, in the place of the solid mass which now gives it stability; and such ornamental abutment, if it did not exhibit Gothic features, must nevertheless be constructed on Gothic principles. Again, most,

if not all, modern domes are surmounted by a superstructure of some sort, which, if the dome is to be made of the same material, must greatly influence its construction; and unless Sir Christopher Wren's expedient of basing it upon a cone concealed within, be resorted to, there will of course be a great practical difficulty in equilibrating the dome beneath, if the form of the latter at all approaches to that of a hemisphere. It appears to me, therefore, that the question of the dome mainly turns upon its construction; and that your correspondents should first determine what are, and what are not, lawful expedients to have recourse to in order to insure its stability, and at the same time to exhibit its proportions internally as well as externally to most advantage; also to what extent the outline of the interior may be allowed to differ from that of the exterior; and that having been done, it will then be soon enough to come to a decision upon the question, "Why may we not have a Gothic dome?" C. B.

RAILWAY JOTTINGS.

THE passenger carriages belonging to the London and North-Western afford eleven miles of seat room, and would accommodate 40,196 individuals, or the whole population of two such towns as Northampton. The leading surface of the goods equals eleven acres, and would convey 40,000 tons. If the tiers of all the company's wheels were welded into one ring, they would form a circle of seventy-two miles.—At the Oldham County Court, Mr. J. Duncuft, M.P., lately sued the Lancashire and Yorkshire Company for 11s. expenses incurred by him in reaching his destination in consequence of the delay for a quarter of an hour of the train in which he was travelling. Counsel for the company contended that the delay was unavoidable, being occasioned by a certain derangement of the machinery of the engine, for the entire prevention of which scientific men had not yet discovered a remedy; but the judge, nevertheless, decreed for the full amount claimed, with costs.—The directors of the South Wales line, on a report by Mr. Brunel and Captain Claxton, have decided on making their grand terminus, or principal station, at Neyland, opposite the royal dockyard at Pembroke-dock, with a three-mile run to Milford. The works between Swansea and Carmarthen are rapidly progressing. The foundations for the Langhor-bridge, near Llanelly, are being laid.—The Treasury, it is said, are inclined to advance 300,000*l.* for the construction of the railway from Athenry to Westport, through Tuam, on terms similar to those on which the extension from Athlone to Galway was constructed. The reason assigned is the desire to open up a complete system of railway transit through the province of Connaught.—A line of railway is immediately to be constructed in Brazil between the mouth of the river Mova and the foot of the Serra, a distance of about fourteen miles. The survey has been made by an English engineer.

INVIOABILITY OF THE GRAVE.

IT is thought even by some who mean the best, that a provision to leave graves undisturbed for eighty years is sufficient. They have no right to be disturbed as long as there are two yards of ground in the country not buried in. I believe there is no country or island but this, where they cannot afford their dead a grave in perpetuity; by which I do not mean the surface kept from cultivation or other uses, but the grave from invasion. Even in the smallest of the Antilles I never heard of burying twice in the same ground, and some of these islands are more thickly peopled than Great Britain, and more cultivated than Surrey. But those who say there is any place where men cannot afford their dead each two yards of ground for ever if they choose, are not worth answering but by giving them the lie direct.

Which is the more essential to "Christian burial"—a ridiculous acting and aping of a

medieval baron's finery, or a decent treatment of the body for a generation or two after?

Which is the more indecent treatment, re-converting the ground into a common cultivated field, or into an English so-called "burial-ground?" Is the heaping up and stowing away bodies on these piles *burial* at all? or the pile itself *ground* at all?

Any use or cultivation of the ground again would surely be more Christian and reverent than this pestilent and abominable mockery. But cultivation is nowhere necessary, at least nothing nearer to it than timber-growing, which is the very kind of cultivation this country can never get from selfish enterprise, and therefore needs continually more and more, as Evelyn and others have said. G.

FALL OF CORNICE-CORE AT KENSINGTON.

OUR remarks last week on the mode of building pursued in some of the suburbs of the metropolis, and its sad results, were scarcely published before a fearful accident occurred at some houses now building, at the north end of the Gloucester-road, on the site of the old Kensington workhouse, which caused the death of one man, and serious injuries to five others, plasterers. They were engaged running the cornice on the top of the front wall, when the core, which was formed for it, surmounted by an open parapet, gave way, and brought scaffolding and men to the ground. The inquest on the sufferer has been adjourned, and we postpone further particulars until next week.

TRAINING FOR ARCHITECTS AND ENGINEERS.

IN a former communication the present anomalous position of architects and engineers was noticed; the possibility of submitting them to an examination, as a test of proficiency, was considered; the desirability of restricting the practice of these professions to those only who had received a diploma from the corporate body was insisted on; and the beneficial results which such a change would bring about, not only to the members themselves, but also to the public, their employers, were briefly alluded to. A few other remarks now occur to me on this subject.

It seems almost a task of supererogation to be arguing on the advisability of such a measure, when nearly every class of persons requiring a certain specific amount of education is already submitted to similar regulations; and the only wonder is, that architects and engineers have been allowed so long to pursue their vocation, as if it were a mere empiric art, having no laws by which the judgment could be guided, or the intellect matured, instead of these being well known and ascertained. We may trace in this, perhaps, the prejudices of some of the senior members of these professions, who from having risen from the humblest ranks, from having acquired their knowledge and experience as workmen, with only a limited education, look upon any measure of the kind with distrust and suspicion, and others, as well as themselves, are very apt to draw the inference that the workshop is the only school from which architects and engineers can proceed. Now, without attempting to deny the value of this kind of knowledge, it may fairly be doubted whether it is entitled to such unbounded praise as some give to it, and whether the possession of the practice without the science, where both are necessary, should be taken as all-sufficient. Look again at certain other senior members of these professions who have had the advantage of sound scientific training, and in addition practical acquaintance with work, with the use of tools, and what and how much can be done with them in a given time: mark the difference between the two orders of men: see how readily—how fully—how, without an effort—the one appreciates and understands what is laid before him,—how the other has to wade through a dull routine of what he has done, or seen done,—how sceptical he is of success,—how

slow to admit the value of any novelty,—and then say which order of men is the best, which is most likely to promote the well-being of mankind, which most likely to add to the greatness of the age, which most likely to bring glory and renown to the country that gave them birth. But supposing, for a moment, that the line of argument adopted by the so-called "practical" men is correct, are they prepared to assert, that from the class of workmen alone must be drawn our future architects and engineers? We think not: even now such is not the case. There are some men undoubtedly whose native genius has surmounted all disadvantages of birth and education, and sufficed to place them in a position of great and deserved eminence; but the number of these is infinitesimally small, and not at all calculated to meet the present demand. They are exceptions to the general rule, and would exist—do in fact in other professions—under any combination of circumstances that could be devised. It is for the many, and not for the few, that we must legislate. Now, without desiring to alter existing arrangements as to pupillage,—simply wishing to insure that the young men when out of it shall possess a certain amount of ability and qualifications fitting them to commence practice, and being fully aware that even this will not make engineers and architects without subsequent experience, I still think that the organization of a corporate body, by law qualified to grant diplomas, and to prevent any one following these occupations without a diploma, is nothing more than the spirit of the times demands, and is absolutely essential, if architects and engineers wish to retain their present position.

Tems.

ACTION TO RECOVER DRAUGHTSMEN'S CHARGES.

In the Court of Common Pleas, on 28th ultimo, an action was brought by Mr. Maberly, architect and surveyor, against Messrs. Shepherd and Buton, patentees of the sub-marine telegraph, for the recovery of 162*l.* for eight sets of drawings of the plans of the telegraph. The defendants pleaded payment of 2*l.* 10*s.*; lodging of 47*l.* 10*s.* into court; and as to the residue, not indebted.

Plaintiff stated that he was occupied fifty days in making the drawings. For this service he charged two guineas a-day for himself, and one guinea for an assistant, besides 10*l.* for the use of his rooms, and coffee and refreshments supplied to Mr. Shepherd. He had at first charged only 76*l.*; but that sum not being paid, he was advised that he could recover more, and therefore brought his action for 162*l.*

This, the Lord Chief Justice said, was not according to the usual mode of business, and was contrary to common sense.

The plaintiff stated that he had thus prepared twenty-eight drawings and four tracings, the defendant Shepherd assisting him, and one of his witnesses said these drawings were worth two guineas each, another that they were worth three guineas, and the tracings, 35*s.* He had paid his assistant 10*s.* a-day.—This was the plaintiff's case.

The defendant, Mr. Shepherd, stated (as reported in the *Times*) that, wanting assistance in copying the draughts for his patent, 14 of set No. 1 of which he had finished but not coloured, and one of set No. 2 of which he had partly finished, he went to the plaintiff, who said he was disgusted with his profession of an architect and surveyor, as there was nothing to be done in it, and who was then employed in making drawings on wood for the engravers. The plaintiff said he knew nothing about mechanical drawings, and the defendant Shepherd showed him how to do them, and to colour the fourteen which he had himself finished. The defendant afterwards assisted him in doing the remainder, and, according to the defendant, only twelve of these drawings were done for him and two tracings. No stipulated price was to be paid, but the defendant promised to use his influence in getting the plaintiff some employment if the patent succeeded. The coffee charged for was when plaintiff asked him to take a cup of coffee as they were at work; and the room of plaintiff smoked so that no one could live in it until he had got a workman to remove the chimney-pot from his neighbour's chimney and put it on his own. The defendant swore positively that the plaintiff only did twelve of these drawings and two tracings. The plaintiff had first asked if 46*l.* would be too much to charge. He then sent him a bill for 76*l.* which not being paid, he put the matter into the hands of his attorney, who made a demand for 86*l.*, and that not being paid, brought his action for 162*l.*

The plaintiff was then recalled by his Lordship, and would not swear that he had done more than three drawings No. 1, and seven or eight No. 2. Afterwards he said positively he and his clerk had done seven of each.

The evidence having been summed up, the jury retired for an hour, and then gave a verdict for the defendant.

NORMAN PARAPETS.

In publications relating to architecture, frequent mention is made of Norman parapets. The paper on "Round Churches," in a late number of *THE BUILDER*, assumes that, originally, a parapet crowned the walls of St. Sepulchre's, Northampton. In the buildings of modern times called "Norman," wherein an attempt to carry out the style in every other particular is very manifest, a parapet constantly appears; and Rickman seems to have had doubts as to what the Norman battlement really was, but supposed it to have been a "plain parapet."

Believing, therefore, that there must be a prevalent misconception as to the existence of this feature in early buildings, I may perhaps be permitted to remark, that originally in not one of our Norman cathedrals did a parapet exist. Generally, of course, the point may be decided by the slant of the weather-mould against the tower; but there is another proof, namely, that the door from the winding-stair, which would have led to the parapet, had there been one, is in every instance an after-piercing of the masonry, and not original. There was always a door from the stair to the interior of the roof; but to the exterior, none.

It must now be too generally known to need remark, that in all the ecclesiastical structures of France and Germany, coeval with our Norman, we see an eaves-course or corbel-tabletmerely,—no parapet. In Norman carvings, too, representing buildings, there is only an eaves-course seen; and the like may be said of edifices portrayed in the tapestry and drawings of that age.

I should be inclined to suppose that the use of a parapet in English churches could not have been anterior to the year 1200, for the choir of Canterbury had none, nor had the earliest portion of Wells Cathedral—two buildings begun when almost every trace of Norman had passed away, and another style had been nearly established.

A word or two may be added respecting Norman roofs, for it is evidently thought by some, that these, upon towers and turrets, were occasionally flat. I do not believe even in castellated buildings, where a parapet was of course needed for military purposes, that the flat roof was ever used, but that it was universally high pitched. The manner of screening the roof behind the walls may still be seen in the keep of Richmond Castle, in Yorkshire.

G. E. LAING.

NOTES IN THE PROVINCES.

Rochester.—The wardens of the old bridge some time since determined upon erecting a new fabric very near the latter, but higher up the stream. It will be chiefly formed of iron work from a design by Sir W. Cubitt, who has been appointed engineer. It will consist of three lofty arches. The centre, 50 feet span, will open at the crown, similar to the London dock bridges, so as to allow vessels of large burden to pass without striking masts. The contractors are Messrs. Fox, Henderson, and Co., who are now employed on the foundations by sinking iron cylinders upon Potts's principle. The approaches are to be formed on a series of brick arches, which are already partly covered with Seyssel asphalt.

Southampton.—The proposed site of the new gaol having been made ground, of however long standing, an examination of it has been made, in course of which there were discovered a number of subterranean hollows, resembling the dry wells in which the Romans and their successors kept their stores of grain in fortified places.

Worcester.—A commotion has been created here among the rate-payers by a bill of nearly 2,000*l.* for plans, sections, work, and labour done, which Mr. E. L. Williams, the surveyor

under the Local Board of Health, has sent in to the Town Council. Mr. Williams had accepted the office subject to such salary as the council might think fit, but owing to an agitation against sanitary measures got up by the owners of small tenements and others, the salary offered to him, it is said, was so obviously inadequate, that, after many months had been spent in useless negotiation, Mr. Williams has at length made his professional charges, and put the whole business in litigation.

Bath.—A map of the borough, by Mr. Cotterell, surveyor, with levels, boundaries of parishes and properties, gardens, houses, streets, wards, &c., is about to be published by Mr. Hayward, of the Abbey-churchyard.

Conway.—There is about to be erected, at a place called the Island, an extensive quay for the shipment of goods direct from the railway up the river to Llanrwst. The steam-tug lighters used will bring, as returned freights, slates, slabs, and minerals, from the mines and quarries around Llanrwst, Penmachno, Dolwyddelan, &c. The contract for the quay has been taken by Messrs. Cropper and Bell.

Birmingham.—A plan for establishing a consumption Hospital here has been started by a number of the clergy and others in the borough. The Peel statue is being proceeded with. A small model of the statue has been completed by Mr. Peter Hollins, submitted to the committee, and approved of. The statesman is represented as in the act of speaking in his customary attitude when animated. The features are those of Sir Robert in the prime of life. The modern costume is preserved, or rather indicated, a cloak being thrown over the left shoulder, and looped up in slight folds over the right arm. The large model is immediately to be proceeded with, and will be submitted to the inspection of the subscribers. The statue will be eight feet in height, of bronze, and its erection in front of Christ Church, where the great lamp now stands, is spoken of.

Liverpool.—St. George's Hall is to be opened at last. The commission for holding the assizes will be opened on 6th December, and the committee of the council have resolved that they shall be held in the new courts at St. George's Hall, which are to be prepared forthwith for occupation.

Derby.—All Saints' Schools, designed by Mr. Stevens, architect, have been completed. They have an elevation of two stories to Walker-lane, with an entrance at either extremity—one for boys, the other for girls; the school-rooms for the latter being on the upper floor, the boys on the under. The girls' large school-room is 45 feet by 25 feet, with proportionate height; besides this there is a classroom 15 feet by 15 feet 9 inches, and lavatories, cloak-room, &c. On the lower floor, the boys' chief school-room is 40 feet long by 24 feet wide, and is also furnished with subsidiary accommodation. At the back of the boys' school, with which it forms a figure like the leg of letter T, is a hall 42 feet 6 inches long by 25 feet in breadth, also with subsidiary chambers. This is to be used as an infant school. The building is ventilated and heated. The schools are calculated to accommodate upwards of 500 children and adults. On the 20th ult. they were formally opened.

Stockton.—An Act of Parliament is to be applied for to carry out some improvements here, comprising the formation of a dock, breakwater, and various river cuts, and the widening of the river channel.

Dumfries.—The Lochrutn waterworks, according to the local *Courier*, are now approaching completion. Two of the filtering tanks have been finished, and the other two only require to be covered with the upper layer of sand. The two completed filters are said to work well. Workmen are busy in all parts of the town putting service pipes into houses, and the demand for these appears to be general and extensive. Water should be at once supplied in different parts of the town for the use of the poor.

Shetland, Orkney, Skye, &c.—The Northern Lighthouse Commissioners have resolved to erect a lighthouse on the Outskerries of Whal-

sey, in Shetland. They have recently completed important lighthouses in Hoy Sound, Orkney, for opening up the anchorage of Stromness, and are now proceeding with the erection of one on North Ronaldshay, in Orkney, and another at Stornoway in the Lewis. They have also in prospect one on the island of Devaar, at the entrance to Campelton Loch; another in Loch Indaal, Islay; and a third in the Sound of Skye.

Jersey.—The works on the New South Pier at St. Heliers, are now completed, and the roadway laid down, workmen being employed in covering the metalling with sandy clay. This, as the *Jersey Times* remarks, although an easement to the traffic, materially injures the road, as the clay and stone will never combine, and ridges with holes will be formed on the surface of the road. The defence-wall on the new road, leading from the Pier-road to Victoria harbour, is in a rapid state of progress towards completion. The road, with its footway, form a continued walk on to the Promenade. The road will be 23 feet broad, the pathway 10 feet. The inner wall of the Victoria harbour is also in hand towards the old South Pier, between which, and alongside the latter, a jetty and beeching-place has been constructed. The old South Pier-head is now rebuilt, widening the entrance to the old harbour 100 feet, and the outer wall is being covered with a strong rough coping.

MODERN PAINTING ON GLASS.*

THE mere imitator should no longer be allowed to shelter his ignorance of the higher principles and rules of art under a scrupulous and literal conformity with the petty details of conventionality: such sneer at real works of art from sheer incapacity to appreciate their merits. Both the artist and the critic, in order that their opinions may generally be respected, must learn to estimate a pictorial glass painting not by its conventional character, but in proportion as it exhibits those essential qualities which will entitle it to be considered a work of art as well as a perfect glass painting.

Mr. C. Winston, in his work on stained glass, page 276, says—

"The introduction of a new style of glass painting suitable to the exigencies of the present age (1847) may be objected to as a startling novelty: that it is founded on analogy of ancient precedents sufficiently appears by the fact, that formerly each century, and almost every year, was productive of some fresh changes in the practice of this art, dictated by a desire to render it conformable with the spirit of the age, and to keep it in a state of concurrent advancement with the other arts of design." "When the sacredness of some of the subjects represented in glass paintings is considered, we surely ought to be cautious not to suffer them to be degraded into caricatures; and if such representations are useful in churches, as serving to recall the wandering thoughts, and awake feelings of piety and veneration, they should be such as can be easily understood. In short, if we wish glass paintings to be a means of instruction, or even to be looked upon without contempt, they must not be permitted to fall below the level of the understandings of those to whom they are addressed. At a time when the gradual diffusion of knowledge, and the engravings with which every class of books, and even many kinds of newspapers are accompanied, insensibly create a familiarity with good, or, at least, respectable models, the extensive employment of glass paintings suggests the propriety of rendering these works conducive to the advancement and encouragement of art." "I am quite sure that a glass painting is, in its way, as capable of high artistic development as a fresco painting, and am only anxious to see the same attention paid to the one branch of art as has already been paid to the other: it should be borne in mind that a display of high art depends not on the

nature of the materials employed, but on the mode of employing them. The glass painter must, indeed, adapt his subject, and the manner of executing it, to the means which glass painting places at his disposal; but the artistic character of the work is wholly independent of these circumstances, and is secured by the skill of the artist alone. If, therefore, we are anxious to cultivate glass painting as an art, we must encourage artists to practise it, by ceasing to countenance those mere artisans who at present make it their trade and confine it to the lowest depths of degradation."

Having thus given Mr. Winston's opinion, I will conclude with a satire extracted from *Punch* (vol. 9, p. 238).

"A Card.—Worthies made up from any number of authorities as per specimen, viz., an unknown saint, which has been faithfully copied from various originals, viz., head from a piece of broken window found under a brick kiln by the Archaeological Institute, at Winchester; missal, from a tombstone in Dublin Cathedral; right hand, from half a bishop, picked up after the fire at York Minster; left ditto, from the nineteenth figure (counting from the right) in the oriel window at St. Peter's, at Rome; feet, from the part of a broken window in St. Stephen's, Walbrook; drapery, from the deal boards in Westminster Abbey."

Ludicrous as this is, those who are acquainted with the practices of some know it is hardly an exaggeration.

EDWARD BAILLIE.

THE METROPOLITAN BUILDINGS COURT.

IN the letter which I addressed to you on the 15th ult., I called attention to the probability that Lord Seymour would again bring forward his Bill for amending the Metropolitan Buildings Act. With your permission, I will draw attention to one, perhaps the most prominent, feature of the Bill. I refer to the proposal to substitute a judge, being a lawyer, for the official referees, being architects and surveyors, as the instrument by which the Act shall be judicially administered. By the provisions of the Metropolitan Buildings Act, one of the functions of the official referees is to determine, by award, questions or differences arising between any two or more parties; and one of the functions of the registrar of metropolitan buildings is to affix his seal to such awards, unless in his opinion, these documents are, to use the terms of the statute, contrary to law, or not complete in any of the requisite forms, or beyond the competence of the said official referees, &c., &c. Under these provisions matters seem to take some such course and to have some such results as the following:—A question is referred to the official referees: they make their award: the registrar questions the same, and thereupon refuses to affix his seal thereto, and thereupon transmits the document to the Commissioners of Works and Buildings, with a statement of the grounds and reasons for such his refusal. The commissioners having considered the matter, make a communication to the registrar, either directing him to seal, or confirming his *refusal to seal*, but not (as I understand the matter) confirming his *grounds and reasons*. This decision of the commissioners, if adverse to the official referees, is communicated to the parties by the registrar by means of a letter, and this letter (as I understand the matter) terminates the case, as the official referees (as we may suppose) consider that they cannot recall their award, and make another, in a direction diametrically opposite, it may be, to the former; but whether the official referees are right in this, their supposed view of the case, I do not pretend to judge. One main object, therefore, of the Bill in question is to provide a cure for this anomalous state of things, so as to ensure a decision in every instance in which a question is referred to the tribunal appointed to decide the same. It is understood that a great number of cases which have been referred in the above-mentioned manner to the commissioners, have resulted in a confirma-

tion of the refusal to seal, and thus no legally complete decision has been obtained in any of these cases. The questions, therefore, that have now to be considered, seem to be the following, viz.—firstly, whether the official referees' awards shall be relieved of the appendage of the registrar's seal; or, secondly, whether the official referees, having had their award questioned by the registrar, and upset by the commissioners, shall make a fresh award, in accordance with the views of the commissioners; or, thirdly, whether questions arising under the Metropolitan Buildings Act shall be decided by a lawyer, assisted in his deliberations (in case he requires it) by the professional knowledge of the official referee. Without question, the present state of affairs ought to be altered, so as to insure a complete and effectual decision in all cases of reference, seeing that in cases in which owners of adjoining properties are at issue, the most serious impediments and consequences might follow unless their differences can be settled by a legal determination, in accordance with the statute. I do not propose, at the present time, to express an opinion on the question, but it appears to me that the question, whether differences shall be determined by A., or whether they shall be determined by B., is of less importance to the public than the question of making provision for insuring a complete and effectual determination in every case referred, as I think we might calculate that, whether Law or Architecture (or, in other words, the *Bar* or the *Bench*) were in the ascendant, the party made responsible would take care that, by some means or other, his judgments should accord, in the main, nearly with law and statute. A. B. C.

FOOTPATHS AND WICKETS.

RETIRED from Pimlico after a long life of business, I fixed my abode in the pleasing vicinity of Dorking, where the chief value of the neighbourhood consists in the lovely and devious footpaths which lead to nodding hills and smiling glades. Many like myself have chosen the same district on account of the perfect freedom that these liberties afford for viewing the wide extended landscapes, the verdant lawn, and the whinny, heathy, and fern-spread common.

As yet there is wide scope, in a range of seven miles from the High-street, as a centre, to enjoy an unrestricted ramble in this fair portion of the Homesdale Vale—although within the last ten years several footways have been stopped: one (as the peasants tell) was open in front of Berry-hill, which is now shut up, and more than one in the beautiful valley of Tillingbourn (leading to the glorious Leith Hill) have been also shut up in that sylvan preserve. The liberty we enjoy here, enhancing as it does the value of my rural retreat, fixes on my mind more strongly the much greater necessity that exists on account of the rapidly swelling population of London for the preservation of every pathway, alley, or street of intercourse communicating between the busy hives of industry. These reflections more forcibly impress me when I come to town, as is my wont, once a quarter.

Then, when disposed to seek fresh air, I enter the Green-park from Pimlico, ramble up Constitution-hill, looking for a turn on to the green sward, which, as I remember, formerly was accessible through a wicket close to the north-east angle of Buckingham House; but an iron range of spikes (my little boy in the Charter-house calls them a *ferrea seges*) intercepted my purpose, therefore I was forced to walk on a short half mile close to the Iron Duke, before I could make a traverse towards the turf.

Would it not be a great convenience to the multitude to have a wicket just at the point referred to? Between Piccadilly and Pimlico it is in the direct line, and could not prejudice the Palace, nor expose it to any annoyance.

Before my rustication, on a summer's morning, I used to walk occasionally up to Primrose-hill, and through the Regent's-park; and here, too, it strikes me that a wicket is much wanted for a footway entrance between the North Gate (Avenue-road) and Hanover

* The following is a portion only of a communication complaining of ill-treatment by Jury XXX. in the Great Exhibition (Section, Stained Glass), and objecting that the only medal given to an English firm was awarded to the partner of a member of the jury. The personal portion of the letter, however, we do not publish.

Gate, a distance of three-quarters of a mile. This part of the park abuts on Portland Town, with a dense population, having no access but by a circuit of half a mile: there is a bridge just midway, across the canal, opposite to Portland-terrace, but this bridge is dedicated solely to the use of *one elderly gentleman*, to whom the privilege is given, together with about *one acre* of pasture inside the park, and about *three acres* of the margin external to the canal! Here there are also several iron fences (what Tom calls the *ferrea seges*: this I suppose to be the botanical name for a new crop), and the people are of course excluded by them.

Some people may think I make mountains of mole hills, when I mention another little blot—it is in fact a little hill, nearly opposite to Mr. Hope's mansion in Piccadilly: it denotes the spot where stood the lately demolished ranger's house (for this park of about 90 acres had also a *ranger*). This little hill (some may call it *molecule*) is useful in its way, for it is the play-ground of urchins, perhaps young commissioners,—at, "I'm king of the castle,"—this mound, formed doubtless for effect from Piccadilly as a feature in landscape gardening, is trodden bare into a russet arena for the before-mentioned infantine and regal sport. Now, sir, one pennyworth of clover seed would sow, and about fifty iron hurdles (without spikes) would defend, still safe, this not ungraceful barrow or tumulus, which might still keep the memory of departed rangers "green in our souls."

Small points like this may appear trifling, but they arrest the eye; and architects are not always regardless of small embellishments: although a sculptor seldom inserts a glass eye, we see that he sometimes *gilds a spear*, as in the group at the British Museum!

TRISTRAM COUNTERQUIT.

IRISH ARCHITECTURAL AND RAILWAY DOINGS.

THE Dublin and Belfast Junction Railway Company are erecting a new station and other works at Poyntz Pass, in the county of Armagh; tenders are being received for the execution of the works in conformity with the drawings of the company's architect.

The late jail and county court-house of Carrickfergus are to be converted into a convict depot for the northern district: they have been purchased by the Board of Public Works for 590*l*.

A new line of railway is proposed to be constructed from Ballibay to Enniskillen, and the Dundalk and Enniskillen Railway Company are applying to Government for leave to bring in a Bill to empower their making same.

A new railway is also proposed between Kells and Cavan, and application is being made for leave to construct it.

The corporation of Belfast have decided on the erection of a new Town Hall; and the Corn Exchange, lately noticed in *THE BUILDER*, is advancing towards completion under the direction of Mr. Thos. Jackson, architect.

The O'Connell monument, lately described by us as having been designed by Dr. Petrie, is to be erected immediately, and tenders for the execution of the works are being received, in conformity with the working drawings, &c., by Mr. P. Byrne, architect.

A new line of railway from Athenry to Westport is in contemplation; and it is stated that the Treasury are willing to advance the sum of 300,000*l*. for its construction, on the same conditions as those on which the extension from Athlone to Galway were granted.

The Committee of Natural History of the Royal Dublin Society have been debating since May last to whom the munificent premium of 10*l*., offered by them for the best designs for a building to cost 2,500*l*., should be awarded. Four sets of plans have been sent in by resident architects, and there appears to be as little chance as ever of this "business-like committee" coming to a conclusion.

The works between Jerpoint Hill and Waterford and the Waterford and Kilkenny Railway are in full operation, with the exception of some parts where the works are at a stand for want of ground.

The corporation of Cork have decided on the erection of a new Town-hall, to cost about 12,000*l*. or 15,000*l*. The new building will contain all the necessary corporate offices, together with a large room for public assemblies, mayor's reception-rooms, library, town-clerk and treasurer's offices, &c., &c. Plans, &c., are being received for same, and a premium of 50*l*. for the first, and 25*l*. for the second design, has been offered.

National model and agricultural schools are to be erected at Kilkenny, and the sites for same are being approved of by the architect to the Commissioners of National Education, from whose designs the new buildings will be constructed.

A handsome piece of plate, consisting of a massive silver cup and salver, has been presented to Mr. G. W. Hemans, C.E., by the Midland Great Western Railway Company, as a token of their appreciation of his services while professionally engaged for them in the construction of the line from Dublin to Galway. The cup is chased in high relief, the cover and base being set off with bosses of highly-finished silver. Both articles were manufactured by Messrs. West and Son, of Dublin.

The new military chapel in connection with the barracks of Belfast has been recently opened for divine worship.

Books.

The Almanack of the Fine Arts for the year 1852. London: Rowney and Co., Rathbone-place.

We have before now expressed ourselves warmly in recommendation of this publication. It contains a large amount of information connected with its specialty, very pleasantly put together by Mr. Buss, and should be in the hands of every artist. We have, however, to express our surprise, as we did last year, at the singular incompleteness of the list of "architects and architectural draughtsmen:"—in fact, it is not a list at all. This is the less excusable as there is a published list of the members of the Institute of Architects readily obtainable. The list of sculptors is also incomplete.

The Ecclesiastical and Architectural Topography of England. Part V. J. H. Parker, Oxford and London.

This part is devoted to Huntingdonshire, a county which contains a number of interesting churches. It has been surveyed expressly for the purpose by Mr. Caveler, who has incorporated the few notes left by Mr. Rickman on this county with his own.

Eöthen. In Two Parts. London: Longman, Brown, and Co. 1851.

MESSRS. LONGMAN have wisely selected this pleasantest hook "from the East" (such is the meaning of the title) that we have yet had, for their "Traveller's Library." As the writer says in his preface,—"You may listen to him for ever without learning much in the way of statistics; but, perhaps, if you bear with him long enough, you may find yourself [not] slowly and faintly impressed with the realities of Eastern Travel." His picture of the plague at Cairo is a fearful one, and his account of Lady Hester Stanhope's conversations very curious. We give a paragraph from the writer's chapter on the Sphinx:—

"Laugh and mock if you will at the worship of stone idols, but mark ye this, ye breakers of images, that in one regard the stone idol bears awful semblance of Deity—unchangeableness in the midst of change—the same seeming will and intent, for ever and ever inexorable! Upon ancient dynasties of Ethiopian and Egyptian kings—upon Greek and Roman, upon Arab and Ottoman conquerors—upon Napoleon dreaming of an Eastern empire—upon battle and pestilence—upon the ceaseless misery of the Egyptian race—upon keen-eyed travellers—Herodotus yesterday, and Warburton to-day—upon all and more this unworlly Sphinx has watched, and watched like a Providence with the same earnest eyes, and the same sad, tranquil mien. And we, we shall

die, and Islam will wither away, and the Englishman straining far over to hold his loved India, will plant a firm foot on the banks of the Nile and sit in the seats of the Faithful, and still that sleepless rock will lie watching and watching the works of the new busy race, with those same sad earnest eyes, and the same tranquil mien everlasting. You dare not mock at the Sphinx."

A Treatise on Investments; being a popular Exposition of the Advantages and Disadvantages of each kind of Investment, and of its Liability to Depreciation and Loss. By ROBERT ARTHUR WARD, Solicitor, Maidenhead, Berks. London: Effingham Wilson. 1852.

THE object of this little work is to give to small capitalists (chiefly) such information of the advantages and disadvantages of each kind of investment as will enable them to place out their money in the manner they may deem most desirable. All technical language is avoided. The instructions are not intended to obviate the necessity of legal advice, but to guide the capitalist in his decisions and in his instructions to his solicitor. At the end of the volume are some useful tables, by which annuities, values, &c., may be calculated. On the subject of property purchased through building societies, and money lent to them, the author, though not professing to be versant with the working of such societies, seems to agree with us as to the risks of loss and ruin from the false principles on which many of these societies have been based.

Miscellaneous.

METROPOLITAN SEWAGE MANURE COMPANY.—An adjourned special meeting of the Metropolitan Sewage Manure Company was held on the 2nd inst., to receive the report of the committee of investigation, which was so far satisfactory that, notwithstanding great discouragements, the shareholders still entertain the hope of being able to carry on their operations in pumping away a portion of that foul liquid which now adds to the impurity of the river. A strong impression prevailed at the meeting that the company is entitled to the co-operation and assistance of the public, inasmuch as they are actually effecting, although on a very limited scale, the great object so long and loudly called for; and that they are doing that at their own expense as a company which is proposed to be done much less perfectly at an enormous charge on the rate-payers of the metropolis. A correspondent on the subject says, "The Commissioners of Sewers have promulgated two grand schemes for intercepting the sewage and conducting it to a distance below the inhabited districts on both sides of the river; but when brought there at an incalculable expense, and with great interference with local arrangements, it is to be all pumped into the Thames! not only wasted, but polluting the water to a great degree, and to an extent that must be noxious and injurious! Surely, if parties could be encouraged and assisted to draw off this foul water at various points, and render it available for fertilisation, the money so spent would be infinitely less, and the result incomparably better, than conducting the water so far, and disposing of it so absurdly and injuriously."

BURNT CLAY FOR MORTAR OR ROADS.—A correspondent wants to know, 1st, the sort of clay which is burnt, ground, and used as a component of the mortar employed in building the railway station at King's-cross; 2nd, the mode in which such clay is burnt, that is, whether in kiln or otherwise, the test of sufficient burning, and the like; 3rd, the mode in, or machinery by, which the burnt clay is ground; and, 4th, will the ground clay preserve its virtue for a considerable, and if so, what length of time? We have ourselves used this material to a considerable extent for ballasting between the lines of a railway. In this case the clay was piled in heaps with a small quantity of breeze interspersed and fired. It may be crushed in a lime-mill.

ROCK-CUT CAVES OF AURUNGABAD.—At a meeting of the Asiatic Society, on the 15th, Mr. Bradley read an account of the Rock-cut Caves of Aurungabad. The ruins of these Buddhist and Jain Cave-temples are found in the hills, within half an hour's walk to the north of Aurungabad; and are half concealed by fallen rocks and earth. Much of the sculpture still remains in tolerable preservation; but the surprising wonders of Ellora have caused these caves to be hitherto but little noticed. The locality is marked by a small Jain cave, which is kept whitewashed by the devotees of the city: the other caves are more or less concealed by bushes, and accumulated rubbish. They are eleven in number, scattered over a space of about a mile and a half, and form three distinct groups. With the exception of the small cave first alluded to, they are all *vihāras*, or monastic caves, accompanied by the usual daghops. One cave alone, containing a gigantic figure of a recumbent Buddha obtaining beatitude, appears to bear marks of antiquity. An arrangement seldom found in Buddhist excavations, but frequent in Brahminical and Jain caves, is here adopted—that of isolating the sanctum from the external wall by a passage going round it, containing chapels, and lateral cells for the priests. The walls appear to have been once covered with stucco paintings, which are now so obliterated, that their character cannot be determined; but the ornamental carving on the pillars, thrones, &c. is the exact counterpart of that at Ellora and Ajunta. In the second group of caves the general character of the sculpture is also Buddhistical. In one, however, there is a figure of *Lakshmi* seated, with two elephants pouring water over her. The most remarkable feature in this division is a series of eight groups of sculpture, representing, on projecting ledges, various figures in the attitude of prayer to the idol. The third group consists of three caves, all of which have been left in an unfinished state.

ST. THOMAS'S TEMPORARY CHURCH, WATERLOO-ROAD, LAMBETH.—The premises which have been converted to this purpose were formerly those of a builder. The four upper workshops have been arranged as a church. The part beneath is about to be converted into national schools; an extensive shed building into ragged schools; and the house flanking the entrance next the road will be residences for the masters and mistresses. The whole establishment will be rather an auxiliary to the permanent church. The entrance opens into a square vestibule (formerly the gateway); and from this, by an enclosed staircase, an ascent is effected to the church quite separate from the rest of the establishment. The church has the old openings for windows, filled with lead lights in quarries: it is arranged with a chancel and vestries on each side of open screen-work, extremely plain, with curtain hangings to the vestries. The seats are all open framed, and, with the pulpit and prayer desk, are of a very plain ecclesiastical character. The works are being done by Mr. Higgs, of Davies-street, Berkeley-square, under the direction of Mr. S. S. Teulon.

PROPOSED RESTORATION OF GADDESBY CHURCH.—Endeavours are being made to raise funds for the restoration of the church of St. Luke, at Gaddesby, a beautiful and perfect specimen of the Decorated style of architecture, the pride of Leicestershire. During the last two centuries, this church has gone sadly to decay, and until within the last few weeks—when, by the munificence of a liberal individual in the parish, it was in part rescued from its deplorable condition—was in a lamentable state. Mr. T. L. Walker, by whom plans for the restoration have been made, says,—"It appears that the first formal grant by the Crown of the manor and church of Rothley to the Knights Templars bears date 14 Henry III., A.D. 1230, at which period a chapel must have existed at Gaddesby, as evidenced by the remains of the south doorway, which is of Early English workmanship, having the banded column and foliated capital of that period; and this doorway I believe to be in its original position. The tower and broach, and the nave, as far upwards as the sills of the clerestory win-

dows, I ascribe to the reign of Edward I., at which period the severity of the horizontal lines of the Early English style was scarcely relaxing, the string courses being still continued through the jamb-mouldings of the windows, as seen in the belfry openings of the tower, while the quatrefoiled circles in conjunction with the lancet heads of the lights were beginning to shadow forth the more perfect development of the beautiful geometrical tracery of the windows, which attained its zenith in the two subsequent reigns, as seen in the belfry windows and the Dormer openings of the broach. The broach itself is an Early English feature, but was retained by the architects of this reign. Like most adopted features in architecture, the broach had its origin in buildings of simple construction and rude materials, being derived from the low shingle roof of the towers often met with in the Early Norman churches, especially in Normandy itself."

ECCLÉSIOLOGICAL LATE CAMBRIDGE CAMDEN SOCIETY.—At a committee meeting on Nov. 18, the scheme for founding a "School of Art for Artist-workmen," suggested by Mr. Allen in *THE BUILDER*, was brought forward, and a general opinion was expressed favourable to the design. Among the letters read was one from the Rev. Dr. Garstin, with respect to the design furnished by Mr. Carpenter for the church at Point de Galle, in Ceylon. The plans, though designed on the data furnished from the island, were now considered not well suited to the climate, and some conversation ensued on the modifications possibly required for the *speluncar* theory of tropical church building, now advocated by the society, in places where, as on the coasts of Ceylon, it is considered as important to admit the sea-breezes as it is to exclude the light and heat of the sun. Some drawings of Swedish churches, their fittings and decorations, by M. Mandelgren, of Stockholm, were examined, and it was determined that a round church, with a round apsidal chancel, which appeared among the drawings, might form the *motif* of an alternative cemetery chapel. It was determined to give assistance to a farmer, carpenter, and inkeeper, who is substituting in his parish church capital oak seats of great substance and of excellent construction for the old pews, setting up stalls for the choir in the chancel, and a reading-desk and pulpit of oak,—all this very much at his own cost, and with the joint labour of himself and his son, a lad of seventeen.

A MONSTER FLOWER SHOW.—Will you allow me to suggest that a monster Flower and Botanical Show should be held in the Glass Palace at a time when the greatest variety of blossom and luxurious foliage could be obtained? This would afford an opportunity to all the amateur florists and nurserymen in the united kingdom to come in amicable competition for prizes which could be awarded out of the entrance fee; which would also be amply sufficient to cover all possible expense. Doubtless Prince Albert or the Queen would join their illustrious names in connection with the scheme, giving it *éclat*, and presiding at a display of the beauties of nature, to which "Solomon in all his glory" was not to be compared. I feel assured that every class of society would co-operate to crown with success the auspicious event. It could be made international by allowing the continental growers to assist at the inauguration of the goddess Flora. If arrangements could be made, I think the contribution of a display of living choice birds, British and foreign, would greatly add to the effect, combining amusement and instruction for the visitors.—H. B.

INSTITUTE OF BRITISH ARCHITECTS.—On Monday, the 1st instant, Mons. M. P. Gautier and Mons. O. Huvé, of France; Herr Stein, Aix-la-Chapelle; and Senor Lorenzo Hidalgo, Mexico, were elected corresponding members. A paper was read relative to the formation of a School of Art for Artist Workmen, and to the establishment of a Museum of Mediæval Art, by Mr. C. Bruce Allen, which led to an animated discussion. We are compelled to postpone mention of it, also several letters on the subject which have reached us.

TO INCREASE THE ILLUMINATING POWER OF GAS.—In one of your late numbers, you allude to a recent patent for improvements in the manufacture of gas, the object of which is to render the gases resulting from the decomposition of water suitable for lighting purposes, by passing them over canal coal in the process of distillation. I witnessed some experiments of this nature with the gases obtained from wood in the manufacture of pyroligneous acid, and have myself, for some time past, been making a series, using several descriptions of slightly illuminating gas, but principally those given out by peat and the lowest quality of coals, and the results are highly interesting. I find that a certain volume of such gas when passed through a heated retort containing Lancashire canal coal, becomes of much greater illuminating power than the same volume of such gas mechanically mixed in a gasholder with the gas given out by the canal; indeed, some of my experiments show this increase to be at least 50 per cent. when our common coal gas is so treated, as 10,000 feet of it may be passed through the retorts containing a ton of Lancashire canal in the process of distillation, and the result will be 20,000 feet of gas equal in quality to that given out by the canal alone, and it incurs no perceptible deterioration by being retained in a gasholder for several days.—C. C.

ANTIQUARIAN GOSSIP AT NEWCASTLE.—At the usual monthly meeting of the Society of Antiquaries, on 5th ultimo, reported by the *Gateshead Observer*, a paper by Mr. Hodgson Hinde was read, on the site of the Roman Bremetenacum, fixing it at Ribchester; while Camden, Horsley, Hodgson, Bruce, and others, had tolerably well made up their minds to confer the honour on Brampton, near Carlisle. Mr. Henry Glasford Potter has presented the Society with two papers on his discoveries within the station of Birdoswald, the Roman Amboglanna. Mr. Potter has, at considerable cost, exhumed two of the gates of the camp, as also some of the interior buildings, and has taken measures for their preservation. During this summer the Duke of Northumberland has had a portion of the court-yard of Warkworth Castle ridged of the *débris* which had long lain there, and exhumed the bases of several piers, which, in all probability, have supported the roof of a large hall. Mr. Benjamin Green has lately completed series of plans and elevations of the remains of Prudhoe Castle, whence the Duke obtains the title of Baron Prudhoe.

ST. ANDREW'S, HOLBORN.—In last week's *BUILDER*, page 750, Mr. Scott asks, "whether there were ever any frescoes on the western wall of St. Andrew's, Holborn, prior to the repairs and erection of the little galleries about 1820?" There were two paintings formerly existing there, one of "Our Saviour giving Sight to the Blind," and another representing "The Sermon on the Mount." These are mentioned in "Allen's History of London," vol. iii., 614, and also alluded to in Mr. Godwin's work on the London Churches. *En passant* I may perhaps be allowed to correct a trifling error in vol. 3, p. 591, of the "Lives of the Chancellors." The choice of an instrument for the Temple Church, by Judge Jeffries, is well known: "He decreed for Smith's, the deep tones of whose organ still charm us, Harris's went to *Wolverhampton*." It might certainly have been sent there, but at all events it came back, for St. Andrew's, Holborn, possesses the very instrument rejected at the trial above mentioned, and which in quality of tone is reckoned to be of hardly inferior merit.—A. W. H.

THE IRON TRADE.—The Welsh iron works, especially those in Monmouthshire and the hill districts, are in a very inactive and depressed state. Men have been discharged at Llanely, and some of the other works are likely, it is thought, to follow the example. Meanwhile, as the Welsh go down, the Staffordshire become a little more buoyant, or rather a little less flat, although pig-iron has, in certain cases been sold at a somewhat less price than heretofore. The Stourbridge miners struck for an advance of wages, but gave in. They have only three or four days' work a week on an average.

CAB DEPOTS.—Cab-stands are nuisances; dirty cabs are nuisances; but the worst nuisance of all is an uncivil and extortionate driver. Let us see how we can remedy all this. In the first place start a cab company at a fare of 4d. or 6d. per mile: the first price, if a profit can be made at it, will pay best. Let the company engage and pay their drivers weekly wages. Let them take livery stables opening into the principal streets and thoroughfares, and indicate them by day and night signals. Let every station or stables have a stable-master or manager; and against the office wall paint up a square table with the fare from that station to every leading place in London in miles and half-miles. The person wanting a cab goes to the nearest station, says where he wishes to be driven to, refers to the table, and pays the fare to the station-master. The empty cab goes to the nearest station to that point at which the fare is put down, or back again, as the station-master directs. The company is thus directly responsible for any mismanagement, and could not be robbed by their men, as the station-masters would be required to keep a tabulated book, in which every fare would be entered, with the cab-driver's number, &c., the hour and minute of driver's exit and return, &c., which would afford a constant check upon master and man. I venture to say, if this system was properly conducted, the cab company would find their greatest difficulty would be to supply the public demand upon them.—E. J.

DODENHAM CHURCH, WORCESTERSHIRE.—About a mile beyond Broadwas, on the right hand side of the road, stands the little chapel of Dodenham, which reminded me of a saying of Charles II., who, when in discussion on the apparent unity of Christians, was wont to declare that he knew of no "visible church" except that of Harrow-on-the-Hill. Dodenham chapel would have formed no exception to the rule laid down by the witty monarch, for indeed it is "invisible, or but dimly seen" through the trees by which it is surrounded; and were it not for the sheet-iron, or whatever other metal it is, with which some artistic chapel-warden has encased the little spire, it would probably be passed by unnoticed. The chapel is like a small barn, being as it were a mere shell of a building. The roof is open to the tiles, and one can see up from the pavement of the church, through the old oak frame-work of what must be denominated the tower, into its pyramidal continuation, which I have dignified by the name of a spire. The walls are as old as the period of the Conquest, as attested by the masonry and the small and plain Norman lights. The hand of the "improver" has been busy even here: a window in the north wall has been cut into a very peculiar shape; the heads of other windows and of the door have been made square, the latter having wooden jambs and top, and the old inscriptions on the walls are now hidden beneath plentiful lavations of whitewash. There is here a round massive font, ornamented with the chevron, being probably of the same date with the chapel.—*A Rambler, in Worcestershire Chronicle.*

BOOKKEEPING: A JUDGE'S ADVICE TO BUILDERS.—In a recent case of importance in the Court of Bankruptcy, the judge made some remarks on the keeping of books, amongst builders chiefly, which merit attention, and which at all events it is our duty to aid the judge in bringing before those to whom his remarks chiefly referred. "There is much reason to fear," said his lordship, "that the standard of commercial morality must be of small estimation in the sight of many when we discover that the most obvious and necessary duty of a trader's life, I mean the obligation of keeping a methodical record of all his dealings, is so constantly neglected. It is matter of almost daily occurrence when a trader becomes bankrupt to find that his books have been badly kept, or, if well kept up to a certain point, that they are greatly in arrears, the most important of all, a cash-book, being oftentimes altogether wanting; and among large traders my experience leads me to think that this happens most frequently with builders. The consequence is serious both to the bankrupt and to creditors. * * * I may

say, from high authority, that 'the business of book-keeping is extremely easy when once the accounts are properly arranged;' but it admits no cessation: the work must be continuous: it cannot with safety be laid aside and resumed at pleasure; and a trader may realise to himself an almost indubitable certainty that sooner or later certain and unavoidable punishment or loss will attend the breach of this duty, while nothing is likelier to keep a man within compass than the constantly having before his eyes the state of his affairs in a regular course of account. * * * Subjection to method and rule is the first thing to which the trader should frame himself, and, though for a time it may prove constraining, yet by degrees, and from experience of its happy effects, it becomes natural and agreeable."

MEDIAEVAL MODELLERS.—At the annual meeting of the Sheffield School of Design, Dr. Branson, in moving a vote of thanks to Mr. Young Mitchell and the assistant masters, said, with reference to an appeal to nature for designs,—"In the chapter-house of York Minster, designs from objects in nature were introduced most skillfully, arranged with all the perfection of artistic principle; and there were found certain very remarkable evidences of the study of nature. They there found the oak, the ivy, the thorn, the maple, and the strawberry, carved in the decorations almost as though they were living plants. Although he did not know much about their modes of instruction in design in those days, there was a curious circumstance connected with this chapter-house, which might throw some light upon the way in which they worked. He had been given to understand on what he considered good authority, that there existed some records connected with the Minster, and among them a curious bill, in which there were items for clay for modellers, and for leaves and plants for modellers, leaving every reason to suppose that they modelled the part to be decorated, and then twisted around it the living plant or ornament, thus giving a life and spirit to the work which could only be attained by similar means."

SOCIETY OF ANTIQUARIES.—On Thursday evening last week Lord Londesborough communicated to the president a letter from Mr. C. R. Smith respecting some antiquarian researches recently made in Yorkshire under his lordship's auspices. The report included an account of a Roman bridge over the river Cock, at its junction with the Wharfe or Wharfe at Grimston, near Tadcaster, the Calcaria of the Romans. This bridge, which is in a very perfect condition, has hitherto been unnoticed by antiquaries and topographers, although the antiquities of the immediate neighbourhood have been often explored. It is a single arch of a 12-foot span of very solid masonry, the stones of the foundation being particularly large, and on one side extending along the margin of the river several yards. On some of these stones, masons' marks occur.

PAVING FOR CATTLE STALLS.—At a meeting of the Highland Agricultural Society, held last week, Mr. Maxwell, before the commencement of the discussion, called the attention of the meeting to specimens of grooved bricks for laying the floors of cattle stalls, invented and manufactured by Mr. Forbes at the Newark brickworks, near Ellon, in Aberdeenshire. Their peculiarity consisted in the bricks being slit in the surface and grooved in the centre; the grooves communicating with a larger brick of similar construction, on the principle of a main drain, which receives their contents, and forms the grip or gutter. He mentioned that he had received from Sir John Forbes, and various practical farmers in Aberdeenshire, statements certifying the advantages of the invention in point of cleanliness, economy of litter, and comfort, and that he understood the bricks were sold at the kiln at 8s. per 100, 160 being sufficient for four animals.

PORTLAND CEMENT SLABS.—The great Cement slab exhibited by Robins and Co. of Great Scotland-yard, has been presented to the Royal Commissioners, and by their orders has been placed in front of the Achilles statue in Hyde Park.

LEE DRAINAGE.—We have received from Mr. J. Bailey Denton, of Gravelly, a note disclaiming the authorship of a communication on this subject in THE BUILDER of 15th ult., with his name appended thereto. We inserted the communication referred to on the sole responsibility of Mr. Bailey Denton, of Gravelly, whom the signature appeared to us plainly to indicate; and we cannot sufficiently express our indignation at the circumstance that, by a virtual forgery, such as this appears to be, Mr. Denton's name should have been imposed upon us, to induce us to publish what Mr. Denton did not dictate, and what now appears to be quite inconsistent with his sentiments. Every one is interested in the detection of a person practising a deception of this sort. We, ourselves, have not the slightest reason to impugn Capt. Dawson's motives.

STONE AT HASTINGS.—Permit me to correct a slight mistake in the article which appeared in your last number on the building materials at the Exhibition. In that article it is stated that the "grey calcareous rock," exhibited in No. 50, and used as a building stone at Hastings and St. Leonard's, is "from Tilgate Forest." This is not the case. It is obtained from the East-cliff at Hastings, which is a part of the same formation as the Forest, the "Tilgate beds" overlying the sand and clay of the Weald. Tilgate Forest is in the northern part of the county of Sussex, and is between twenty and thirty miles distant from Hastings.—J. R.

A QUESTION.—Will you have the kindness to elicit from one of your correspondents who may be better versed in algebra than myself a solution of the underwritten example, which is taken from "Wood's Algebra," by Lund, 13th Edition, example 21, under the head of "Greatest Common Measure," viz.:—Find the Greatest Common Measure of $x^6 + 4x^5 - 3x^4 - 16x^3 + 11x^2 + 12x - 9$ and $6x^5 + 20x^4 - 12x^3 - 48x^2 + 22x + 12$. Answer: $x^2 + x^2 - 5x + 3$.—G. E. G.

THE TIMBER TRADE.—Owing to the unprecedented influx into London of vessels laden with foreign wood goods this season, the managers of the wood-dock establishments have found it requisite to make extraordinary arrangements, in order to provide space for the housing of the wood in the bonding premises. An excess of nearly 100 sail, with between 15,000 and 20,000 tons, had lately already arrived, and other cargoes were then expected.

MODEL COTTAGES FOR MARRIED SEAMEN'S FAMILIES.—The *Nautical Standard* suggests the formation, in addition to the Sailors' Home for single men at Portsmouth, of a number of cottages for the more deserving of the wives of seamen, to be let at a self-supporting rent. The Board of Ordnance are now adding to their two hundred cottages for families at Woolwich, and the *Standard* thinks the Admiralty might apply to Parliament for power to erect such cottages; and hopes, at all events, that it will largely subscribe towards so commendable an object.

LIGHTHOUSE AT SINGAPORE.—The *Singapore Free Press*, of 21 October, announces the completion of a lighthouse on the Pedra Branco Rock, at the entrance to the Straits of Singapore, and called the Horsburgh Lighthouse, in memory of the late hydrographer to the India House. For this, the first light in the China seas, the mariner is indebted to Mr. J. T. Thomson, the Government surveyor, who designed and executed the work. It is a tower 95 feet in height from high water level, and built of granite. The rock on which it is built is 10 miles from land. The lantern, dome, and lighting apparatus on the Holophotal system, invented by Mr. T. Stephenson, C.E., were made in Edinburgh by Messrs. Adie, opticians, and Milne, brassfounders, in accordance with the design, and under the directions of Messrs. Stevenson, civil engineers. The workmen employed in the construction were from various countries, no fewer than eleven different languages being spoken, so that many directions had to be given by signs. The total cost of the work was about 5,400l. The light is seen at 15 miles, the curvature of the earth preventing its being further visible.

The Builder.

No. CCCCLXII.

SATURDAY, DECEMBER 13, 1851.

OUR recent article, commencing "Autumn usually brings other falls besides the fall of the leaf," has been called by some "prophetic," but, like many other prophecies, was grounded simply on the belief that like proceedings would bring like results. Certain it is, however, that no sooner was it published than the terminating cornice and parapet of four houses, and part of a fifth, in the Gloucester-road, Kensington, fell (causing the death of one workman and injury to others), and that, before the inquiry into the cause of this was completed, namely, on Sunday morning last, one of the houses now building in New Cannon-street, City, fell to the ground, but, happily without injuring any person.

The cause of the last occurrence is not yet known with certainty, but should be rigorously inquired into for the sake of the future. The frontage of the house is about 40 feet, the depth not more than nine feet at one end, next Bush-lane, and 14 feet at the other. The front wall, which has fallen, bringing away with it the whole of the interior, but leaving the roof marvellously suspended, was carried on cast-iron girders with a brick pier in the centre, and we must suppose, pending investigation, that one of the girders, which had a bearing of 20 feet, broke. The wall was 18 inches thick part of the way up, and 14 inches thick the remainder. The roof, curved in front, is kept up by the back and side walls. The side wall next Bush-lane was wanted to admit a door in the angle: the part of this wall which remains, with its overhanging cornice, looks very dangerous, by the way, and should be further supported.

The back wall being an old one, the joists were laid on plates spiked to it, and probably afforded little tie to the front wall. The accident happened at a time when everything was perfectly still (Sunday morning), when there was not even a vehicle in the road to cause a vibration: had it occurred when the men were at work on the floors, the plasterers on the front, and the street filled with people (as was likely), the consequences might have been dreadful. The size and construction of the girders we have not been able to obtain; and comment at this moment would be useless. It is due to the builders and owners of the premises (the Messrs. Lawrence and Sons) to say that the work appears to have been done in the best manner. We did not hear that any architect had been employed.

Before leaving New Cannon-street we must express our discontent with the dowdy common-place character of most of the buildings that have yet been erected in it: we fear the city architect has not had sufficient control. It will be an important thoroughfare, and should have exhibited some little art and beauty. It would have been better, by the way, if the house at the east corner of Queen-street had

been kept back, as it now projects somewhat awkwardly before the general line of fronts. The granite statue of King William IV. terminates the east end of the street effectively.

The investigation into the cause of the accident in Gloucester-road was concluded on the 8th, before Mr. Wakley, M.P. the coroner. In the course of the evidence which was given,—

Dennis Hurley, foreman of the plasterers, deposed that he had himself made complaints as to the state of the work, more especially of the parapets and cornice. He perceived that they were being built in mortar, and he called Mr. Bean's (the architect's) attention to the circumstance, and told him that it was dangerous. In consequence of that representation the work was pulled down, and it was built up again in what was called "cement." In witness's opinion it was not cement, and when he saw it he poked it to pieces with his finger, and said to the men employed, "Do you call this cement? why you might as well use the M'Adam stuff off the roads." As to the cause of this accident, he said, under the cornice there were five or six courses of bricks. Those courses ought by rights to have been carried up in good cement and good Thames sand, instead of which they were carried up in mortar. If they had been carried up in cement, the accident would never have happened. When those courses were carried up, the stone-work ought to have been bedded in cement and grouted in, but, instead of that, some of the stones were put in dry.

Mr. Bean, the architect, deposed that he had not the control of the materials that he ought to have had. He had complained to Mr. Inderwick, both personally and by letter, on several occasions, that he had not sufficient control over the works or the workmen, and that Thames sand ought to have been used in the cement. The loam that was employed in the mortar completely destroyed the binding properties of the lime, and it would be just as well to put up a stack of dry bricks as bricks with mortar composed in that manner.

Daniel Edwards, the bricklayer who executed the brickwork, did not like the nature of the material he had been compelled to use, and he had complained of it several times to Mr. Bean, but it was not his business—he had not to supply the materials.

Mr. T. Peacock, an architect (who had been instructed by the coroner to view the premises, and to report upon them), deposed that he had made such an inspection of the buildings as enabled him to give the jury an account of the cause of the accident. In the first place, he considered that the cornice was too heavy for the building, the retaining portion not being sufficient to counteract the preponderating weight of the overhanging portion. The brickwork under the cornice was not at all such as should have been used. Neither the grit nor the material used for mixing the cement was such as it should have been.

Mr. Donaldson, the district surveyor, said, in such capacity I have frequently inspected the works in question when they were in progress. In such a case as this I have very little power of interference. In fact, the Act merely requires that projections such as these shall be of incombustible materials. As far as I can, I endeavour to persuade builders to take every precaution, but that is all the power I have. When I have been at the works, complaints have never been made to me by the men that improper materials were used; but I have occasionally—frequently—complained of the quality of the earth mixed up to make the mortar, and I have often noticed that Mr. Inderwick had not competent men on the premises to superintend the works. I think that the weight of the "telling" ought to have been more considerable, and having heard that parties walked along the cornice, I have no hesitation in saying that that would destroy the cohesion of the brickwork with the stonework. The clerk of the works is the person to see the works properly carried out. In the absence of any clerk of the works, I do not think that the architect is the person responsible.

The Coroner, in summing up, said,—It was very difficult in these cases to determine where the actual responsibility rested. By the agreement* Mr. Inderwick appeared to have transferred every legal responsibility to Mr. Bean. That gentleman had supreme power over the works. It might be said that he had not power over the materials, but yet, inasmuch as he had power to stop the progress of the works at any moment, he had indirectly power over them. In these circumstances was Mr. Bean

lax in the discharge of his duty? It appeared that he had complained to Mr. Inderwick, but that he had not complained in such authoritative terms as to attract his full attention to the danger that would ensue if his warning were neglected. He did not think that this was a case which required the jury to fix any criminal negligence upon any party concerned, but he thought it was due to the safety of the public that they should name in their verdict the party or parties to whose act this unfortunate accident might be traced.

The Jury then retired, and after a lengthened absence returned with the following special verdict:—"We find that Robert Woolen was accidentally killed by the falling of the cornice of the parapet of certain houses, the property of Mr. John Inderwick, situated in Gloucester-road, Kensington, upon the 29th of November, 1851; and we further find that the cause of the accident was by reason of the bad materials furnished by Mr. Inderwick. We also find that Mr. Bean, the surveyor, was to blame for having permitted the works to proceed under such circumstances."

It is all very well to say that the architect should not have permitted such materials to be used: but what authority could he exercise over his employer? Leaving the evidence, however, to speak for itself, let us look a little farther. How was the core for this cornice formed? On four courses of 14 inches work ($\frac{1}{2}$ inches of which projected beyond the wall beneath) was placed a layer of Yorkshire paving, 2 feet 8 inches wide,—1 foot $1\frac{1}{2}$ inch on the brickwork, and 1 foot $6\frac{1}{2}$ inches projecting beyond. Upon this was formed a parapet, consisting of a 9-inches plinth, 18 inches high, open panels filled in with cast cement-work, 2 feet 2 inches high, with brick piers between, and a cement coping. It was supposed to be built in cement, and it had some iron hooping in the plinth. The whole projection of the cornice was 2 feet 3 inches; and the parapet had to counterbalance this leverage. Had all the circumstances been favourable,—the weather good, the work well done, and kept unshaken, it would doubtless have stood (the cornice of the opposite houses, precisely similar, had stood); but what was the fact? the brickwork on which the stones were laid (*the fulcrum against which the lever was acting*) was in mortar and badly executed; the cement with which the parapet was put together crumbled into dust between our two fingers; the whole had been shaken, and the fall was inevitable.

The daily papers said that the stone core had broken short off close to the wall: this however was an error.

Without wishing to throw any further blame on the young architect under whose direction the work was being done,—referring, indeed, rather to the mode everywhere pursued than to any special case,—we must insist on the necessity for such a construction of these external cornices as shall render their safety something more than possible. This is not the first, second, or third time, within a very short period, that life has been destroyed by their failure; and our readers will especially remember the melancholy accident in Lupus-street, Piccadilly, in September last, commented on by us at the time,* in an article which was reprinted all over the kingdom by our contemporaries, who are ever ready, we say it with gratitude, to give far-reaching wings to our advice and suggestions. The stone should *tail in at least* to the extent of its projection, and no force should be set up which has a tendency to strain and distort the work. Most of the mechanical defects of buildings result from inattention to the laws of gravity.

* I agree to prepare plans and specifications, &c. and to superintend the erection of the houses in Gloucester-square, for 15l. per house."

* See p. 610, ante.

ARCHITECTURUS TO HIS SON.

THE LAMP OF SCIENCE.*

If I describe the science of the architect as that which forms the great power of the civil engineer, this will convey to your mind my meaning so far by illustration. It consists of the two departments,—firstly, the philosophy of natural structure of materials involved in building; and secondly, the philosophy of the constructive principles of building. There is included by implication in each of these departments, as part of the idea of the question of building, the philosophy of the operations of nature in connection with building. "Construction," says Mr. Donaldson in his "Maxims," "has for its laws the principles which govern matter; for materials, the productions of the vegetable and mineral worlds; and for its end resistance to weight, a successful struggle with the elements, and victory over decay."

It would take a volume rather than a page to exhibit these philosophies of which I speak. There is no lack of treatises on all their details: my purpose is but to indicate the position of the subject among the objects of the architect's attainment, and to force upon your attention the folly of its neglect.

The practical architect, then, ought, in the first place, to be well versed in the knowledge of building materials, as regards their natural structure and mere application; and not only mark me, in their knowledge, but in their philosophy,—in that knowledge systematised as a science. But I must disclaim the position with which an enthusiast might complicate the question—that such philosophy is equal to the comprehension of all that is to be learnt in mineralogy, vegetable physiology, geology, chemistry, and the like. These sciences are every one of far wider range than merely as they bear upon building; and it is only as they bear upon building that the architect requires their knowledge, as the master of the builder. But so far he ought to know them thoroughly.

Being thus possessed of the knowledge of the properties and applications of the several materials in his hands, he must, in the second place, understand the science of the uses and employments in detail of these materials,—that is to say, the requirements of building, and the mechanical means of meeting those requirements with the materials in hand. I might say, if I were humorous, that there are three ways of meeting those requirements. A late eminent statesman, as all the world has heard, had a habit of stating that there were three courses open to him; and in our own subject, an eminent professor takes pleasure in elucidating a triplicity in the essence of things—three gradations of proportion, three gradations of strength, three primitive colours, three degrees of comparison, three positions of time, three elements of the crust of the earth, three orders of architecture, and (no doubt he would say) three lamps likewise of architecture, where Mr. Ruskin and your old father see seven. So be it, then, and there are also three ways of meeting the requirements of building with the materials at command; first, by over-building; secondly, by under-building; thirdly, by well-building; first, with excessive substance; secondly, with insufficient substance; and thirdly, with exactly adjusted substance. I need not say, that of these the third must be the architect's aim. The first is waste or unwieldiness, the second ruin inevitable, and the third science. To calculate absolute equilibrium is the perfection of science in theory: to build with sufficient excess, and no more, to ensure permanent stability, is the perfection of science in practice—that upon which the third lamp shines.

I need not be careful in discriminating between science and building, as if I were writing a treatise on these subjects; and a great deal of what passes through my mind as I write I therefore do not record, but leave to pass through yours as you read. But it may be well to hold what I call science to comprehend only the philosophy of the mechanics of structure, and to include under the head of build-

ing all other matters of knowledge of the builder's work. And this, perhaps, I ought to have said before.

The materials of mechanical construction hitherto have been stone (or brick) and timber, to which a third is now of late added—iron. The works of the ancient times, those of the mediæval ages, and those of the modern period and our own day, are familiar to you, and their scientific merits and demerits have often been canvassed in theory, so that the general principles of science in the abstract are by no means unknown; besides which there has been within the last century such great advance attained in the experimental and scientific investigation of all such subjects, and so many elaborate and explicit treatises have been issued from the press of this and other countries; and, moreover, in the works of our engineers there has been displayed so close a comprehension of scientific perfection, and such ingenious precalculations and satisfactory results; that the cause of the well-known deficiencies of the architects of our day is only matter of wonder. Certainly while there exists, and in such universal estimation, another profession, whose attention is specially absorbed in the execution of great scientific constructions, it is scarcely matter of surprise that architects, having only to do with smaller works, and having their attention, moreover, specially distracted in the complicated nature of their calling, should fail to maintain, and indeed, fall very far behind, the standard of the engineer's skill in the abstract; but surely there can be no reason why the architect should not, in his own comparatively simple province, at least maintain creditably the standard of his profession in other times. But I believe it is the fact that, with a very few exceptions, men of our profession are scarcely at all, even in theory, acquainted with the principles on which, for instance, the Freemasons equivoqued their system of arcuation, while in practice there is almost nothing of these principles carried into effect—perhaps never a single calculation made further than by reference to such a thing as a book of precedents, the Building Act, or the requirements of a body of commissioners. So long as Fredgold is on the bookshelf, or even Peter Nicholson, we need never be at a loss for such a matter as the scantlings of a girder, or of a roof-principal of standard truss and span, or of even a cast-iron beam or a story post; but this manner of overcoming difficulties will not suffice much longer. We must again acquire the power of precalculating for the occasion, whether for stone arch, pier, abutment, pinnacle, or buttress, for timber trussing of whatever complexity or peculiarity, for iron, cast in pillar, beam, rafter, strut, or rib, or wrought in tie or suspension rod, and for brick even in the common wall, pier, aperture, or arch. Some of the architects of the dark ages, no better than friars, could estimate and adjust, and did so, as we every day can see, with a precision amounting to mathematical certainty, the most complicated questions of elaborated counterpoise, raising up structures of magnitude and complexity yet astonishing, with materials little better than the paving stones of the French barricades, almost realising Mr. Donaldson's maxim of the "ablest constructor" who upholds, upon the smallest amount of surfaces of support, the greatest weight, with strength uniting economy, till we almost fancy it is but a painted vision that is before us—the picture of some dream of magic grottoes woven in wickerwork. Too nicely, indeed, had their adjustment been sometimes done, where crumbling ruins are now all that remain of beautiful building—tracered window, sculptured foliage, and fan-vault like the forest sky. And why cannot we, of this enlightened time, sitting in purple and fine linen in libraries over-loaded with dissertations, precedents, experiments, statistics, data, formulæ and tables, encyclopædias, and indices, do as did those poor men of sackcloth and mortification, spelling with difficulty through their little store of scanty gleanings from an untilled field? Ah! my son, those men, I dare say, learned in a severer school than ours, and burned the midnight oil in patient study, while

cigar divans and latch-keys were as yet unheard of.

While I cannot agree with those who demand that the civil engineer shall acknowledge himself a usurper, and give up his territory to the architect as its rightful ruler, believing as I do that this bisection of an ancient unity is but a profitable application of the principle of the division of labour—profitable both to the interest of the community and to the real interest of architecture; yet there is one matter which seems now to be acknowledged as the concern of the engineer, of which I should be disposed to dispute with him the possession as a question of right,—and that matter is the bridge. In the different varieties of the bridge we have unquestionably an excellent series of subjects for architectural effect of the highest order and most piquant degree. I incline to the opinion, moreover, that the architectural treatment of the bridge is a thing which has never yet been fairly attempted—whether it be the stone arch, the iron rib, or the suspended way,—not to speak of the tubular wonders of our own period, which seem to bear more of the appearance of the coffin of some such thing as a sea serpent, than of that artistic effect of which their construction is perfectly capable. Why I claim the bridge for the architect is, that I assume the impossibility of the engineer ever becoming an artist, seeing that, with perhaps at present this single exception, there is nothing in his province which is a subject for art. And therefore, unless there be an amount of mechanical difficulty which is beyond the reach of the architect, this particular subject would be better handled by him. And instead of the subject involving extraordinary difficulty, I think the case is the reverse—that the philosophy of the bridge is rather simple. If in the case of the new bridge of Westminster the system of public competition should be resorted to (a system as profitable in works of great public importance as it is pernicious in its present extension to every trumpery nickname in a country village), then I hope the architects of England will come forward in strength and determination, to match the engineers in simple skill, and drive them from the field on the question of the beautiful—that without which, within its own wide sphere, man's work is unworthy of him.

I have little more to say on science, but that we must not forget those knowledges which refer to the operations of nature on construction, from the philosophy of the foundation on which it is to stand to that of the action of the elements in the work of decay. This department completes the question of Science; and what else I have to say on practical matters must be attended to under the question of building.

I have spoken of Art as a prodigiously noble thing: I speak now of Science as very noble too. There are pretended men of science whom I despise,—talkative, fussy, and conceited men, whose shallow waters are in perpetual boil, while the deep stream runs silently and slow. Empirics, too, I hold beneath contempt,—blind leaders of the blind,—much more pernicious than profitable. But the clear-headed, calculating man, who can grasp nature's agencies like arrows, and direct them with unerring aim—who can deduce and demonstrate, discover and detect, by system and rule—who can direct me from the end to the beginning, from the beginning to the end,—such a man is an enchanter, a prophet, a worker of miracles. When Le Verrier wrote to his friend to look towards such a spot in the stupendous heaven at such a time, and see an unseen planet rolling by—"I have not seen it," says he, "but it will be there"—what do you call such a man? When in his silent study, while plodding traders crept by along the street absorbed in francs, and gilded butterflies were fluttering on the promenade absorbed in finery, this lonely man, with pen and paper, was absorbed in such a thing as this,—what would your traders and your butterflies have thought of him? But he has done,—the last figure finishes his work,—and makes his name immortal: he has weighed that unseen planet in scales,—he has measured

* See p. 784, ante.

with a mighty chain the myriads of leagues of its tremendous orbit! He does not hesitate,—he trembles, it may be, as thus the key of the unknown abyss is placed in his small hand to open,—but he does not hesitate—there is no uncertainty—the act is accomplished. This is Science. K.

ON THE INFLUENCE OF CUSTOM, TASTE, AND MATERIALS ON PRACTICE, AND HOW INNOVATIONS FROM SUCH SOURCES SHOULD BE MET.*

THE spirit of movement and change, the desire never to rest satisfied with things as they are, the restless efforts to gain, to grasp, to gather together and use, which mark the mind of man—pervade especially, along with those other matters that engross his attention, that art from which he derives so much to delight his eye, and which adds so much to his comfort—*Architecture*: and that because it is, more than any other fine art, so intimately mixed up with his wants and daily life.

And thus it is that the architect has a two-fold tide continually rolling in upon him, and needs to keep his attention awake, his head clear, his hand ready; for there is danger that he may sink, weighed down by the shackles of prejudice, or be carried away by one or other of those billows ever swelling before him: there is danger that he may yield to the force of the merely useful, and so be cast away on the rock of mere utilitarianism; or there is danger that the charms of mere æsthetic thought may woo him to quicksands which want the necessary foundation of the useful, and where he may stick fast, unheeded by his fellow-men, because unrequired by them. It is the office of the merely necessary and physical wants to be the vehicles by which the more elevating and mental tendencies are brought out, and the right office of art is, to clothe the every-day means by which man's commonest wants are satisfied with its own beauties; so that the better, the poetical, the happy, and pure feelings of his mind are called into action, and by constant exercise are improved and perfected, to the vanquishing of many fresh delights and before unknown sources of pleasure in his soul.

The architect, if he is wise, will beware of the dangers to which we have alluded: he will rise with the immediate occasion before him, not to be mastered by it, but to direct and govern it,—willing to receive, ready to adopt, but determined to direct,—neither shutting his ears to popular calls, nor blinding his eyes by popular fashions.

With these remarks, then, we will approach our subject a little nearer, and proceed to consider the tendencies and demands by which the artist is influenced in the present day.

He has the hue and cry for new styles, new art features and effects ringing in his ears on the one hand, and on the other he is deafened with the noise of the workers in materials, hitherto only used subordinately, who extol their own inventions on mere practical grounds only, amid the hiss of the steam and the incessant rattle of the engine; and these latter are too apt to act indiscreetly, abusing materials excellent and useful to all sorts of purposes—urging on, instead of stemming, the popular tide—ever running to extremes; so that hearing of iron and glass well used and fitly for one purpose, we presently hear of warehouses and railway stations to be so constructed, and may be prepared to see imitative genius suggesting some much more extraordinary application of this combination.

The growing into unexpected use of some hidden and unused medium should be matter of great interest to the architect—of congratulation and delight if he views it aright,—and should be welcomed by him as such: the difficulties found in treating old material's in a new way vanish in this case,—and great difficulties assuredly they are: he is brought up in old modes of thinking: he has old tools and old materials put into his hands: he has old models to study, and old lessons are imprinted on his mind: what wonder, then, if he finds it diffi-

cult to break away from old paths, to get rid of old impressions, and to mirror back new views from old reflections.

Perhaps the greatest architectural feature of the age is the growing introduction of cast metal into all sorts of buildings, and for all sorts of purposes. Now if the metal has within itself the elements of successful utility, its progress will not be arrested: a cold reception may delay its usurpation, and maintain against it an unequal combat on the part of its antagonists, but they must succumb at last; and might it not be better if the architect, foreseeing the end, would apply his mind to the present need, and lend his aid to place the new feature at once on a loftier elevation—detracting nothing from the past, but giving the thing of this present its full weight and singularity—marking out his own age—walling off his own epoch from those previous—setting up a great landmark, an eternal pyramid of fame?

In the architecture of past ages, some signs of the passage of one material into another may often be traced: wooden framing and construction leave their impress on succeeding stone, and evidence of the usages of one age becomes transferred to another in which the latter no longer exist; so that the intense absurdity is again and again perpetrated of erecting buildings on principles contrived for one part of the world in some other part totally dissimilar: thus, Gothic churches are built in India, and Egyptian buildings in Britain; but surely there is for us a grand opportunity of avoiding such errors: the architect working in Rome must almost necessarily divest himself of all idea of stone and wood; and so, he may mark the change, as instant and rapid and as wonderful as that which took place when the Early English, or first pointed, reared its sweet beauties in the land—uncontaminated by the rudeness of the previous age—untaught, except remotely—pure and fresh as the early morn. A great opportunity this, a wonderful advantage, if the premises we have assumed are at all correct.

Practically, however, we must allow that there is much difficulty to embody any such idea: we have learned to admire mass combined with lightness—the easy flow of curved lines—the manifold beauties of scientific construction—pleasing the eye, and carrying conviction of a thoughtful and masterly mind: we look for evidence of strength, and expect to find it in solid piers and massive buttments: we like to see a building alive with purpose, each portion taking up its right place in the whole—all subservient one to the other, mutually giving and receiving support and strength—receiving and conferring grace and beauty—separately, perhaps, little or nothing in effect, but, together, either by mutual help or contention of power, making a perfect whole.

In turning, however, to *iron*, we are, perhaps, indisposed to employ it, because, although it has, doubtless, some of those excellencies properly treated, yet its more proper beauties are worthy of a different order: solidity and breadth it has not, for it is rigid, and of great strength in a small compass, and its power must not be wasted: the beautiful effects of thrust and counter-thrust, and security maintained in the midst of contending forces, it has hardly at all; for it is in its nature firm and unyielding, and this intrinsic independence of each part of the rest has led to its being treated in parts only, and rarely or never as a whole—a series of panels and posts—a range of weighty beams, that form unpleasing combinations, because the effect of mind is wanting—there is no thought written on them—it is the strong metal, not the mind of man you see.

But a wall of iron would look thin and miserable? Yes, indeed, unless you will let it look like itself. Imagine a stone cathedral electro-plated with iron: what a grim, gaunt, oppressive, weighty, tremendously ugly-looking monster it would be! or, on the other hand, paint and sand your iron support, and draw joints, making it look like stone: what a dangerous, frightful aspect it would have! nothing would tempt the spectator near

it, unless he knew the mystery. The architect must make the spectator understand the *nature* of the power he is dealing with: he must let its strength be seen: he must let it discover itself, not in its native grimness, but with its sternness purified into serene power, and the might of its brute vigour tamed and led by his art influence.

Suppose, for example, you were required to design a church,—to put what some would call a very gross case,—the main feature of (not the entire) construction to be iron, as stone usually is now: suppose a railway king, whose dominion grew out of iron, directed you to do this,—because he loved the metal, first, and, secondly, because he might be able to add that the cost was only half what it might otherwise be: would you laugh at him, reason with him, or quietly give him up as past mending? The circumstances would authorise you to do none of these: no, you would act more worthily of your art, which should be ever slow to yield to difficulties, if you applied your mind to the idea, and strove to carry out your employer's notion.

True, the mere thought of such a case to the sticklers for imitation of the past will be beyond endurance: indeed, the strict precedent-men are out of court altogether, and have no resting-place for the soles of their feet. But it may happen that more liberal thinkers would feel a natural instinctive repugnance to any such idea. What is to become of old associations, hallowed recollections, the poetry of the past? Shall we forsake those forms, garlanded by poets with wreaths of song—by art clothed with beauty—in which the religious man believes he can trace the influence of the religion he loves, and in which the scientific man sees the exemplification of those telestic excellences which fill him with pride and call forth his approval and admiration?

Estimate all this at its utmost value—give it its just weight in the scale; and, after all, it is not of such immense importance as may seem at first: the immortal mind of man is still the same: the poet is no less so, if from the gorgeous city he be transported to an island of rock and desert; nor is the heart of the religious man changed because the forms at present around him may vanish: we may learn from the past, that outward fashions do not rule the higher inspirations.

But to return. The architect having his instructions, how shall he carry them out? First, as to plan,—his mind may advert directly to what he has seen and practised a hundred times—the old arrangement of nave and aisles: well, let him take it; not because it has been used before, but because it is a good plan and a reasonable, and perchance will suit him as well as any other: moreover, it is well proportioned, and the divisions of the building always fall in together pleasantly, and with harmony. But the thought of piers and arches to divide his nave from his aisles occurs to him: no; so far as the arches, at least, he rejects that at once,—he sees that here he depends not on the inert strength of mass for his support; that the arch, the principles of which are the tendency of wedge-like *voussoirs* to bear towards a common centre, can have no place under the circumstances with which he has to deal: compared with stone, he has a more concentrated power, and a more resisting: acting in the place of piers, he may cluster supports of hollow open work, and these he may design in any art form he pleases, so long as it is not one that belongs and exists veritably only, because constructively, in some other medium (there he will reject the close apparently solid, though hollow, imitative column); while above he may have his transverse beams pierced, and in what pattern he may choose.

But how can he manage his walls? Perhaps he can only think of a framing filled in with glass, which he has seen at some conservatory; or of thin plates bolted together at the flanges, like a Californian house, built for ready use and quick sale; or a cast-iron light-house; and all these he sees are wanting in beauty,—very useful, perhaps, but wholly inartistic. He might determine that, to equalise temperature, he should have a double chamber

* Part of paper read at the ordinary meeting of the Architectural Association, on Friday, Nov. 28.

in the wall, and this would help to give him thickness if he desire it: he may consider that while iron is to be his main dependence, he may introduce other material to give him colour, while still the main framing and construction remain apparent. Perhaps he has seen the clever introduction of porcelain in connection with iron by a member of the Architectural Association. Coloured thin tiles may effectively be introduced, with a pattern on them if required; or any other dense medium, not affected by the weather; or he may coat his metal with some other metal, and so defy corrosion. But perhaps he was brought up a Goth, and feels sorely the want of buttresses, objecting greatly to a flat surface of wall: a buttress which is to resist a thrust he does not require, but stays and supports he ought to have, and not to depend on the tying in of the roof, as we usually see done; and if he were to stiffen his exterior by open-work standards thrown out at certain distances, he might satisfy his prejudices much in this respect; and all the while his aim and treatment would tend to show light nervous strength, without heaviness and without flimsiness.

But here is a difficulty: his client will have the church seen for miles away: he likes a tower and spire, and will have one.

Now, the feelings excited by heaping up stone on stone, and rearing a mass solid as the natural mountain, telling of ages gone—looking to ages to come—mighty mass, unyielding power,—this he cannot imitate, at least in the same way: to cast blocks of iron hollow, and pile them up like stones, he feels will not do; but might he not put up a structure of powerful framing, of bold outline, and exterior bespeaking stern endurance, which should in another way convey similar impressions, while he might elevate an open-work enriched spire, the whole meeting, in some degree, the end he desired?

In this case we have of course been supposing an influence from that which exists around us, not arguing that this or that suggestion is in any respect the most applicable.

In executed examples of iron-work there is a want of profile and projection, a baldness which we believe might be avoided, although, without question, our material is less susceptible of light-and-shade effects than many others; while it is as true that mouldings and water-tables, cornices and large projections, massive consoles, &c. belong to quite another order of beauty.

With regard to ornamentation, although there is no opportunity for the stone carver, is the talent of the worker in iron less—the art of the chaser and finisher—the elaborations of the cunning smith in wrought work a lower order than the mason's? Assuredly not; while there is a vast field unexplored of ornamentation by the incrustation of one metal on another, and gilding, silvering, and the employment of colour, are of course altogether admissible.

Having carried our supposed case thus far, for the purpose of covering our assault on the castle of prejudice, let us revert to what we originally started with, namely, the desire to show that unexpected innovations are not to be cried down and opposed because new; and perhaps some may think, after all, that even such an extreme result as we have contemplated is not so abominable, so incapable of good treatment, so decidedly inappropriate, unworthy of the art, and impossible of execution.

And I would urge, that he who could embody in some worthy form the demands of the age, would render good service to his contemporaries and to his country: an unknown wilderness, as it appears as yet, is opened out to us; he would be a great man who could map out the right track and find out the paths that will lead to the pleasant places in the new land.

Surely, it is the want of this feeling that is making us each day go on preferring old wares to new—making us write about in the confined bounds we have raised around us—continually trying to escape from our self-imposed imprisonment, but whenever we do so, in some

degree giving melancholy evidence that we have riveted the chain too strongly—that the bricks are too heavy; and even if we succeed to some extent, still the name of our art-prison is branded upon us, and we and our art-country are known wherever we go.

Is not this so in the great majority of the attempts of modern art at originality? Is not the result of thought, labour, and great desire in the designer, in too many instances, only a jumble of styles—an incorporation of one principle with some other perhaps very antagonistic—a kind of happy family of art notions, forced to live together in seeming harmony, but in real nature altogether at variance?

But with a new material, such as the age would seem to bring ready to our hand, all these difficulties disappear.

Can I be wrong if I strenuously urge upon the enterprising members of the profession the necessity, the desirableness of turning their earnest attention to the possibility of some such change?

But the particular feature we have been considering is merely one out of many new things which abruptly meet us: another feature of the day—the result of an almost insatiable demand—natural offspring of the spread of science and exercise of ingenuity—is, the production of numberless details, ornaments, and parts of a building by machinery; so that there is an opportunity for those too idle to think, or too incapable, to find ready-made efforts of the mind of others, which they buy as articles of commerce and use—papier maché and cannabic ornaments, designs for decoration, composition, enrichments, &c. &c., the tendency of which, if used to any extent, must be to render the offices of an original designer in many cases less necessary, and so to give an encouragement to idleness, and by the decrease of the demand and the want of practice, to dull the edge and sap the vigour of the artist's mind. It is difficult to say how this state of things should be met: perhaps it must rest with the architect's employer: if he will have the greatest show albeit with the least intrinsic value—the most in appearance for his money at the lowest trade price,—then such means must be used; but if the architect may choose, will he not do better to rest content with harmonious plainness—with actually designing and putting forth only the efforts of his own mind—even to the loss of showy elaboration, which he may not be able to afford? He will assuredly be the gainer thereby in mental culture and experience, and his employer will possess an unique and therefore valuable work.

I confess I think the profession ought not to encourage the sale of this ready-made art furniture: if the practice could become universal, then that architect would be the greatest man who had the most complete collection of trade tariffs, and who was most fully up to the market-price of, literally, "the materials of his art."

Let, however, a wide distinction be made between this and the employment of machinery in the production of works of original design. There has been some empty talk of how the production loses, if the hand and finger of man be not immediately on it: there may be a great increase of interest if, when contemplating the beautiful turn of a moulding, we can picture to ourselves the intent earnestness of the mason, hanging over the work as one of love, following it out carefully as it grows beneath his hand, and emerged from the rude stone watered by the sweat of his brow—the task before him one of thoughtful admiration—the success heart-gladdening—the recollections of grateful toil soothing in the weariness of evening; and, it may be, reminiscences of the beautiful still sweetening the slumbers of night; and truly such are the influences of Art! at its birth-gladdening and raising the producer, for the time at least, above the things around him, and ever after continuing to minister to the happiness of mankind. It may be that the machine-worked moulding has reached maturity by a process less graceful to the producer, but there is not as much of the human in it, as much of mind, effort, and thoughtful power written

on it? I might say that there is a greater impress of the power of mind; that the iron sinews and discoveries of science brought to bear and made subservient to the art-mind are as valuable as interesting, and more so, and more wonderful, giving in the thing produced as much matter for reflection and food for imagination, making it a yet greater monument of what the mind of man may achieve.

When I consider the fact, that never yet has that metal which I have chiefly alluded to, iron, been used in any important manner by any architect—that not even has any design ever been publicly exhibited for doing so—that while terms for the division of Gothic architecture, the manner in which enrichments on Gothic mouldings are carved, are subjects capable of exciting intense interest through the length and breadth of the land—I must feel that the effort is not ill placed, or the time thrown away, in directing inquiry to some of those things which are about us,—that it is at all events well to bring the subject before you for your discussion.

Is it not almost astonishing that no spirit of speculation or inquiry should have led any one of the immense body of architects in this country to test and ascertain at least what might be done with this metal?

JAMES EDMESTON.

THE CATTLE SHOW, KING-STREET BAZAAR.

THE "coming event," Christmas, begins to "cast its shadows before," and in the present instance assumes the more substantial than graceful form of monster pigs, colossal sheep, and mammoth oxen. The King-street Bazaar again opens its doors to these giant specimens of over-feeding, not as solitary wonders as at a country fair, but in whole flocks and herds, until our ideas of natural history become so distorted, that the leg of mutton put on table to-day looks more like a giant model for a "swarry" than a reasonable "family joint." There are "trimmings" to match, and Prince Albert exhibits pumpkins that render the transformation of one of these vegetables into Cinderella's coach a commonplace idea. We look to see the accomplished honorary Secretary mount the box and scamper off with the heroine of the small slipper.

In our innocence, or, as modesty should suggest, ignorance, it is not without the assistance of the labels that we are able to distinguish between the mass of flesh ticketed "South-down" and the mass of flesh ticketed "pig." The labels and the wool are made for such as we.

If to the inexperienced eye, however, their form and proportions (?) fail to instruct as to the "improvement of breed," there are moral lessons which we cannot choose but read. In that specimen of the fleecy tribe, see how sensual indulgence has obliterated every line of shape it ever possessed. See how the calm reflective light that shines out even from "sheep's eyes," as it chews the cud of sweet and bitter thought in summer fields, has given place to the dimness of utter vacuity. What a pity that this moral lesson will not be so legible when this sheep becomes mutton! Can that really be a pig that looms upon our sight in Mr. William Culliford's silver medal pen (No. 263)? A small specimen of pork, something more than sufficient for the supply of rations to a fleet bound for an Arctic winter. A mystery how it could have been placed there, but a still greater mystery how it is to be removed. A work requiring diplomatic care and circumspection.

"Take it up tenderly,
Lift it with care,
Fashioned so slenderly,
Young and so fair!"

But we shall be called to order, and reminded that the philosophy and poetry of bricks and mortar, the building and the implements, are the objects that should more particularly engage our attention. Well, so be it.

As we struggle through the crowd we catch faint glimpses, bringing back fond recollections of the Great Exhibition. Here stand

some agricultural implements, in whose scarlet wood and bright blue iron we recognise some old acquaintances. There some Phillips's Fire Annihilators with their one fault—that of never having extinguished a real fire yet. Here we have a peep again, if we mistake not, of a certain state carriage, dim-faded and despondent at the change of scene. The new specimens of agricultural implements, which seemed to attract the largest knots of jolly, leather-gaited martyrs, were:—The Hand-mills, stand No. 190; the Boiler Cooking-apparatus, for linseed and oats for cattle-feeding; and our old friend Mary Wedlake's patents.

The building itself deserves a few words. The alterations have been extensive and complete. Instead of the former, makeshift, the animals are specially and handsomely provided for; and as we gradually lose ourselves, wandering about these extensive premises, we note various additions and improvements. Gallery seems to succeed gallery in a perfect forest of columns, girders, and iron roofing. We see openings in the distance that are as deceptive as those prospects of horizon that wearied the Children in the Wood. Long before we reach them other bazaars and exhibitions have led us astray. Here again some crystal gems from the Great Exhibition are collected in a separate bazaar, devoted to Messrs. Apsley Pellatt. Some antique vases are placed in a wall with niches, after the ruins of Herculaneum: there the Pankibanon iron works, a large collection of itself, and then an ordinary fancy bazaar, spreading far and wide, filled with the ordinary fancy wares for attracting lady-buyers. Madame Tussaud's and a new Indian diorama (of which below) require no inconsiderable space, but manage still to leave room for large collections of carriages, saddlery, furniture, machinery, and fine arts. To cover these over with a tolerably uninterrupted building, is, in itself, evidently no easy task, and we have, consequently, buildings seated upon other buildings where ordinary ones would have roofs,—stories, jutting out over other stories, upon giant cantilevers, and the whole connected and linked together with all the modern profusion of iron appliances, suggesting what a strange gaunt iron skeleton it would make, with its sinews and flesh of timber and bricks and mortar fallen away,—a curious and characteristic ruin of the 19th century, contrasted with one of our old baronial castles of the 12th. The whole evinces a tact in economising space, that does considerable credit to the architect, Mr. W. A. Boulnois, the son of the proprietor. An addition to Madame Tussaud's portion was made by Mr. Grimsdell, but the recent additions and alterations have been executed by Messrs. Winsland and Holland.* The whole is very interesting, especially—the pigs!

DIORAMA OF HINDOSTAN, AT THE BAKER-STREET BAZAAR.

THE new Diorama which has been opened at the Bazaar, in Portman-street, will interest a large number of persons. While the "Overland Route" depicts the way to India, Mr. Stocquer's "Scenes" at Willis's Rooms, gave glimpses of the mode of life pursued there by Europeans, this represents the interior of the country from the source of the Ganges, at Gangoutri in the Himalaya, to Fort William, Bengal, and shows the numerous fine buildings which adorn the banks of the Holy River. It has been painted by Mr. Philip Phillips, the figures and animals by Mr. Louis Haghe, and the shipping by Mr. Knell. All have done their parts admirably

and the result is one of the best painted dioramas that has yet been produced. A gorgeous moonlight scene; the Bengali women committing their little paper boats, carrying lights, to the waters of the Ganges (thence to draw augury); the elephant establishment at Plassy; a mosque at Moorshedabad; a storm, and a sunset are amongst the most striking effects displayed. It appears to be painted with great attention to accuracy. We heard one of the fairest part of creation (and a good specimen of it too) identifying beyond a mistake her sister's house, though we happen to know the place itself was many a long mile away: such is the strength of imagination winged by affection.

The architecture is admirably well portrayed,—correct, and firm. The figures in some cases are over tall, and so lessen the size of the surrounding objects, but are throughout painted with the power that Mr. Haghe possesses. All who would have a notion of our little territory out in India should go and see that part of it which is here depicted. And if they call to mind that the first charter to an association of merchants who desired to trade to the "East Indies and countries thereabout," is dated 1600, and that the founder of Calcutta was alive 150 years ago, they will have matter for thought as well as amusement for the moment.

ON THE FORMATION OF A SCHOOL OF ART FOR ARTIST WORKMEN, AND THE ESTABLISHMENT OF A MUSEUM OF MEDIEVAL ART.*

WHATEVER interest may be felt generally in improving the workman in the knowledge and practice of his trade, to the architect it is especially a matter of concern. All, indeed, allow this, but they ask how the improvement is to be effected. The Government have offered to teach the workman to design, and others have undertaken to instruct him to draw and to model: some have thought lectures would do, and have given him books to read, and I have no wish to depreciate the value of either; but it seems to me that in the great majority of cases they are likely to fail, because the mind of the workman is usually altogether unprepared for their reception, and however numerous and however able they may be, his memory is so little practised, and his powers of abstraction and attention so little cultivated, that he cannot follow them up. He hears a very able lecture, and perhaps remembers some striking part, probably some illustration, but of the general scope and bearing of it he sees nothing, and of the principles which it may be the object of the lecturer the most fully to inculcate, he remembers or perceives nothing, as he comes to the subject, whatever it may be, profoundly ignorant, not only of it, but of all other collateral and necessary branches of knowledge.

In the school which I am about to propose for your consideration, we shall take the workman just as he is, viz. from his bench, without it may be, any knowledge whatever of the fine arts, derived either from lectures or books, or the teaching of his master, and possessing, indeed, nothing whatever but the knowledge of his handicraft, which he has acquired at his daily labours. He would first be required to make a copy of any simple object in the common material of his trade; but this, his first task, he would do by himself in his own way, so as to enable us to judge of his capacity and skill. Thus in a very short time it would be seen what each man could do, and for what he was best fitted—in short, where his strength lay; and we could direct

him accordingly. It would not be necessary that he should complete his first task, its object being simply to ascertain practically what progress he had already made in his art. Another model suited to his present powers thus ascertained, would then be set before him, and he would be required to draw on the stone (supposing him, for example, a mason) a correct outline of the plaster or natural model. I do not mean a neat drawing, but a broad bold sketch. He would, of course, if altogether ignorant of drawing, begin in a clumsy way, and to tutor his hand as a draughtsman he would be set—but not till after he had made some trials on the stone—to make a rough sketch of the object in black chalk on a board, and of the full size; for nothing can be more thoroughly useless to a workman than small drawings. The simple purpose of this process would be to train his hand to draw, and not to make a picture of the object, for to do this we should have to teach him perspective, foreshortening, and a host of other matters, with all of which, however interesting in themselves, the workman as a workman has nothing to do: his time and the money he pays to learn are valuable, and he cannot afford to bestow them on picture-making and neat drawing, but what he is anxious to do is to copy the model, not in a drawing, but in stone. After becoming in this way tolerably expert in the leading lines of his model, he would commence drawing it on the stone itself, in which, perhaps, he could not well have too much practice, for the most accomplished draughtsman on paper, fresh from the Royal Academy itself, would find some little difficulty in drawing the foliage of an early Gothic capital on the turned block.

When the work was so far completed as to be ready for finishing, it would be the business of the teacher to point out carefully to him where the general lines failed, and where they were successful, and to caution him against the common fault of cutting away too much and impoverishing the work; for it is better to have the lines too heavy than too light, as time takes away, but never adds to the crumbling stone, and one would like a more art-enlightened age to see what the working-men of to-day could do; for their interest in old work will arise from the knowledge that so many centuries have elapsed since it was cut, and their pride will be that it has been untouched by all but time, whom assuredly they will pardon for taking away so many grains of the stone when they see the colour he has given. The workman would next proceed to finish his work, and bring it up to the model, still using the chisel, and still being cautioned, else all his previous labour would be vain, against the almost universal idea that the value of sculptured work is to be measured by its smoothness to the touch; for people are to be found who will pass their fingers over the surface, and then pause enthusiastically over the feeblest work, because it is smooth to the eye and finger, when perhaps had the artist been contented to leave some marks of the tool, he would also have left some life. The workman would hence be taught, and in time would come to see, that if he could do nothing with the rough chisel, sand paper would not assist him. The principles which guided the artist in the production of the original work would, as far as possible, be pointed out to him, for he would now be prepared to listen to them with advantage, and to appreciate their importance, just as a learner when able to read correctly begins to perceive the importance of grammar, and to feel interested in it, not as a dry study, but as something essential to his further progress. This would, beyond all other plans yet tried, compel him to think, and make him something more than a machine, by inciting him to feel an interest in his daily labour—not a mere ordinary sluggish interest, just sufficient to enable him to do his work, but an interest so great as to induce him to strive to get forward: his work would rise in his mind from a dreary necessary labour to a delightful and pleasurable occupation—from a feeling of doing nothing but his master's work, and for his master's interest, and for weekly wages, he would come to feel that he was working for himself, and to his own credit.

* To be a little more precise on this point, the alterations which have been made consist in the conversion of the premises lately held by the Hanson & Co. Company, comprising a yard nearly 200 feet long, with stables and lots on either side, into covered ground-floor space for the exhibition of the cattle and sheep, and light galleries for the implements. The yard has been covered by a building entire in itself, supported on cast-iron girders and columns, with quoin and buttress piers of brick in cement. The floor of this building, on Fox and Barrett's principle (a capital job), is supported on deep open girders 30 feet span, and is sufficiently elevated to admit of a doreatory under it, to throw light to the galleries and ground floor. The walls are of brickwork, and the roof of timber, slates, and lead, in the ordinary fashion. This building was designed for, and is appropriated to, a panorama of Hindostan, and consists of a museum 30 feet by 30 feet, by 20 feet high; a theatre, 60 feet x 30 feet; and a stage with wings, 60 feet by 15

feet. It is approached by slate stairs 6 feet wide, the entrance being from Baker-street, through the new show-rooms constructed in the old riding-school of the Bazaar. A new roof of 40 feet span, 200 feet in length, has been thrown over the old implement galleries: it is a collar beam roof, the principal rafters composed of deep flitches of wrought iron and bolted together, the collar of cast-iron, open pattern, the ties of wrought iron bars: the rafters are framed longitudinally between the principals as a floor would be, are 10 inches deep, and are cross and diagonally struted, boarded for the slates, and ceiled with plaster underneath. The floors of the new galleries are carried by girders composed of wrought iron and wood flitches bolted together, the flooring being framed into binders.

* The following is a portion of a paper read by Mr. Allen, at the ordinary meeting of the Institute of Architects, December 1st, already referred to.

With reference to the Museum of Mediæval Sculpture, which it is proposed to form as a necessary part of the school, a few words may suffice, as the importance and interest of such a collection will not, I presume, be questioned, even by those who object to the school. There is not, I believe, in England anything accessible to the public which can be called a Mediæval Museum,—a fact not a little surprising, when the wonderful remains of the middle ages, and the proud display of which this country can boast, are taken into consideration. The British Museum contains specimens of artistic skill from every country on the face of the earth; but not a single leaf, or flower, or fragment of stone, from our own: not a single shelf in the whole establishment is devoted to British antiquity, though the interest that must attach to a collection seems past all possibility of doubt. And surely no country has so glorious a collection of effigies of kings, nobles, warriors, and priests; not like the Ninevite, nameless, and without histories, but all of them, their names and their deeds, their ancestry and their successors, known as well as the most familiar story. But all these have been passed by as utterly worthless, by the side of some broken Greek inscription, containing perhaps a list of the names of the doorkeepers of some forgotten temple. And not only are they of surpassing interest, as monuments of antiquity, but some of them are beyond all praise as national works of art. As works of art merely, and without reference to their antiquity, they are second to none; and specimens, I take it, may be found, not only equal, but perhaps superior to anything on the Continent. The men of the middle ages in our country were not only inferior to none in all Europe, but in not a few instances superior to all; for the beautiful style of architecture which they cultivated never reached in the hands of either the French, the Germans, or the Italians, the point of excellence which it did here. Try it by any standard we will—by principles, when we have them—by rules, when we know how to apply them—or by comparison where memory serves,—the glorious style, as we have it in England, is not only second to none elsewhere, but infinitely and marvelously superior to all. I hold them in all respect, and hope to see all the evidences of their skill; but let us not do injustice to ourselves by giving undue credit to foreign works because they are distant and less familiar.

Let us then try to collect under one roof a connected series of what yet remains to us untouched by the desolating hand of restoration, and thus leave to those who follow us the plaster evidences at least of what our forefathers have left us; and what we have studied, and wondered at, and tried to emulate, let them study, and wonder at, and emulate.

At the close of the paper—

Mr. Scott, Fellow, said—On the main points there could be no difference of opinion: that architect who had not felt the great want of artistic skill in the majority of the workmen employed to execute his designs, was indeed fortunate. The only question was as to the best mode of supplying the want. They must all agree that a school in which workmen might be taught thoroughly to practise each his own branch of ornamental art, was worthy of their support.

Mr. C. H. Smith, visitor, said, that, having been brought up as a mason, he was much more in favour of example than of oral instruction as a means of educating workmen. It was of the greatest importance that ingenious workmen should be able to examine a good collection of examples, which indeed would be infinitely more valuable than anything they could be taught; for it was very truly said that "he who learned nothing but what he was taught, would never know much." He attached the greatest importance to an extensive museum of specimens of art-workmanship. Actual specimens were far more valuable than squincies or plaster casts, which could not possibly convey the spirit of the tool and the sharpness of the chisel. He had been frequently applied to with respect to the execution of Gothic carvings for modern churches; and when he stated the price which ought to be paid for their proper execution, the parties went away quite astonished at the price named. Whilst carving was put into the general

contract with builders, it was impossible it could be properly executed.

Mr. Seddon, Associate, mentioned the success which had accompanied the "North London School of Drawing and Modelling," at Camden Town; in which, since its establishment, 600 or 700 workmen had been engaged in drawing and modelling. With regard to Mr. Allen's plan of instruction, it was his own opinion that it was impracticable. The great variety of the different classes of workmen attending was astonishing, and it would be impossible to provide the necessary space for all the different materials of their trades, if they were to work upon them in the school, while it would be difficult to find parties competent to give the practical instruction suggested.

Mr. Barry, jun. Associate, thought the chief difficulty to be surmounted arose from the commercial principle referred to by Mr. Smith, and the ambition which all men felt to better their position. The practical instruction suggested by Mr. Allen would tend to make the workman feel a pride in his own art, and the commercial difficulty might to a great extent be overcome.

Mr. Alfred Smith, Fellow, thought that with regard to carving, architects ought to take it into their own hands, and not allow the builders to have anything to do with it. It should be kept out of the contract or specification, and superintended by the architect himself.

Mr. Burns, Fellow, said it was a very easy thing to say that architects should take the superintendence of carving into their own hands, but they had very little power where money was concerned. In reference to the education of workmen, he felt convinced that without teaching them drawing and modelling, so as to appreciate a drawing when put before them, they could never be made carvers.

Mr. Hardwick, V.P., before quitting the chair wished to express his sense of the extreme importance of educating workmen in art. Architects constantly experienced the want of a knowledge of form and effect on the part of workmen, and a consequent difficulty in getting their drawings properly carried out. Differences of opinion might exist as to the best mode of conducting the required school, but undoubtedly some education was highly desirable. The Royal Academy was confined to the fine arts, and accomplished its purpose most successfully. The Government Schools of Design were connected with commercial art, and drawing and modelling were there only taught to lead the students to design works for manufacturers. The means of educating workmen in metal, stone, and wood, so as to understand architects' drawings, were still wanting. He hoped the members of the profession would unite to form such a school as they required, with a museum as a collateral branch of it.

On Monday, 8th, Mr. C. Barry, Mr. Clarke, Mr. G. Godwin, Mr. Penrose, and Mr. G. G. Scott met Mr. Allen to consider in what way the proposal could best be carried into practice. Letters of concurrence from Mr. T. H. Wyatt, Mr. Carpenter, Mr. Ferrey, Mr. Cundy, Mr. Hardwick, jun., and many others, were read, and it was determined to form a committee, and to open a subscription in support of the project. Mr. Scott agreed to act as treasurer.

ARTIST WORKMEN.

THE conversation which followed Mr. Allen's paper, at the Institute, induces me to beg your attention for a few remarks. There seems to be a pretty unanimous feeling that the sculpture now applied to our buildings is not equal to that of old times. That feeling is justified, not only by a glance at examples where it is used architecturally, but is, alas, only too dreadfully true where it is used *per se*, as let the public statues which disgrace and disfigure London witness. With this branch of sculpture, however, we have nothing or little to do at present: it is the figures, fruit, draperies, &c., applied architecturally, which are complained of, and which it is proposed to reform by the foundation of an artisan school, after attendance at which every workman will be a great sculptor in his way,—give spirit, life, and meaning to his work,—and we be proud of the sculptural parts of our buildings, instead of ashamed of them, as we ought to be. I have no faith in that plan: this idea of turning the hands into the head will never succeed: the great mass of workmen will be the mechanical hewers of stone, and nothing more,

whilst stone-masons are masons: it was not otherwise of old, is not now, and never will be, as far as we can see. The secret of the superior sculpture in all periods of art, down to Grinling Gibbons, in England, was, that there was one great sculptor employed, who worked, himself, who superintended those who assisted him, and who finally gave the finishing touches to the whole work; and that not slightly, by just putting more force in a frown, more joy in a laugh,—but to such an extent as to leave the pre-eminent mark of his own individual power throughout the whole mass. Besides which, let me add, that the sculptor worked always in the style of the time, and with the life and knowledge of his time: he was not required to get up a fictitious feeling for a period of art inferior to his own; and if told to seek the style of an era not his own, it was an era which led him on by a noble emulation to an excellence which has never yet been surpassed. I could say more, much more on this subject of the deficiency of architectural sculpture, which is the sculptor's fault, arising from a pitiful little pride, preventing our great sculptors from giving that assistance to architecture which was never thought a disgrace till now. However, doubtless, money has much to do with this. Although a school for the workman may not be amiss, I would also suggest a school for the architect. One gentleman, who prided himself on being a "practical" man, said he saw much of architects, and they often did not know what they wanted themselves.

There was a time when architects were artists. I will pass over the grand, the revered names of the great painters and sculptors of old, and will only say that I have seen—we may all of us have seen—drawings by Sansovino, Sanmichele, Balthazar, Peruzzi, Palladio, Brunelleschi, and many others, which bespeak quite sufficient power over the human figure, animals, and ornament generally, to raise them above the level of ordinary artists. We have great architects now—men who do more, and on a larger scale often, than they of old. I would ask them what they know of drawing? Who is the stupid workman to be complained of? I will not go further into this to me painful subject. I will not appeal to those whose names stand first on the list of successful architects to give us proof of their knowledge of drawing,—of their capability, without external aid, of making the workmen know what they want. To those who have somewhat of the heart and soul of the artist about them, I would say, and do say, seriously, earnestly,—avoid this trade (for trade it is): the genius of the art of architecture is dead, and gone: if you love art enter not here, for here art is a sin, and will, if followed by you, bring nothing but neglect and disappointment. Have you an oily tongue, a glib speech, a lust of gold at all price, a good connection, a sound business tact and knowledge? Can you flatter patrons, cajole committees, bully builders, now bend and fawn, now dispute and withstand? In fine, can you do all that is necessary in all professions save those of the gentle arts? Then enter here. And with this knowledge the reward of success will be some thousands a year; but as to the art which you love and seek, it is anywhere but here: you may instruct workmen, but it will not therefore come; you may get some great sculptor to aid you, but it will still be absent: you may weep over it, but your tears will not revive it: you may pray over it, but the soul is not there, and will never come until the architect shall be valued, not by his means, his manners, or his name, but by his love for, his knowledge of, his manual power in, all the arts connected with his vocation. ***

BRICKS FOR THE MILLION.—At Stourbridge, according to the *Worcestershire Chronicle*, a machine is at work producing perfect bricks from untempered clay, at the rate of forty-eight a minute. The bricks are said to be of such consistency as to be immediately fit for the kiln. It is added that there is little doubt the machine would produce them at the rate of 100 a minute, if required.

NOTES IN THE PROVINCES.

Nottingham.—The site for the church cemetery is now fenced out. An open space of eighty acres immediately adjoins it. More than 800 out of the 1,000 shares have been sold by the committee.

Lutterworth.—A national school has been erected at South Kilworth. The design is said to have been furnished by the Rev. Mr. James, of Theddington, and the work was executed by Messrs. R. and J. Law, of Lutterworth, builders.

Heyford.—Steeple Baston Church has been entirely rebuilt, and was re-opened on Friday, in week before last. The cost of the building is about 1,200*l.*, which has been realised chiefly by mortgaging the church rates for twenty years.

Crewe.—The site of the town of Crewe was sold twenty years ago to the late Mr. Edleston, at the rate of 5*l.* an acre. The present lord of the manor is said to be in receipt of 1,500*l.* an acre for land set out for building purposes!

Liverpool.—At a recent meeting of the Dock Committee, the Sub-committee of Works submitted plans for warehouses on the east side of the Wapping Dock. The plan included the erection of nine free warehouses as the best arrangement for light. The surveyor was required to furnish plans of warehouses with vaults. A notice of motion has been given "that the sub-committee of works do forthwith furnish estimates for warehouses on the quays of Stanley Dock or other north dock, as an introduction to an extension of dock warehouses on the quays of the northern docks." A letter from Mr. J. H. Howard, of London, calling attention to the invention of a new motive power for cranes, was referred to the Committee of Works. The advantages of the new power were said to be that, without the aid of steam, a weight of 33,000 lbs. might be raised one foot high in a minute. The crane was also not liable to get out of order: a child might direct its operations, and the expense was only two guineas. This looks a little like the hydraulic crane, introduced with so much effect on the quays at Newcastle. The net cost of the Albert Docks was stated to be 319,491*l.*, and of the warehouses 434,892*l.*

Southwell.—The work of restoration and adornment has been for some time progressing in the collegiate church. The lath and plaster work that blocked up the clerestory in the nave has been removed, whitewash scraped off, and the masonry of several of the arches and Norman windows (formerly debased Gothic interpolations), repaired and restored. Four more stained glass windows have also been put up (making in all seven within the last three years), designed and executed by the Messrs. O'Connor, of Berners-street. Three of these are memorial windows, the subjects of which are, "Our Lord among the Doctors, blessing the little Children, and the commission of the Apostles;" "Our Lord healing the Sick, teaching out of the Ship, and at the Pool of Bethesda;" and "The raising of Jairus' Daughter." The fourth window is an offering from the artists: the subject is, "The Virgin and Child within a vesica piscis," being the ancient seal of the chapter of Southwell. Two of these windows and the altar furniture were in the Great Exhibition.

Andover.—We are requested to state that the architect of the works in the church of St. Mary the Virgin, Venham Dean, referred to in our last number, was Mr. Arthur Asphitel.

Burnley.—The Mechanics' Institution building, the foundation-stone of which was laid on Tuesday in week before last, in the midst of a general half holiday, is to be erected from a design by Mr. James Green, of Portsmouth, near Totton; the masons' work being contracted for by Mr. R. Smith, and the carpentry by Mr. W. Parke. The building, of which the *Preston Guardian* speaks of giving an engraving, will have two principal fronts—to Market-street and York-street—and will be of the Italian style of architecture. These fronts will be built of stone from the Catlow Quarry, in Maraden, and will be wholly of polished ashlar, except the channelled rustic dressings

to ground floor windows, which will be in cone-picked and frosted work. The principal entrance is from York-street, and will have a portico, consisting of four disengaged and coupled Corinthian columns, supporting entablature and balustrade, in all 25 feet high. The entrance-hall on ground-story is to be approached by twelve steps, and opening out of it, to the right and left, will be reading-room, 28 feet square; news-room, 35 feet by 28 feet; library, 28 feet by 17 feet; also committee-room and large staircase to lecture and assembly-room on first floor. A portion of ground-floor fronting Market-street will be appropriated to two shops or offices, each 28 feet by 18 feet. The first floor will be devoted wholly to the purpose of a public hall for lectures and assemblies, and is 72 feet long by 51 feet wide, exclusive of ladies' and gentlemen's ante and retiring rooms; over which will be a gallery the full length of room. The walls of lecture-hall are to have Corinthian columns and pilasters, forty-six in number, supporting entablature with modillion cornice. The room will be 25 feet in height, and will have a covered and panelled ceiling, with a large circular dome or lantern of stained glass in the centre. Spacious class-rooms, also lodging and living rooms for a resident porter will be provided in the basement story, under the whole of which will be store vaults, fire-proof. The whole of the building will be heated with hot water, and provision made for ventilation. The entire cost of the structure will be about 4,500*l.* towards which about 2,000*l.* have already been subscribed.

Wigan.—The churchwardens have published their account for the parish church restoration. It gives the following items of receipts:—Subscriptions from parishioners, from 1845 to 1851 inclusive, 3,821*l.* 5*s.* 6*d.*; subscriptions of non-parishioners, including special donations, 544*l.* 5*s.* 4*d.*; interest from 1845 to 1851, inclusive, 195*l.* 11*s.* 5*d.*; Mrs. Kenyon, for the stained glass window, east of chancel, 500*l.*; various persons, for the stained glass windows west of the nave, 339*l.* 5*s.* 1*d.*; various persons, for restoring the old church organ, 125*l.* 13*s.* 9*d.*; the rev. the rector, for rebuilding the chancel, &c., 1,184*l.* 14*s.* 2*d.*; the Earl of Crawford and Balcarres, for rebuilding his chapel, 1,059*l.* 10*s.* 6*d.*; from the parish rates, from 1845 to 1850, 1,033*l.* 0*s.* 2*d.*; from the Commissioners of Public Works, 4,540*l.*; deductions from Mr. Harrison's contract, 72*l.* 4*s.* 4*d.*. The expenses have been 13,465*l.* 10*s.* 5*d.*, leaving 1,591*l.* 3*s.* 7*d.* due to the churchwardens.

Wick.—Application is to be made to Government for a supply of convict labour for the erection of a breakwater in the bay of Wick, for a harbour of refuge to shipping in general on that coast.

Belfast.—In this bright spot amid the waste of unhappy Ireland, new proofs of a thriving and vigorous vitality are ever and anon appearing; one of the most auspicious of which is the completion of an extensive and complete iron foundry, with "a forest of tall and graceful chimney stalks," as the *Belfast News Letter* describes it, "rearing their towering points over an extensive area, for the most part occupied by sheds supported by metal columns and girders, and by all the usual, but in this place novel, accessories of a first-rate wrought-iron foundry." Here on Monday week the first boiler-plate ever rolled in Ireland was turned out by the stalwart arms of the Marquis of Downshire, who doffed his "Irish frieze" and tucked up his "Irish linen" manfully for the occasion. It appears that both iron and coal will shortly be supplied in abundance from the neighbouring counties.

Kilkenny.—Messrs. R. and H. Preston, having renewed their search for ancient monuments at the houses on the west side of Friar-street, within the original precinct of the Dominican Abbey, succeeded, on Wednesday evening, in bringing to light a very handsome tomb, at a depth of two feet beneath the floor of another room of the same house in which the former discoveries were made, last September. It is a coffin-shaped slab, of the

thirteenth century, ornamented with a floriated cross of unique pattern, in relief, but without inscription or armorial bearings. A regularly arched vault has been found at some distance beneath, but it is feared that the strength of the water which bursts up everywhere on excavating in the locality will prevent any further search from being carried out. The tomb has been removed into the present abbey enclosure, in order to its preservation.—*Kilkenny Moderator.*

Taunton.—The Commissioners of the Taunton Turnpike Trusts have erected five toll-houses in Taunton and its neighbourhood, within as many years, the designs for which were furnished by a journeyman carpenter. Some members of this body, not feeling satisfied with the way in which this affair was managed, induced their fellow-commissioners, after much opposition, to offer a premium, viz., the magnificent sum of five guineas for the two best designs for two houses they were about to erect. Four parties competed, two of them only being architects, when Messrs. Foster and Wood's designs were selected; the commissioners at the time giving particulars of the accommodation they required, viz., a collecting-room, living-room, two bedrooms, scullery, pantry, water-closet, and ashpit; also to include a well-pump and drain-grates, shelves, and other fittings to make the houses complete. The walls to be built with rag-stone, with freestone-dressings, and limiting the expenditure to 160*l.* per house. The following tenders were sent in:—

	East gate.	South gate.	Total.
J. Corner, Taunton	£201 5 4	182 15 8	384 0 10
G. Follard do.	199 0 0	185 0 0	384 0 0
J. Macey do.	204 8 5	179 10 0	383 19 0
H. E. Hamblin, Bristol	190 0 0	143 0 0	333 0 0

TO REGULATE THE APPARENT HEIGHT OF DISTANT OBJECTS.

The problem proposed by your correspondent "Ignoramus" in *THE BUILDER* for November 29, being one which frequently occurs in designing the facade of a building, the following is a general solution:—

PROBLEM.—What must be the height of an object, CD, placed at a horizontal distance, EA, from the eye of a spectator, and at an altitude, AC, in order that it may appear equal to an altitude, AB, at the same horizontal distance from the eye, and on a level with the eye.

In order that CD may appear equal to AB, we must have the angle DEC equal to the angle BEA; from this the height CD, may be found by simple geometrical drawing, or it may be calculated as follows:—



The distances EA, AB, AC, are supposed to be given.

$$\begin{aligned}
 CD &= AD - AC \\
 &= EA \times \tan(DEA) - AC \\
 &= EA \times \tan(CEA + BEA) - AC \\
 &= EA \times \frac{\tan(CEA) + \tan(BEA)}{1 - \tan(CEA) \times \tan(BEA)} - AC \\
 &= EA \times \left(\frac{AC + AB}{EA + AB} \right) - AC \\
 &= EA \times \left(\frac{AC + AB}{EA + AB} \right) - AC
 \end{aligned}$$

$$\text{or, } CD = (EA)^2 \times \left(\frac{AC + AB}{(EA)^2 - AC \times AB} \right) - AC$$

which is the general rule required.

Example—

$$\begin{aligned}
 \text{Let } EA &= 300 \text{ ft., } AC = 50 \text{ ft., } AB = 5 \text{ ft.} \\
 \text{Then, } CD &= (300)^2 \times \frac{50 + 5}{(300)^2 - 50 \times 5} - 50 \\
 &= 5153 \text{ ft., or nearly } 5 \text{ ft. } 2 \text{ in.}
 \end{aligned}$$

E. W.

GROUND PLAN OF NEW COLLEGE, LONDON.



NEW COLLEGE, LONDON, FOR THE CONGREGATIONAL DISSENTERS.

THE union of Homerton College, Coward's Academy, and Highbury College devoted to the object of assisting the appropriate education of young men for the work of the ministry among the Congregational Dissenters of London, has led to the erection of an extensive edifice in the Finchley-road, St. John's-wood, near the "Swiss Cottage," which not long ago stood all alone in the country, but is now in the midst of "villa residences," smart as *compo* can make them. The new building is founded on the received Collegiate type; is Late Perpendicular in style, with a central tower; and is constructed, externally, wholly of dressed stone. The building seen in our view on the right (somewhat too chapel-like in appearance), is the library: at the other end is the residence of the principal. The central tower is heavy, but the general appearance of the building is good: it has variety without studied irregularity.

We give a sketch-plan of the ground-floor, to show the interior arrangement. The best features are the staircase, and the roof of the library. Mr. Emmett was the architect, and Mr. Myers the builder. The plans were selected from a competition of ten architects.

The number of students this year, theological and lay, is sixty.

REFERENCES.

Ground Floor.	First Floor.
A Hall.	Council Room.
B Corridor.	Corridor.
C Lobby to Library.	Bed Room.
D Students' Room.	Museum.
E Retiring Room.	Retiring Room.
F Principal's Lecture Room.	Lecture Room.
G Retiring Room.	Lecture Room.
H Lecture Room.	Lecture Room.
I Coward's Trustees.	Lecture Room.
K Staircase to Librarian's Room.	Staircase.
L Library.	
M Porch.	
N Principal's Residence.	

ARCHITECTS' DRAWINGS AND CHARGES.

CASE OF REPUDIATION OF A CONTRACT.

In the Lichfield County Court, on the 25th ult., a case, novel in some points and possessing features of interest to the profession, was heard and decided by Mr. Lawrence Temple, Q.C., the presiding judge in that district.

The plaintiffs in the action were Mr. E. J. Payne and Mr. Richard Potter, architects; and the defendant the Rev. W. R. Essington, the vicar of Shenstone, in the county of Stafford.

The circumstances out of which the action arose were these:—

The parish church of Shenstone is a very ancient structure: some months since the vicar and a number of the landed proprietors resident in the neighbourhood appeared to have entertained the idea of restoring or re-constructing the edifice: with the view to the former, advertisements for drawings were inserted in the local newspapers, and Mr. Payne, one of the plaintiffs in this case, having had an interview with Mr. Essington, the result was an admeasurement of the church, and the necessary preparations in the shape of drawings, &c., for restoring the edifice in the manner contemplated by the vicar, and the committee associated for the purpose. Mr. Potter had in the meantime become associated with Mr. Payne in carrying out the work, and on the 9th of June a meeting of the

committee took place at Shenstone. The result of its deliberation was, that the plaintiffs were instructed to prepare all the plans and drawings, for restoring the church, together with the requisite specifications, on condition (as Mr. Payne alleged in his evidence, at the hearing of the case), that he and his partner were to be paid for all their work, or if their plan was carried out under their superintendence, to receive instead five per cent. on the estimated outlay,—1,870*l.* The plaintiffs completed their work within the specified time (one month): the defendant and his friends, however, repudiated the contract: they refused to pay the plaintiffs a shilling, and it was to recover the amount,—63*l.* 18*s.* (13*l.* 18*s.* being abandoned, to bring it within the limits of the County Courts Act),—that the present action was brought.

The first witness (Mr. E. J. Payne, one of the plaintiffs) deposed to the preliminary facts as stated above; and detailing the transactions subsequent to the 9th of June, when the order for the drawings was given, he said—"Whilst the plans and drawings were in course of preparation we were constantly receiving letters from Mr. Essington suggesting alterations: a door was to be opened in one place and a window made in another, and so on, until my design became a good deal changed; and our plans were not quite so complete as they might have been, which was, however, noticed by indorsement."

At a meeting of the committee on the 10th, Mr. Essington, Mr. Manley, of Manley Hall, and other gentlemen were present, and Mr. Christian, the diocesan architect, signified his disapproval of the plaintiffs' plans. The result of this meeting was that Mr. Payne received instructions to prepare another set of plans according to Mr. Christian's views, the latter agreeing to a condition that if the work was carried out under the plaintiffs' superintendence, they should still receive only 5 per cent. on the outlay, but that if otherwise they should be paid for the plans. Notwithstanding this arrangement, on the day after the meeting, July 10, the defendant again wrote to the plaintiffs, "After what took place yesterday we think it right to have another meeting of the committee to consider what course ought to be adopted by us: I therefore beg you to suspend operations for the present. Inform me what we owe for your services up to the present time, and send the plans and specifications without delay." On the 11th the defendant again wrote, "We shall have another committee meeting on the 15th. I cannot answer for your being remunerated for any services beyond the date of my last letter." There was another letter from Mr. Essington on the 13th, and in it the rev. gentleman thus addressed the plaintiffs:—"Send in a statement of the sums in which we are indebted to you, and all the drawings and specifications of any description which you have prepared at any time on our account." The plans, drawings, and specifications were sent accordingly: in a short time they were returned to Mr. Payne unaccompanied by any intimation of the cause: the defendant refused to pay the plaintiffs a shilling. The committee, in the meantime, had changed their purpose, intending to rebuild instead of restore the church, and another architect had been consulted for the purpose of carrying out the design.

Mr. Isaac Newey, builder, spoke generally to the practically complete state of the plans: would himself have been willing to carry them out. As for the plaintiffs' charges, in his opinion they were most moderate; but as there was a degree of incompleteness, he suggested for it an allowance of one-half per cent. Mr. John Cresswell, a builder, gave similar testimony.

This being the plaintiffs' case, Mr. Greene, on behalf of the defendant, applied for a nonsuit on three grounds, but these were overruled.

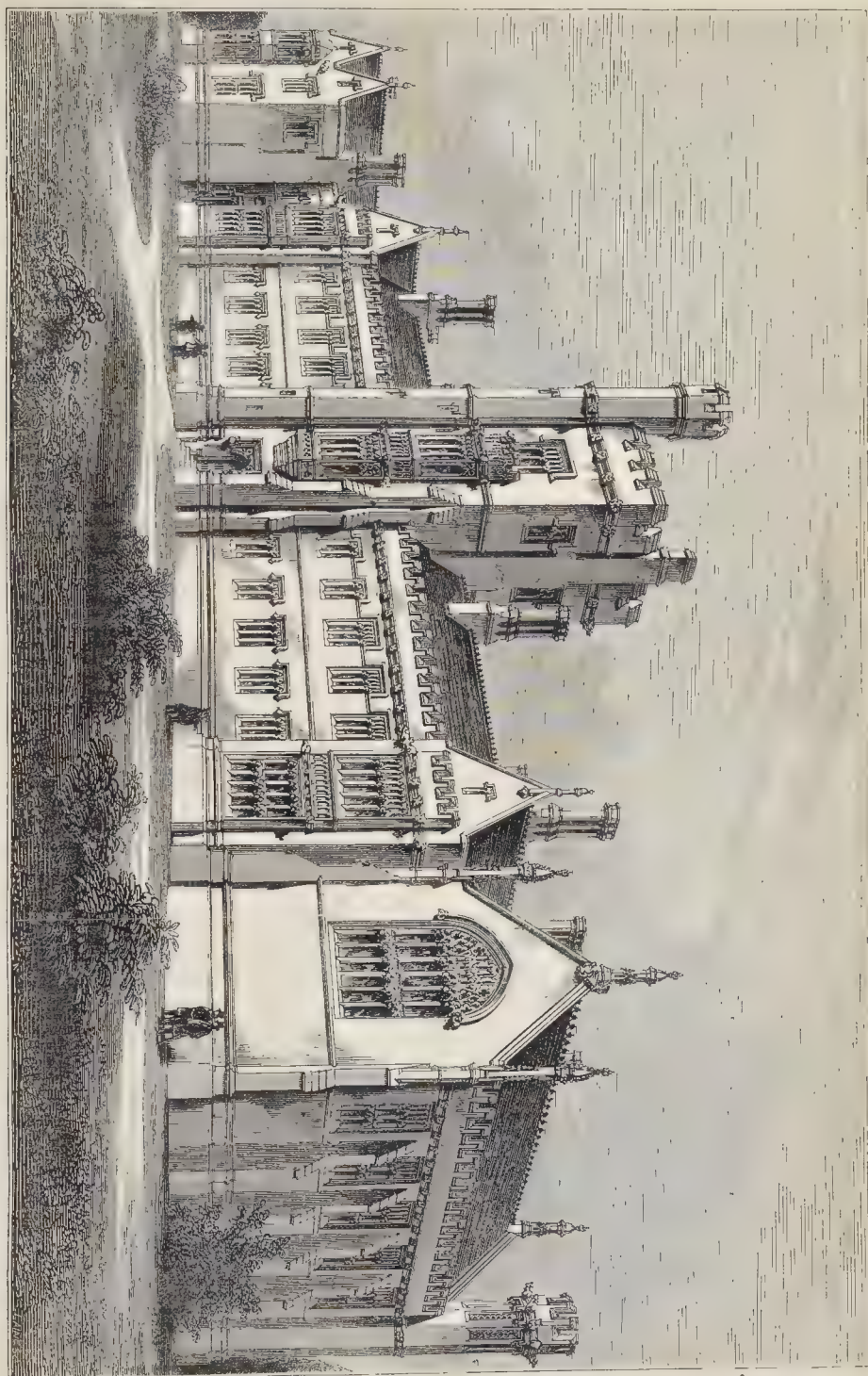
The defence then sought to be established was

the impracticability and incompleteness of the plaintiffs' drawings, which rendered them worthless and unfit to be carried out. Mr. Essington, in his evidence, denied that there ever had been any promise to pay the plaintiffs. Mr. Payne had been simply instructed to prepare plans, subject to the approval of Mr. Christian; further, that the plaintiff (Payne) had been told at the meeting on the 10th of July, that his plans were utterly valueless, and he had not a word to say in reply. In cross-examination the defendant said,—"We had very little money, and we wanted a great deal done for it. Mr. Payne promised us that, and we were foolish enough to believe him. We have allowed this action to be brought, to expose what we consider to be a roguish affair."

Mr. Christian, diocesan architect, was of opinion that the plaintiffs' plans were impracticable. He objected to their placing 16 feet additional on a tower already supported by a buttress. The specification sent in was incomplete and inconsistent with the drawings: would not have sent in such plans himself, and as diocesan architect could not have passed them. He objected to all the suggestions which the defendant had made to the plaintiffs whilst they were preparing the designs, and had told the committee that they (the committee) were wrong. He considered the plaintiffs' charges fair: would himself expect to be paid for drawings. And with reference to Mr. Payne's statement of what took place on the 10th of July, he corroborated it.

His Honour, in giving judgment, said, two questions first presented themselves for consideration,—firstly, whether the defendant is liable to be sued in this matter; and, secondly, to what extent. Now, it is quite clear there has been sufficient acting by Mr. Essington to fix liability upon him. He was an active member of the committee, and it is quite clear also that being so, and indeed officiating as secretary, he is liable to the full extent. The defendant seems to have given all the orders, and his instructions, so far as I am able to judge, were fully carried out. He is left, therefore, to seek his remedy against the other members of the committee. There are expenses incurred, and at the time they were being incurred, Mr. Essington must have known that somebody must be held responsible. The plaintiffs are not likely to sue the committee: indeed, it seems the committee is a mere myth. Where are the committee? Who are they? Where are their funds? It is not to be expected that men are to form themselves into a committee, give orders for work, and then disperse without any of them being liable to be sued for charges incurred. That is not the law of the land: if it were, a fatal law it would be. The defendant communicated with Mr. Payne by letter frequently: here are his letters, they are most distinct and explicit, fully contradicting everything that has taken place here to-day; and I cannot help saying that it is to me a very extraordinary thing that such an action should have been defended. As to exposing a roguish transaction, I confess I see no pretence for such an assertion; and certainly in such a proceeding one should take care not to put on the screw so tightly as to get one's fingers in an unpleasant position. The only question is as to the amount the plaintiffs are entitled to recover, and in that I am relieved by Mr. Christian, who says that the charges are fair and reasonable. A very respectable witness, Mr. Newey, having however advised a reduction of $\frac{1}{2}$ per cent. because of the incompleteness of the drawings, I shall consider that as fully set off in the 13*l.* which have been abandoned in order to try the action here, and I am glad that the Act under which I sit gives me that power. Judgment must go for the plaintiffs for the whole amount, to be paid forthwith.*

* It is right to state we have received a communication giving a different colour to the transaction, but we have no reason to doubt the accuracy of the above report of the trial.



NEW COLLEGE, LONDON.—MR. J. T. EMMEY, ARCHT.

THE BEST ASPECT FOR ROOMS.

THE inquiry opened up by "G. C." (page 727) is one, indeed, of great consequence, and well worthy of being discussed. Whatever ideas, or results of experience, can be brought together upon the subject, must be of value, seeing that, next to its *location*, the *position* of a house is of prime importance. I know of no writer who has given such consideration to it as the late Mr. Loudon; the merits of whose diagonal system, set forth in the annexed extracts from his "Cottage, Farm, and Villa Architecture," are deserving of being carefully weighed.

With regard to the aspect which is most common in towns, it certainly does seem to be the practice, in laying out a new town, to aim at laying the lines of main streets due east and west; and supposing it to be the case that in these the business houses are congregated, and that private residences are situated chiefly in the cross streets, then the observation of "G. C."—that the aspect of the majority of dwelling-houses is east and west—will hold good: according to my observation, however, this is not the case; but I could readily adduce examples of towns wherein the cross streets contain only the flanks of the houses, garden-walls, and mews lanes, the principal fronts being confined almost entirely to the lines of street running east and west.

Whether it is a sound practice to lay out main streets in these directions, giving all the sun during the best of the day to one side, subjecting that to its full blaze, while the other is all in shade, and rendering the walk westward in the evening, when the sun is near the horizon, so unpleasant, so far as the eyes are concerned, appears open to be questioned: were the lines laid north-east and south-west, the sunning of the two sides would be rendered more equal, and the homeward course more pleasant,—the sun, if crossing, being higher in the firmament, or, if low, having already crossed.

In saying "the homeward course," I must explain that I refer to the growth of towns, being chiefly westward, a circumstance which I cannot say I have ever seen noticed, but have observed to be generally the case, with a southerly tendency. It is natural to seek the sunshine, and hence the sites for their villas and cottages are by business men sought, by choice, westward—still westward; while, in order, if possible, to prevent some neighbour squatting down between them and the sun, they keep edging also, of necessity, towards the south; not even deterred by boisterous south-westers: and thus the growth of towns is influenced. In this south-west position, those same prevailing breezes, which might be considered as a drawback to its selection, exempt it from the currents of smoke that often form a canopy over the opposite quarter.

If a town were laid out diagonally to the four cardinal points of the compass, as Mr. Loudon would have done had he had the opportunity, the expressions denoting the intermediate points would doubtless become equally familiar with those denoting these points, and as simple and easy to direct by. If I am right in my hypothesis about the growth of towns, the growth of such a town would be more regular than of those whose streets are square with the cardinal points. In the country, in the case of the road lying square with these points, there is seldom any obstacle to villas or cottages being set diagonally to it, as Mr. Loudon suggests; but where that is not practicable or expedient, much of the advantage may be gained by means of splayed oriel windows; which might even, for the same reason, be employed in towns. As a general rule, where the front of a house towards such a road has a northerly aspect, the principal rooms should be turned to the opposite side; the offices being formed in wings to right and left.

As an evidence of the importance of the sunshine to our dwellings, in a sanitary point of view, and the propriety of so arranging streets as to equalise it, it has been observed that epidemics will extend along the shady side of a street, while the other enjoys a perfect immunity. This I had myself occasion to

notice in the time of cholera a few winters back, in a locality where only the wealthier class of inhabitants resided. Physiologists have also pointed to the deformed growth of the children of the extreme poor, when reared in the cellars of narrow alleys in densely-built localities, where the sun's rays are prevented penetrating.

"G. C." notices the dismal character of north rooms. I have known this enhanced to perfection by means of puce-coloured papering: nothing could be better calculated to conquer the contumacy of a criminal. Mediums are usually best; and apartments that have too much sun—as in the west,—and those that have too little—as in the north, may be greatly ameliorated by means of the tints employed in them. It must not be forgotten, the while, in regard to warehouses for soft goods, that a northern aspect is preferred; which will, in a measure, explain that mysterious lining of the lower sashes with light-blue paper (nearest the line of counterlight), which is a remarkable feature in manufacturing towns, and in some parts of the city of London,—the object of which, I believe, is to neutralise the excess of yellow in the sun's light, which causes "blues" and some other colours to look to disadvantage: this is necessary to be had recourse to in those warehouses which have a southern or western exposure.

I hope other correspondents will contribute their views on this subject, which "G. C." has so well introduced. JAMES WYLSON.

EXTRACTS ON ASPECT, FROM LOUDON.

"With reference to Britain, and to the flat countries of most parts of Europe, the mildest aspect is the south-east; and, therefore, the door of a cottage should, if possible, be placed on that side. The next best is the south; and the two worst are the north-east and south-west. It is very desirable, in a cold moist climate, that the sun should shine on all the exterior walls of the cottage, and also in at all the windows, every fine day in the year; for the sake of keeping the walls dry, and the interior warm and cheerful. This object may be accomplished by placing any building which is, or can be, resolved into a square, or parallelogram, on the ground plan; so as that a north-and-south line will form the diagonal (of the) figure. This being done, the out-offices should be placed on the north-west side of the square, or parallelogram. The dairy and the pantry should always, if possible, be placed on the same side, or with a north-east aspect, for the sake of coolness. Tanks for water should also be on the same side, and under ground, for the same reason.

In all practicable cases, we intend that the dwelling should be so placed as to admit of the sun shining on all its walls every fine day in the year, with the exception of a few weeks at the winter solstice. * * * In most parts of Europe the door should face the south-east. When cottages are detached, and built either singly or in pairs, and set down in a garden, the adherence to this rule of position, with respect to the sun, will add to the picturesque beauty of a village, whatever may be the direction of the road along the sides of which the houses and gardens are built and laid out. * * * In building long lines of connected dwellings of this sort, this law cannot be applied; but if the lines (which determine the aspect) be in the direction of south and north, the same advantages, in point of heat and dryness, are obtained as by the diagonal position of detached cottages; for the sun will shine throughout the year on the east and west sides of every dwelling; and the south and north sides being party walls will be necessarily both dry and warm.

There are some considerations respecting aspect which apply to every country; and others to particular countries or districts of country only. Nothing in the architecture or appendages of a house can compensate for its being set down on the north side of a high hill or ridge; where it is precluded from partaking of the direct influence of the sun during three or four months in the year. In most countries

there is some point of the compass from which rain and storms are more frequent than any other; and to set down a house in such a manner as to be exposed to these tempests is evidently injudicious. An aspect exposed to high wind is less objectionable than one exposed to driving rains; since shelter may be afforded from the former by trees, but not from the latter by any means.

The preference should always be given to the south-east when practicable; as the wind, in most parts of Great Britain, blows seldom from that quarter than from any other; and when it does blow it is always warm. The south-west is a boisterous quarter, and should only be had recourse to when it is necessary, in order to obtain a diagonal to the plan which shall be a south-and-north line. * * * We prefer, in almost every case of single cottages, to have, next the road, an angle of the building; by which the views across the road will be oblique instead of being direct; as the former, in every case, exhibits a longer perspective, which must consequently contain a greater number of objects. The grand point to be attended to, in putting down every cottage, single or double, ought to be to have the diagonal to the main building a south-and-north line: this rule ought to be considered as absolute."

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

Statuary Art in Russia.—The monument of the Emperor Paul I. has been lately completed and inaugurated at *Gatchina*, near St. Petersburg, the place to which the unfortunate monarch was most partial. The bronze statue represents the emperor in a standing position, costumed according to his fashion, as in the act of commanding, &c.—At *Saratov* (on the confines of Asia), also, the German colonists have erected a bronze monument to the memory of Catherine II.

Railway from St. Petersburg to Warsaw.—The tracing of this huge line of communication has been completed, and the earthworks are now in progress. General Gerstfeld, the assistant of General Kleinmichel, director of public works and roads, is intrusted with this undertaking. This line will not keep a straight direction, and extends to the double length of that from Moscow to the Russian capital. It is calculated that it will be completed in about ten years.

Curves.—M. de Radowitz, the well-known Prussian statesman, and formerly prime minister, delivered a lecture in one of the Aulas of Berlin, "On the use of the *Curve* in Architecture." Starting from the forms, dates, and measurements of Grecian buildings, he alluded to the circumstance that if the pediment, the elevation, or the corner columns, be taken into account, curves and not straight lines will be observed. M. de R. expatiated on the æsthetic feeling of man, which prefers waiving to straight lines, &c. The lecture was held at a meeting of the Erfurt Society of Art-friends.

Italy.—At Bologna, a plan has been started to erect a *Pantheon*, for commemorating all the great men born in that city. The execution of the statues and busts is to be entrusted to M. Bollami, professor of sculpture at the Bologna Academy of Fine Arts, in whose atelier two statues *Psyche* and *Eve*, in white marble, are now much admired. At Florence, the exhibition of the Academy has been enriched by a bronze group of *Cain* and *Abel*, made by the professor of sculpture. The mediæval buildings of Siena, Pisa, and Lucca, are being actively restored, and the domes (cathedrals) of Prato and Orvieto have undergone a thorough repair, when, conjointly, many injudicious restorations of the time of art-decadency were also removed.

THE IRON TRADE.—In Scottish pig-iron, it is reported, a large business has been done, mostly on speculation, on Glasgow account, and prices slightly advanced on previous rates. Staffordshire iron has been as heretofore, dull of sale, and Welsh bar iron without demand.

CONSERVATORY OF ARTS AND TRADES, PARIS.

THIS daily progressing and expanding establishment was founded in the year 1792, the fiercest time of the French Revolution; but, on account of its palpable utility, fostered by all subsequent governments. Its galleries and collections are a tangible and working cyclopædia of arts and trades, unique in their kind. The following extract from the programme of "Lectures, public and gratuitous, of the Sciences applied to the Arts," (*Cours publics et gratuites, etc.*) will best illustrate the large and comprehensive basis of this establishment:

Geometry applied to Arts.—Ch. Dupin, Professor.—Instruction in geometric drawing for the pupils of Professor Dupin.

Descriptive Geometry.—Olivier, Professor. *Mechanics applied to Arts.*—Morin, Professor. The lectures will begin with a synopsis of mechanics applied to the industrial arts, after which Professor Morin will treat of the resistances of materials, &c.

Physics applied to Arts.—Pouillet, Professor. These lectures will embrace the production of steam in various boilers, &c., galvanoplastics, and electric telegraphy.

Chemistry applied to industrial Arts.—Payen, Professor, will treat of sulphur and sulphuret of carbon; vulcanization of caoutchouc; on gutta percha; on acids, bases, &c.; the making of mortars, cements, &c.

Agriculture.—Moll, Professor, will treat on the irrigation of meadows, gardens, and fields; the examination of foreign agricultural implements best fitted to the circumstances of French husbandry.

Industrial Economy.—Blonqui, Professor, will treat on the economical constitution of the principal industrial branches of Europe, &c.

Legislation of Industry.—Wolowski, Professor; on the *conseils des prud'hommes*, on associations of working-men, the frauds in the making and selling of articles, &c.

It is to be observed, that the days and hours of these lectures are so chosen, as to be most convenient to the laborious classes of the French capital, whose attendance at all these lectures is very considerable.

PROPOSALS FOR FOUNDING A LIGHTHOUSE (OF ALL NATIONS) ON THE GODWIN SANDS.

The principles of the construction of the Britannia Tubular Railway Bridge have suggested to me the means of ensuring a permanent foundation for a lighthouse constructed of wrought-iron, with an exterior fender of rough masonry; to be erected on, or near, the Godwin Sands.

Hitherto every attempt to erect a lighthouse on that site has failed, from the want of a solidity to withstand the full force of wind and waves. The system which I now venture to suggest will, it is presumed, offer the following essential advantages:—The greatest ultimate stability; relatively the most economical structure for such sites; admit of being very rapidly executed with the greatest safety; novelty of design in the general construction; and adapted to other sites. It will easily be observed that from the principles of the construction, and the necessary order of operations in the proposed undertaking, all the incidental contingencies will be effectively provided against; but it would obviously clog the subject too much to enter into details in the first stage of introduction to public notice.

During the first series of operations, the proposed foundation would consist of two iron girders, placed in form of a cross; with the sides, top, and ends double (each being lined with wood). In order to insure easy and perfect adjustment, the girders would have an underneath curve of about 2 feet: their being hollow, and the bottom capable of being opened in compartments as required, will admit of arrangements for excavating the sand through the girders, for the ultimate foundation on the chalk rock; and thus by the superincumbent weight of the whole structure would it settle down to its proper place. A series of very large "boiler plate" telescope

tubes would rise from the centre of the crossed girders, which would constitute the framework of the lighthouse, and be raised by means of hydraulic presses. The workmen before they leave the shore would test, by repeated trials, the full capabilities of the structure, which would give them confidence in the whole undertaking, as all the preliminary adjustments and elevations would be executed entirely from the interior. The men would thus have, from the first to the last, a comfortable home in the lighthouse itself. After the working drawings were finished, all the materials might be made to fit; then marked (even in the workshops of the makers); afterwards conveyed to the sea-side, and put together; advantage being taken of the finest summer months to float it out in its pontoons, and deposit the telescope tubes and foundation girders upon the intended site.

Probably the shore between Deal and Sandwich would be selected to first erect a temporary yielding breakerwater, in a series forming a semicircle, within which would be put together a large circular pontoon (in compartments), the exterior compartments of which would be filled with water (or sand) during the period only required for fitting up the girders and tubes within the pontoon (which would thus form a dry dock), so placed and calculated as to enable a steam-tug to tow it all out, when finished, at high-water, to its destination. The pontoon being in two moveable parts, could be easily disengaged when required, leaving the lighthouse and workmen on the proposed site. Of course, the selection of the site would be judiciously undertaken by the proper authorities, who would cause the same to be carefully buoyed out: they would have also to determine the magnitude of the lighthouse, general fittings, and the expenses of the materials required for the structure. During the summer months a sufficient weight and strength of materials could be properly placed, constituting the foundation of the lighthouse, which would prevent the sea from washing away the first courses: the tubes would form the nucleus or scaffolding, around which would be reared the masses of rough stone on the exterior, which united would finally merge into the structure itself, resting on a good independent foundation of 400 screw piles. In order to facilitate the operations on the exterior, portable cranes would be adjusted to the upper works. The pontoons would play an important part; and as they would be constructed to draw only a few feet water, they might afterwards be used to convey the rough stone for the exterior and the concrete for the lower parts of the interior; and if also required, the solid gas, or even coals for making gas, in the proposed lighthouse, being a cheap, clean, and practical means of illuminating to the greatest advantage.

ARTHUR GEARING.

Mr. Hoblyn, F.R.S., has just now published a description of a method of effecting the same purpose.*

This is the writer's plan:—

"Having selected a central and well considered situation, I should surround a space of about 200 feet diameter with a floating mass of faggots, which has been proved to be a most efficient breakerwater. Within this circle, and constructed of iron, I should moor a large pontoon, formed in the shape of a ring, whose inner radius should be 30 feet less than its outer one; thus giving a circular platform 30 feet in width, encircling the space to be operated on. This pontoon should be constructed in segments, so that its diameter can at any time be lessened by the withdrawal of one or more segments. The buoyancy of the pontoon could be lessened, if necessary, by pumping in water. Having moored this, it is proposed to commence sinking a series of hollow iron rings; the first ring to be 120 feet external and 100 feet internal diameter; each ring to be 10 feet in height, and to diminish in diameter every succeeding ring. These rings would be formed of wrought-iron, put together with inner flanges

firmly bolted together, and excluding the water on all sides save the upper one. The first or bottom ring would have a sharp edge. This first ring would be attached by chains to the pontoon, to prevent the possibility of its sinking too rapidly; but I conceive that these rings would of themselves have sufficient buoyancy to enable the superintending engineer to regulate their descent. The first ring being in its place, proceedings would be taken to attach the second ring to it, and to fill in the first ring with rubble work in cement, which, by the additional weight, would cause the rings to descend. By the time that the third and fourth rings were added, thus giving a vertical height of 40 feet to the whole structure, I conceive a difficulty would be encountered in causing the rings to descend; and I then propose to commence removing the sand from the interior by the means of dredging machines.

By constantly removing this interior mass of sand, and adding fresh rings, and additional weight to these connected rings, I conceive that eventually the chalk will be reached, and the engineer will have a large shaft sunk through the sand,—a shaft whose diameter shall be 100 feet at the base and 70 feet at the top, which top shall be 16 feet above high water. Underneath the edge of the bottom ring the chalk might then be removed a few feet, so as to give the whole structure a firm and level base.***

Having sunk this shaft in the manner described, I would then proceed to build a strong stone building, well founded in the chalk, and entirely independent of the iron shaft, which would encase it all around. Of the detail of such a building it is not here necessary to speak. It would of course be fireproof, and afford accommodation for stores as well as inhabitants. The space between the outside of the building and the inside of the shaft would be subsequently filled in with rubble-work, which would of course add to the stability of the whole structure. The whole of the iron rings, when connected and filled in, would rise, as I have said, some 16 feet above high-water mark, and would be plankered over, forming a platform round the stone lighthouse. This building would rise about 124 feet above the sands themselves. The size of this building would admit of much accommodation. The upper chambers should be appropriated to the accommodation of, I think, twenty men; who should continually reside there, not only for the purpose of attending to the main light, but also to the lesser beacons, if thought necessary, and, in case of wreck, to afford the means of manning two life-boats, each with a crew of eight men."

MEMORANDA IN CORK.

The new district lunatic asylum is now nearly completed: it is expected that the patients will be removed to it about March. A large number of men are employed in levelling the slopes and terraces in front. The church is a detached building consisting of a nave and chancel, with sacristy of the Early English period: the west end is crowned by a bell-cot: the entrance is by a porch on the south side: it is a picturesque adjunct to the main building. The exterior of the building is of a severe and forbidding character, rather too expressive of its intended uses, which by some, no doubt, will be looked upon as an excellence, but in this and like instances the rule "characteristic" might judiciously be departed from. The architect is Mr. William Atkins, of Cork, from whose designs the new convent of the Sisters of Mercy is now erecting (an engraving of which appeared in THE BUILDER). This building is a successful adaptation of the Early English style to conventional purposes: it is built of red sandstone in the walling and light grey limestone dressings. The building is now roofed in.

A new chapel in connection with the Society of St. Vincent de Paul is now erecting from the designs of Mr. John Benson, county surveyor: it consists of a nave and aisles, with a chancel, sacristy and western tower. Being built on the side of a hill, the nature of the ground allows of a crypt, a portion of which will be used as a school-room: the foundations,

* Description of a Method of Founding a Lighthouse on the Godwin Sands. By Thomas Hoblyn, F.R.S., V.P.S.A. &c. London: Samuel Budge, Fleet-street.

which are very heavy, are nearly completed to the floor level: the building is to be allowed to settle until March before the superstructure commences.

A new Roman Catholic presbytery is erecting at Mallo from the designs of Mr. R. Brash, of Cork; also extensive flax mills at Bandon by the same.

Tenders were received on the 27th by the Cork Harbour Commissioners for erecting a pier and timber jetty at Monkstown from the designs of Mr. Benson. The contract was taken by Messrs. Roddy and Doran, at £301. The highest tender was 1,650*l.*, and the next lowest to the accepted tender was Mr. Edwards, 1,130*l.*

The time for receiving plans for the proposed City Hall has been extended from Dec. 1st to Dec. 8th, to convenience, it is said, certain parties at a distance, who wrote to intimate that their plans could not arrive on the day appointed. It is said some of these designs are coming from the United States. The justice of the postponement is rather questionable, as many of the architects had their plans lodged before hearing the announcement, which was not made until the very day for receiving them. I need not inform you that a few of the knowing ones are taking advantage of the additional week, while the poor industrious fellows, that worked hard and were up to time, are manifestly at a disadvantage. The course of competition never yet did run smooth.

C. D.

CHURCHYARD RIBALDRY.

HAVING read in your journal of the 29th your remarks upon churchyard memorials, and concurring in the spirit of them that though "a correcter feeling on the subject has become more general than it was," there is room for improvement; I venture to send you two inscriptions on tombstones which I have never seen in print, but which I have often read about midway up that beautiful avenue of chestnuts in the churchyard at Hertford. The inference which I draw from the two is, that a husband buried his wife, and caused the first inscription to be cut upon her tombstone; that subsequently he married again, and survived his second wife, and then died himself, his executors determining that he should be buried in the grave of his second wife giving rise to the second epitaph. The two graves are side by side.

FIRST EPITAPH.

"Grieve not for me, my dearest dear,
I am not dead, but sleeping here;
In patience wait prepared to die,
And in short time you'll come to I."

SECOND EPITAPH.

"I am not grieved, my dearest life—
Sleep on, I've got another wife;
Therefore I cannot come to thee,
For I must go to bed to thee."

I enclose my card.

A MAGISTRATE.

RECOVERY OF CHARGES FOR LETTING LAND.

FIELD V. SMITH, IN THE COMMON PLEAS.

This was an action by a surveyor against an attorney in Southampton-buildings to recover 23*l.* 12*s.* 6*d.* as commission due to the plaintiff for letting land in Enfield, in Essex, upon a building lease. The defendant paid into court 5*l.* 12*s.* 6*d.* and pleaded that he never was indebted as to the residue.

The question in dispute was, whether a surveyor, who lets land upon a building lease, is entitled to receive from the lessor the first year's ground-rent as his commission, although it may be at the same time agreed that the lessee or builders should pay the fees of the surveyor. The plaintiff proved that in April, in last year, he was instructed by the defendant to survey, plan, and advertise the land for letting: he did so, and in consequence two gentlemen, named Lovegrove and Green, applied to him to take the land, and ultimately agreed with the defendant to take it for ninety-nine years at an annual rent of 20*l.*, and they were to pay the surveyor's fees.

Several surveyors proved that under such circumstances the plaintiff would be entitled to 20*l.* from the defendant as commission, and that the fees to

be paid by the builders would be a distinct and additional payment. Several professional witnesses were called on the part of the defendant, who deposed to the contrary, but some of them admitted that they had never known a case like this, and the others that they never let land upon a building lease.

The jury said they would not trouble his lordship to sum up the evidence, and returned a verdict for the plaintiff for the full amount in dispute—namely, 18*l.*

The learned judge ordered execution in four days.

Plaintiff's attorney, Mr. Archer, 11, Tokenhouse-yard; defendant's attorney, Mr. W. G. Smith, Southampton-buildings.

Books.

Memoirs illustrative of the History and Antiquities of Wiltshire and the city of Salisbury, communicated to the annual meeting of the Archaeological Institute of Great Britain and Ireland, held at Salisbury, July 1849. G. Bell, Fleet-street. 1851.

ALTHOUGH the "Journal" of the Institute has superseded the annual volume distributed to the members under the authority of the council, it was thought desirable to continue the series of congress volumes, and the publication in the present instance was undertaken by Mr. Bell, whose only regret appears to be that from causes beyond his control the History of the Cathedral, by Professor Willis, which the central committee had made every effort in their power to secure for this volume, is wanting. In every other respect, however, this seems to be a volume entitled to rank with its predecessors. It contains, amongst various other memoirs, one on the results of archaeological investigation in Wiltshire, by Mr. George Matcham; on the Topographical Gatherings at Stourhead 1825-33, by the Rev. Joseph Hunter; on the Early English Settlements in South Britain, by Mr. Edwin Guest; on the examination of Silbury Hill and other earthworks, by the late Dr. Merewether; on Stonehenge; on Painted Glass at Salisbury, by Mr. C. Winston; on Ecclesiastical and Monumental Sculpture, by Mr. Richard Westmacott, Jun.; on Market Crosses, by Mr. J. Britton; Wimborne Minster, by the Rev. J. L. Pettit; and various notes, remarks, and notices on other subjects of interest.

Mr. Westmacott, in the close of his article on ecclesiastical and monumental sculpture, gives his own ideas on the subject of Gothic revivals, in the shape of warning and advice to modern architects.

"There appears," he thinks, "to be some need to warn one section of a school of would-be reformers against opening itself at least to a suspicion of affectation in another direction. Some who have urged a return to the peculiar manner of the early artists, seem, like the *pseudo* classics, to argue only on the value of antiquity, and on the fact that a certain class of art was so practised in a particular century; and they would have the rude execution of primitive times in painting and sculpture imitated, as if the repetition of mere technical defects were points of valuable design, or showed real feeling. Some also have declared, in the same spirit, that no architecture is proper or admissible for church building but the Gothic, and that of a particular age and style. Others again, adopting a theory of symbols, assert that the presence or absence of *spirituality* is shown as the shape of a window or the curve of an arch approximates to, or departs from, the favourite standard,—whether "Early English," or "the Pointed," or "the Decorated," or any other style, as the case may be. This seems to be mistaking what it must be admitted is a matter of *fancy* for one of *principle*: while the fact appears to be entirely overlooked that Christianity—and it may be hoped its *spirituality*—had existed some twelve centuries before what is called Gothic architecture was known.* In this desire to recur to ancient forms, the Commandments and the Lord's Prayer, in the vulgar

tongue of our own day, are often exhibited in our churches not only illuminated out of all recognition, but are written in the obsolete, and, to the greater number of people, illegible character of four or five centuries ago. There is a vital mistake in this, in *principle*, to say nothing of its ill effect on art, which cannot require for its perfection that any means or accessories it employs should be unintelligible. It is not always remembered that, in an age when the religious services were sung or said in a dead language, and the people kept, perhaps intentionally, in a state of extreme ignorance, it would matter but little in what way such inscriptions were set forth, serving as they did chiefly for ornament. But even then they were in the character of the time. In these days, however, when even the humblest classes are being taught to read, it must at least be supposed that texts and inscriptions are intended for edification. On the extreme absurdity of inscribing in a *dead language*—the Latin, for instance—passages and texts from the Sacred Writings, which, by the way, were not written in that language (so that there is not even the excuse of quoting the original), and then—*anomaly on anomaly*—exhibiting these in *obsolete early English characters*, it is scarcely necessary to enlarge."

It was rather a sad meeting, that at Salisbury: *cholera* was in the town; and the course taken by some of the authorities did not tend to raise the spirits of the visitors; but it had some good results, and this volume is one of them.

The Industrial Arts of the Nineteenth Century. A Series of Illustrations of the Choicest Specimens produced by every Nation at the Great Exhibition of Works of Industry, 1851. By M. DIGBY WYATT, Architect. London Day and Son. Parts III. IV. and V.

THE progress of this work fully justifies our good opinion expressed on the appearance of the first Part. It will form, when completed, a magnificent record of the wonderful assemblage of objects gathered together in Hyde Park. We have, in the parts now before us, amongst the works of higher art, Gibson's very fine statue of "The Hunter," to which, undoubtedly, a council medal would have been awarded, if the sculptor had not been on the jury; and Geerts' "Massacre of the Innocents," conventional, yet full of feeling. Then there are Vases, by Minton; objects in glass by various manufacturers; the Coalbrookdale Fountain; the Sévres Vase; Window from Tunis (deserving the particular study of the ornamentist), and Bronzes, by Vitztoz; the last-named plate not so successful as some others. In addition to these are examples of Turkish embroidery, Russian embroidery, and Indian elephant trappings.

Mr. Wyatt's accompanying descriptions are tasteful and intelligent. We take the following from his notice of Messrs. Geerts, the carvers, of Antwerp.

"In their most important undertaking, the execution of the new stalls of the Cathedral of Antwerp, the Messrs. Geerts appear to have selected for their model the beautiful carvings of the stalls in the church of St. Gertrude, at Louvain. Imitating these fine productions of the middle of the seventeenth century, more particularly in the small detached groups which surmount various portions of the design, they have succeeded in imparting to their elaborate work a freedom and beauty entirely their own. While the architectural details of the canopies are in a pure Gothic style, the multitude of subjects with which the stalls are enriched are devoid of any affectation of antiquated drawings.*

Surrounding themselves in their studio with casts from the works of the great masters we have mentioned, together with beautiful models of the architecture of the middle ages, the Messrs. Geerts have formed a large atelier, from which productions of extreme beauty are constantly proceeding. Among the important works upon which they are now engaged may be mentioned a series of 260 statues in stone, to be placed in the niches of the Hôtel de Ville, at Louvain, and twenty-nine panels, to be cast in bronze, for the new church of St. Joseph, at

* The stalls referred to, both of Louvain and Antwerp, as well as many of the elaborate works of the old Flemish carvers, are delineated with great pictorial effect in Mr. Haghe's "Sketches in Belgium."

* Something of this may possibly have arisen from the undue importance given to the ingenious fancies indulged in by Durandus (*Rafaele Diein. Offic.*) and other writers of the class, respecting whom Mr. Bloxam, in his valuable little Manual, quotes the following just remark: "That the ecclesiastical writers of the thirteenth century, who wrote on the rules and ceremonies of the Church, only busied themselves in seeking and inventing mystical reasons, which they made the subject of their works."

Brussels. The latter are in the style of Lorenzo Ghiberti, and are expected to rival the works of that artist in the baptistry at Florence."

One or two of the plates are a little sickly in tone, as, for example, Minton's vases, and the specimens of glass, but for the most part they are beautiful specimens of lithography.

Notes on the Distribution of Gold throughout the World, including Australia, California, and Russia. With Four Maps. London: James Wyld.

The spirited and enterprising geographer to the Queen is ever ready to aid in enlightening the public on any popular subject of interest throughout the world. And as the Age of Gold appears to be now setting in, he presents us, *à propos*, with a half-crown's worth of maps and notes of all the known or celebrated gold regions throughout the world. The maps consist of one of the World, showing the gold districts; one of the Australian gold districts; one of the gold district from Bathurst to Sydney; and one of the Californian gold districts. The notes comprise a sort of little history of gold hunting, and the whole is appropriately dedicated to Sir Roderick Murchison, the celebrated geologist, who predicted the discovery of our own gold mines in Australia. Mr. Wyld by no means encourages a "run upon gold." His discreet opinion is, that gold digging, however large in its nominal returns, is not, as a pursuit, more productive of net profit than others. Only it does open up a new fountain of wealth more glitteringly attractive to some minds and habits than others, and especially to a restless order of men, many of whom it is better to have engaged in such a branch of industry, however irregular or exciting, than in previous pursuits.

Reports to the Health Committee of the Borough of Liverpool. By the Borough Engineer, Inspector of Nuisances, and Medical Officer of Health. Liverpool, 1851.

From the first of these reports it appears that since June, 1847, no less than 17 miles of sewers have been constructed, a length equal to about one-tenth part of the total length of existing roads in the borough. The Health Committee have generally selected for execution such works as in the opinion of the medical officer of health would most effectually contribute to remove the causes of disease, and we are pleased, though not in the least surprised, to find that the results have abundantly justified this course of procedure. The general scheme of sewerage and drainage set forth by Mr. Newlands, the borough engineer, and approved of in 1848, is thus in a fair way to final accomplishment. His present report contains plans showing the details of the Liverpool mode of house drainage, and also of course descriptive matter explanatory of these plans. It likewise contains information on the paving of the streets, worthy of perusal. The sanitary and other statistics in the two latter reports are instructive and valuable.

SOCIETY OF ANTIQUARIES OF SCOTLAND.—At the anniversary meeting of this society, held on Friday week at Edinburgh, a report submitted to the meeting, conveyed the intelligence that negotiations long pending with the Treasury had been brought to a satisfactory conclusion; and that by a deed drawn up and signed, the society have made over to the Crown, as national property, the whole collections of antiquities formed by them during the last seventy years, to form the nucleus of a National Archaeological Museum for Scotland. The Treasury have, on their part, vested the curatorship of the collection permanently in the hands of the society's office-bearers, and become bound, so soon as the new gallery on the Mound is finished, to fit up the entire suite of rooms occupying the north and west sides of the Royal Institution buildings on the upper floor, for the accommodation of the society's collections and meetings. At this meeting several honorary members were elected, among whom were the city architect, Mr. D. Cousins, and Sir John Watson Gordon, Kt., P.R.A.

Miscellaneous.

RAILWAY JOTTINGS.—The total amount received for traffic on the London and North-Western Railway, for the week ending Nov. 30, was 40,021*l.* (corresponding week in 1850, 38,508*l.*) Midland and Bristol and Birmingham, for the week ending Nov. 23, 21,407*l.* (corresponding week in 1850, 20,529*l.*) North Staffordshire (Railway and Canal), for the week ending Nov. 23, 4,614*l.* (corresponding week in 1850, 4,351*l.*, exclusive of receipts available under agreement with London and North-Western). Great Western, week ending Nov. 23, 14,353*l.* (corresponding week in 1850, 13,135*l.*) Great Northern, week ending Nov. 23, 10,360*l.* (corresponding week, 1850, 6,140*l.*)—The great railway bridge and viaduct at Chepstow is rapidly progressing. The structure is so far advanced, that an idea of the bridge may be formed. Numerous visitors have already been to see it, and its fame is likely to vie with that of the Britannia or Menai-bridge. The whole will be made of wrought-iron, and will combine the principles of the suspension with those of the tubular bridges. Including the viaduct, the bridge is 623 feet in length; the span or suspension part being 290 feet. There are two separate roadways, each being perfectly independent of the other, and their height is 70 feet over the river Wye at high-water mark, so that vessels can pass under. On the Chepstow side, the roadways rest on six upright iron cylinders, filled with concrete, and driven firmly in a foundation of rock. The roadways on this side are continued in the form of a viaduct for about 300 feet more, resting on these upright cylinders, filled with concrete, and firmly imbedded. On the east side, the roadways rest upon solid work. The masonry is in a forward state.

WATER SUPPLY AND DRAINAGE OF SOUTHAMPTON.—The supply of water at the present moment is from the Common Well 121,250 gallons per twenty-four hours; from Northam, 31,500; Sugar House, 37,632; and from the Springs 35,309; making a total of 225,689 gallons per twenty-four hours. Mr. Ranger in his report estimates the amount required per day at 700,000 gallons.—A correspondent, with reference to the drainage, draws our attention to the fact that the corporation are about to borrow another 20,000*l.* to throw into what he calls "their big ditch which they call sometimes a *drain*, sometimes a sewer, but which, in point of fact, is neither drain nor sewer, but a continuous chain of cesspools."

ELECTRO-TELEGRAPHIC PROGRESS.—The seal of the Lancashire and Yorkshire Railway Company has been affixed to an agreement with the British Telegraph Company, enabling them to use the whole of the lines of the Lancashire and Yorkshire Company for telegraph purposes. The British Company are now, it is said, about earnestly to commence operations, having issued specifications for poles and fixing to a considerable extent.—If all be true that is said of the magnetic telegraph, our "electro-telegraphic progress" must shortly be changed into "magneto-telegraphic progress," and the galvanic battery be altogether dispensed with. We seem to be approximating still nearer to the ancient idea of "the magnetic telegraph" with its magnets and its sympathetic alphabets, and may ultimately find that even the electro-magnetic telegraph is but a sorry invention compared with "what once hath been." Contracts, it appears, have been entered into by the Magnetic Telegraph Company for the establishment of Mr. Henley's improvements on a great many miles of railway.—If we have doubts about the propriety of ranking the note of progress just made under the head of electro-telegraphic, what shall we say to the following? "A gentleman in Newport, Kentucky, is perfecting an application of electricity for propelling a box containing letters over wires from place to place, on the telegraphic principle. It is said that the experiment over wires of 600 yards in length has worked successfully." We long ago, in a jocular mood, suggested the supersedement of the electric telegraph by the transmission of written paper

pellets or letters through an exhausted line of air-tight tubes, a notion afterwards gravely advocated by some of our contemporaries; but the Kentuckian project is certainly an improvement on that. The old woman who expected her umbrella to be forwarded by electric telegraph had evidently an estimation of its capabilities as just as it was profound. She was probably some "wise woman" incog.; and had her hint been acted on, the laural might have been plucked by anticipation from the Kentuckian temples, ere it, Elinically speaking, had had time either to plant itself or grow upon them.—It is said, that so long since as 1666, one Gilbert published a book, in which he predicted that the day was not far distant when men would be able to communicate from one end of the world to the other by means of electricity.

MISCELLANEOUS INVENTIONS IN WOOD AND BRICK CONSTRUCTION, &c.—Mr. George Tate, of Bawtry Hall, Yorkshire, has recently taken out a patent for constructing houses, &c. by fitting together staves, or stave-like and other pieces of timber, or other suitable material, secured together by hoops or other binders or fasteners, built of any suitable size, and fixed, either vertically or horizontally, at any height, upon piles or sleepers. Such houses, or parts, may be formed one within the other, to leave space for the circulation of air, &c. The floors, roof, partitions, &c. are also formed by wedging up stave-like pieces in concentric rings, with an external hoop, and the interstices filled up with glue or other viscous matter, mixed with earthy or mineral substances. [This invention reminds us strongly of one first announced in *THE BUILDER* some time ago, and which was applicable to bridge building, ships' masts, &c.] The second part refers to machinery for mixing ashes, dust, &c., with house soil for manure, and forcing it out similar to a pug-mill for preparing brick earth. Another to the formation of beams or girders: hay, straw, brushwood, &c., are mixed with animal or mineral viscous matter, and then compressed in moulds for ultimate use, as required. For floating harbours, breakwaters, &c., this material is recommended for its floating power. The specification claims also for constructing rigid suspension bridges, by attaching to the chains cast-iron abutments, and holding down chains of galvanised wire, coated with gutta serena (?), and each link protected by a metal sheath. Another part is for perforating bricks and tiles, and making channels, flues, and pipes in walls, for circulating hot or cold air, and the manufacture of bricks and tiles, by forcing them into moulds, by the employment of centrifugal force; also for making ornamental bricks and tiles, by facing those made of common brick-earth with a finer kind of clay, or porcelain, which is to be painted or printed with any architectural device or pattern.

DRAINAGE OF LEE.—At a meeting of the Commissioners of Sewers on the 3rd, Captain Dawson, with reference to a letter on this subject in our columns, to which we drew attention last week, made a statement showing the necessity for immediate drainage in that neighbourhood, and called the surveyor, Mr. Cressy, to give evidence on the subject, and elicited from that officer explicit replies with reference to the neighbourhood, its drainage, and the situation of Captain Dawson's residence, which he pointed out on the plan to the Court. The drainage of the place, he stated, is, most defective, and the proposed alteration in it would not in any way benefit the captain's property, as it was situated opposite to Lee, the water shed being the other way; nor was it at all connected with Dacre-street, although if the works at Dacre-street, &c., were carried out, he (the captain) would have to pay his share in common with the other inhabitants of the district.

BUILDERS' BENEVOLENT INSTITUTION.—Our advertisement columns have apprised those interested in this thriving institution, that the directors have resolved on giving another ball, on 19th February next, in Willis's-rooms. They are now recruiting for stewards, and would be glad to have early additions to the list.

PUBLIC PATHS—REGENT'S PARK.—I have just received your publication for this week, in which I find some remarks upon the stopping of public paths, and encroachments on public property, and I am of opinion that your correspondent has been very moderate in his complaints. When a boy, I was in the constant habit of walking round the outside of the fences of the Regent's Park, when the hares had the privilege of running through the plantations inside; but from the strenuous exertions of Mr. Hume and others, the gates were opened to the public. Many thanks to them, say we, and they would have done well to have kept their eyes on so great an object, with a view to keep it from being again taken from us. I could name many beautiful crops that have been gathered within the inclosures, and here beg to enumerate a few of them. About the year 1824, a small portion was allotted to the Zoological Society for exhibiting their collections, &c.; now I should say about twelve times the extent: the same with the Botanical Society. In or about 1832, a crop off for a house for Mr. Holford; since which time, and I believe very recently, the iron fences have taken a flight to a very considerable distance further from this, and a house not far from it, which I believe is called Hertford House, taking in ground, at a rough calculation, I should think, of ten or twelve acres. Surely there must be something wrong about this, and I am induced to call attention to it, fearing that some foggy night these fences may take another leap, and we lose for ever the opportunity of making a foot entrance into this part of the park, which is so much needed.—A SUBSCRIBER.

IRON PAVEMENT.—We some short time since noticed an experiment which had just been made at Glasgow under a new patent by Mr. Allan, of Spring Bank Iron Works. The pavement laid down has now had a trial of several weeks' duration, and the result is reported by the *North British Daily Mail* to be favourable to its adoption in the place of granite pavement, on the score of first cost at least, and of adaptation to its purposes, if not also of durability, which has not yet been sufficiently tested. It is grooved in zigzags, and thus prevents the horses' feet from slipping. As it must wear much faster, however, than those slipping traps in sloppy weather or in frost—the iron shot-hole covers to coal-cellars on our metropolitan pavements,—and as it must inevitably require replacement so soon as the grooves are nearly obliterated, which they so often are in the instance just adduced, the question of relative cost remains to be settled by the horses' shoe iron. Its absolute prime cost is actually less than that of granite, according to the *Maid*, which states that, while the cost of the latter in Glasgow was from 8s. to 9s., and in London from 12s. 6d. to 14s. 6d. a square yard, that of the former in Glasgow is only 7s. 6d. to 8s. 6d., according to thickness. There was some fear of the influence of frost in rendering the iron pavement too brittle for heavy traffic; but it has already withstood the force of some pretty strong frost, and every day hundreds of tons of coal, iron, &c., pass over it, besides omnibuses, carriages, carts, &c., and as yet not the least appearance of yielding or failing is said to be visible. The plates are rebated on the edges, and mutually support each other, and the joints are so close that no oozing of dust or mud appears. The substratum is of lime and sand. The noise is said to be much less than on granite, and the footing more secure.

LANDING PLACE FOR MARGATE.—In consequence of the damage sustained by the present landing-place, from the gale of the 4th of November, the directors of the pier and harbour have decided on calling for plans for a new landing-place: it is proposed that the length should be about 1,400 feet, and the width about 25 feet, and that the cost of the works shall not exceed 12,000*l*. The directors also ask for plans on a more extended scale, by which greater protection shall be afforded to shipping. The cost of this work is not to exceed 15,000*l*. A correspondent expresses a doubt as to the honest intentions of the directors, as they have already a plan before them.

STREET RAILWAYS FOR HORSE-TRAINS.

—A new project has been started whereby it is proposed not only to centralise the metropolitan railway traffic, but also that of the omnibuses, in such a way as to virtually clear the streets from much confused and conflicting traffic, while, at the same time, affording increased accommodation to the public. This project contemplates simply the laying down of lines of rail flush with the streets, to radiate from the centre of the metropolis through all the principal lines of thoroughfare, and of course to all the railway stations, the gauge being the ordinary one suitable to railway carriages, by a modification in the construction of which it is proposed to adapt them also for street traffic when detached one by one, and driven off by horses from each station towards the centre, stations being set down at least every quarter of a mile along the course. As represented by the engineer, Mr. Thomas Wright, of George-yard, Lombard-street, a railway centralisation would thus be obtained at the smallest possible cost, and with the utmost possible safety, and without the slightest destruction of property, or alteration of streets, except in the laying down of two lines of rails near the kerb-stones, on each side, the rails to be, so far, common property, or used or crossed by all sorts of vehicles, at all times, except while the trains are passing. In support of the practicability of this scheme, the engineer points attention to the fact that the system projected already exists in several American cities, such as New York, Philadelphia, and Baltimore, where it is found to be not only practicable, but immensely useful.

THE ORIGIN OF THE INTERNATIONAL EXHIBITION.—Mr. S. C. Hall, the editor of the *Art-Journal*, has thought it due to himself, without disparagement to any one else, to give, in his excellent journal, an account of his endeavours, since 1844, to "originate" a movement in favour of "An Exposition of British Industrial Art," which endeavours he regards as the primitive basis on which Prince Albert's grand idea of *An International Exhibition* may be said to have stood. "It will be observed," says Mr. Hall, "that I never at any time contemplated an International Exhibition: this plan originated in the large mind and enlightened policy of his Royal Highness Prince Albert; but I humbly think it will be seen that, as between some who have been named and me, there is no question as to who was the 'originator' of a Great Exhibition of Industrial Art in the British metropolis. There can be little doubt, however, that the idea must have occurred to many others: the example of France was sure, sooner or later, to be imitated in this country; and year after year brought us nearer to a position in which competition, being no longer dangerous, was not to be avoided."

ALPINE BLASTING.—Galignani reports a gigantic engineering operation near Welschmetz, in the Italian Tyrol. Stone being required for the construction of viaducts and bridges for a railway, it was resolved to use a rock 350 feet high and 85 wide, which rose like a wall. In two places only it was connected with the chain of Alps. First of all, it was entirely separated from the mountain, an operation which occupied 800 workmen for some time: seven or eight large openings were then effected at the base, so that the mass was supported on columns, and then trains of gunpowder were placed in each opening. Fire was set to the train, and in 11 minutes the mass came down with a frightful explosion. The fall shook the earth for a distance of nearly 2 leagues, and the pieces of rock spread over nearly 10 acres.

NEW WESTMINSTER BRIDGE.—Westminster-bridge, you say, is going to be rebuilt, and the Commissioners seem to think the bed of the river will play them tricks again. Why don't they be independent, and span the river with a single arch? I do not see any difficulty after the Thames Tunnel and the Tubular-bridge. At any rate throw out the suggestion, and some adventurous engineer will be found to make such a working plan before Christmas arrives.—ADVANCE.

ANSWER TO G. E. G.'s QUESTION.—The following is the solution of the algebraical question of G. E. G.:— $6 \times (a^6 + 4a^2 - 3a^4 - 16a^2 + 11a^2 + 12a^2 - 9)$ divided by $6a^2 + 20a^4 - 12a^2 - 48a^2 + 22a + 12$, gives a remainder $4a^5 - 6a^4 - 48a^2 + 44a^2 + 60a - 54$. Call these expressions P, Q, and R respectively. Then $2Q$ divided by $3R$, gives remainder $58a^4 + 120a^3 - 228a^2 - 136a + 186$. Call this S. Then $29 \times 3R$, divided by S, gives remainder, $410a^4 + 672a^3 - 1968a^2 + 160a + 696$. Call this V. Then $55 \times \frac{1}{2}S$, divided by $29 \times \frac{1}{2}V$, gives remainder $864a^3 + 864a^2 - 864 \times 5a + 864 \times 3$, which being divided by 864, gives $a^3 + a^2 - 5a + 3$ as the "greatest common measure" of the quantities P and Q. The letters P, Q, &c., have only been used in the above in order to save space, and would not be used in working out the question, which is done by the ordinary rule for finding the greatest common measure, which has been followed in the above, the multipliers being introduced in order to make the work easier, and to save the introduction of fractions.—E. W.

SURVEY OF CHRISTCHURCH, BLACK-FRIARS.—At a meeting of the Board of Guardians of St. Saviour's Union, specially convened, held on the 10th, to receive tenders for the survey of the above parish, Mr. Paine's tender was accepted. The parish contains 1,500 houses, and the survey is to be completed within two months.

TENDERS FOR IRONWORK.—Tenders were sent the other day for fifty lamp-posts required by the trustees for improving the hamlet of Mile End. The price named by one leading firm was 14*l*. 12s. 6d. per ton, including the wrought-iron work, equal to 2*l*. 11s. 2d. per post. The tender accepted was 6*l*. 12s. 6d., equal to 1*l*. 3s. 2d. per post. There were seven parties: the other figures I do not know. I have had prices from three firms in different parts of the country: one quoted 2*l*. 15s., and another 2*l*. 18s. 6d. per post, weighing $\frac{3}{4}$ cwt.; the first equal to 15*l*. 14s. per ton, and the other 16*l*. 14s. 3d. per ton. A strange system this.—A. B.

ARCHITECTURAL PUBLICATION SOCIETY'S CYCLOPEDIA.—The importance of rendering "The Cyclopaedia of Architecture," now in course of preparation by this Society, as perfect as possible, must be sufficiently evident to make apology unnecessary for requesting a short space in the columns of *THE BUILDER* for the following suggestion: viz., to affix the correct pronunciation to every term in italics, in the same way as Walker has done in his edition of Johnson's Dictionary, with references, giving the sound of the vowels. It appears to the writer that the value of the work would be by this means materially increased to the young student.—A SUBSCRIBER.

ROYAL ACADEMY ARCHITECTURAL MEDALS.—The Royal Academy gold medal for the best design for a marine palace, was awarded on Thursday evening last to Mr. J. Robinson. For drawings of the tower of Bow Church, the first silver medal was given to Mr. J. T. Christopher; the second silver medal to Mr. Rowley; and the third silver medal to Mr. H. Snell. We congratulate these three gentlemen upon not having broken their necks. It seemed almost too bad to make them risk their lives in measuring the grass-hopper on the lofty steeple of Bow.

THE KOH-I-NOOR.—Messrs. Hart and Sons are fitting a capital model of this great diamond, filled up exactly like the original, which, whether impostor or not, certainly had more eyes upon it than any other single object in the Great Exhibition. The model is a nice present in memoriam.

BELFAST WORKING CLASS ASSOCIATION.—A lecture on "The Connection between Religion and Industry," in aid of the library fund of the Working Class Association of Belfast, was recently delivered in the Music Hall by the Rev. Dr. Henry, President of the Queen's College, Belfast. The Bishop of Down took the chair, and spoke on the importance and utility of associations such as the one whose interests they had met to promote.

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The Builder.

No. CCCCLXIII.

SATURDAY, DECEMBER 20, 1851.

A MILLION of people, on a moderate calculation, derive the basis and medium of most of their fluid sustenance and culinary processes—their *pabulum vite*—water, from the Thames, into which the whole of the sluggish and imperfect drainage and corruption of the metropolis is disembogued. Two millions of people, at the lowest calculation, breathe continually the air of streets and houses, the whole substratum of which is saturated with the abomination of cesspools and stagnant sewers, whose steaming vapours and gases are continually impregnating the air so breathed. These are facts no less horrible and astounding, than disgraceful to the boasted refinement, energy, and wealth of the metropolis of the British empire. True, the exertions of some are never-ceasing; but if the senses of the mass of the community were not blunted by habit, so as to be utterly unconscious of the evils, in the midst of which they vegetate, or stagnate rather, it could never have remained for any, in the latter half of the nineteenth century, to taunt them with the existence or the endurance of such evils. It is full time that the matter should be taken properly in hand, and that, by one spirited and comprehensive effort, all traces of uncleanness should be swept away. The most serious complaints are indeed continually made to those whose duty it has hitherto been to remove the source of mischief, but whose practice has been, perhaps unavoidably, merely to dally with it, stir it up, and intensify our consciousness of it. Even palliation is put off by the perpetual assurance that “there can be no relief previous to the execution of the comprehensive drainage plan, which is in contemplation.” What we now want is immediate action, not mere dallying “contemplation.” Something *must* be done. The Thames must be purified, and the air must be made wholesome.

If we may judge from the proceedings at recent meetings, the Commissioners of Sewers have no intention of attempting this, at all events at present. They are reducing the establishment and appear to be setting their house in order for quietly carrying on the present business;—even countermarching some of the isolated works which had been ordered, amounting in cost to 41,000*l*. It was on the 10th instant that Mr. Lawes, the chairman, brought forward the scheme for the reduction of the establishment, and which the Court at once unanimously adopted.

It will be observed, by the way, that under the present arrangements, nothing is brought forward before the Court for discussion: this we suppose passes elsewhere: it simply comes there for formal acceptance.*

* One exception occurred on the 17th inst., when the motion, “that the services of Mr. John Phillips, as surveyor, be discontinued,” was carried by one only. Remembering the good service performed by Mr. Phillips at an earlier period, the public will probably ask the reason for his dismissal. We were glad to observe that Mr. Allison, who was a member of the old Westminster Commission, moved a proposition to retain Mr. Phillips.

On the occasion to which we have alluded, Mr. Lawes stated that the opinion both in Parliament and out of doors being, that the expenditure was greater than the necessities of the case, or the amount of works executed, would justify, he had obtained returns of the charges at different periods. He found that on the 30th of November, 1847, the establishment charges amounted to 12,838*l*. 5*s*. 9*d*. On the 5th of January, 1849, they amounted to 16,778*l*. On the 8th of October, 1849, they had increased to 22,820*l*.; and on the 1st of August, 1851, the same charges amounted to 24,753*l*. 15*s*. 8*d*. Upon a reference to the amount of public works executed during the several years to which that return related, he found that in 1847 they amounted to 70,630*l*. 4*s*. 7*d*.; in 1848, to 79,665*l*. 9*s*. 7*d*., of which sum 32,172*l*. 19*s*. 5*d*. was in respect of works executed or put in hand prior to November, 1847; in 1849, the works executed amounted to 50,309*l*. 4*s*. 1*d*.; and in 1850, to 57,655*l*. 6*s*. 4*d*. It would then at once be seen by comparing those sums with the amounts expended in establishment charges that they bore a very large proportion indeed to the extent of public works executed by the commission. By the scheme submitted he showed that, including some reductions lately made, a gross annual saving of 9,027*l*. would be effected in the establishment charges, now estimated at 29,064*l*.

Founded on the pressing want, a Company to drain London has been set on foot, and the necessary steps have been taken preparatory to applying to Parliament for the purpose of securing an Act of Incorporation during the forthcoming session. The Bill, it appears, has been submitted to the Government, with the view to obtain their sanction to the introduction of a clause which will, in consideration of the public benefits to be attained, guarantee a minimum rate of 3 per cent. interest to the shareholders in the enterprise. The estimates, however, give assurance, it is said, that the works may be constructed without subjecting the ratepayers to any charge whatever.

The plan (not a new one) of this company is described as consisting of—

“A tunnel-sewer on each side of the Thames, crossing under the present sewers without disturbing them, and receiving the contents of each through a shaft. These two tunnel-sewers will be constructed by tunnelling or boring, and will be laid with such an additional fall, or inclination, as will secure a rapid subterranean current towards the marshes east of the metropolis, where the refuse-matter will be raised by mechanical means, for agricultural purposes. The company’s works will afford means for effectually draining the lowest parts of the metropolis: an important sanitary improvement will be conferred, by the proposed removal of the refuse which now vitiates the atmosphere: the Thames water, which is used by a million of the inhabitants, will be preserved from pollution; and a *guano field*, of vast extent, will be collected for the use of our agriculturists.”

They naturally quote the declaration of a Select Committee of the House of Commons, on July 13, 1846:—“That it is only through the agency of a company,” that the various plans proposed to them “may be all combined and applied to the important purposes of cleansing our towns, purifying our rivers, and enriching our soil.” “Commercial enterprise,” says Mr. Morewood, the projector of this company, in a communication to us on the subject, “can point to works which it has devised, successfully carried, and managed, although involving an expenditure of several hundred

millions sterling. It has accomplished works previously esteemed impossible. We can also organise an Exhibition, passing like a meteor along the horizon. * * * Fifty-six years ago it was felt that a dock was wanted for ships. The subject was fully laid before a general meeting, and in December, 1795, the project proposed was unanimously approved of, and a subscription of 800,000*l*. was filled in a few hours for carrying the same into effect. In 1851, redundant capital is seeking employment in every part of the globe. Who then, will now join in the honour of prosecuting and securing to the metropolis a work, which in its beneficial results will not stand second to any other work which man has accomplished?” There are few things that commercial enterprise cannot accomplish, but to enlist it there must of course be a reasonable prospect of gain. We have always viewed favourably the endeavours made to apply the produce of the sewers to agricultural purposes; and are most anxious to see brought into practice what ought to be so profitable. Certainty, however, on this head has not increased; the difficulty of application has not lessened; and whether the prospect of remuneration which the scheme affords be sufficient to bring in the capital required to effect the complete and perfect drainage of London remains to be seen. If it were otherwise, however, we are not anxious to confide this important matter to a commercial company. The first and paramount object is the effectual drainage of the metropolis, not to make money by it, and this must be done by the public, irrespective of cost and returns.

Mr. Lewis Gordon, the engineer, has recently published a description of Captain Vetch’s plan for the sewerage of the metropolis,* by which it was proposed, it will be remembered, as in some other plans, to gather up the sewage on each side of the Thames, to establish settling tanks near Plaistow Level, and at Deptford, and to take the overflow into the river at a short distance west of Barking Creek. “There is no room,” says Captain Vetch, “for half measures: it is in vain to hope that the sewerage of the town can be materially improved until the river is freed from the pollution at present discharged into it.” We may mention that the Captain’s views on Water Supply are added: the two subjects are intimately connected, and ought always to be considered together.

At Croydon, last week, new combined works of water supply and drainage were opened. The supply of water is derived directly from a spring, which has been found adequate for the supply of the whole town, with only the intervention of a covered reservoir 75 feet in diameter, to adjust the twenty-four hours’ flow of the spring to the twelve or fourteen hours’ consumption, this arrangement obviating the exposure of the water to pollution, and its deterioration from stagnation. The works, we understand, were designed by Mr. W. Ranger, and are especially noticeable as the first constructed under the Public Health Act. At a meeting there on the occasion, it was stated that—

The expense of the water supply in the metropolis, taking as examples three average London parishes supplied by trading companies, was 3*l*. per annum per house, one with another, or about 1*s*. 2½*d*. per week, for an intermittent supply, besides the expense and

* “A short Description of the Plans of Captain Vetch for the Sewerage of the Metropolis.” London: Wylie, 1851. Various maps accompany it.

the pollution of the water occasioned by the use of cisterns; whereas at Croydon, under the Public Health Act, the expense of a constant supply of water, entirely free from animal impurities, and free from the soot and dirt of cisterns, well aerated and fitted for immediate use at the table, would be at an average rate of only 12s. a house per annum, or less than 3d. per week per house, while no cisterns or expensive works of the kind would be required in any of the houses. This calculation was made for works which had been laid out for the progressive increase of the town, and for double the present population, and then the cost would be reduced to an expense of 13d. per house per week; and this constant and unlimited supply of pure spring water could be given to the poorest houses in the place at the rate of 1d. a week per house.

With respect to drainage, too, a great saving is to be effected, and we may have an opportunity to look more carefully into the arrangements.

Returning to London, we re-urge the crying necessity of freeing the river from pollution, and providing perfect drainage for the town. Half-measures will not do: we must have the most perfect plan that can be obtained. "Lords and Commons of England," we say with Milton, "consider what nation whereof it is ye are, and whereof ye are the governors; a nation not slow nor dull, but of a quick, ingenious, and piercing spirit; acute to invent, subtle and sinewy to discourse, not beneath the reach of any point the highest that human capacity can soar to."

ON SOUND CONSTRUCTION IN REFERENCE TO THE BUILDING ACT.

Your observations upon the materials and workmanship employed in speculative buildings, and the illustrations which they derive from the accidents that are sometimes occurring, will, I trust, command serious attention. They are pregnant with instruction, and convey lessons for precaution, which it behoves us all to ponder well and in time.

Never were tact, firmness, and good sense more necessary in the district surveyor; for there are four great causes which tend to deprive him of the moral support and influence which ought to be conceded to him as a public officer, whose duty it is to protect the lives and property of the public. First, there is the anomalous position of the Metropolitan Buildings-office; secondly, the weakly-advised court of appeal—her Majesty's Commissioners of Works and Buildings; thirdly, the tendency of the first Commissioner of Works and Buildings to allow his judgment, in framing the various bills, to be swayed and controlled by that very body, and especially the speculative builders, whose misdoings or want of judgment it is the one great purpose of the Building Act to counteract,—they have such an interest in rendering the Act as inoperative as possible, that it is of course their object to neutralise its requirements, and leave themselves free to go a-head unheeded and unrestrained; fourthly, the strange assumption of most of the magistrates to ignore their purely ministerial administrative character, and to rehear *de novo*, and rejudge cases already heard and already judged by a more competent authority, and whose decision it is their proper duty merely to grant the powers to carry into effect.

Nothing can be more irksome to the district surveyor than to have perpetual squabbles with the builders, and nothing is more inimical to his own interest than to impede the progress of building operations. If, then, the district surveyor considers himself compelled to take steps against a builder, it may be generally assumed, for I do not argue upon exceptional cases, that it is from a sense of duty; for he derives no remuneration for the additional trouble, and exposes himself to a great deal of vexatious opposition and loss of time.

But their duties would be materially lightened if one class of trade, which would be materially benefited, I mean smiths and founders, would turn their attention to the matter, and second the primary intention of the legislature in carrying out the building regulations. I allude to the more general introduction of iron, even as an economical material in various departments of construction. In the first place, I do not see why cast iron cornices for houses and shop fronts should not be introduced. At Paris, many entablatures to some of the most elegant "magazines" are of this material, and present a great variety of design. And no greater monotony need result than is now perceptible in our shop frontispieces, most of which are more or less repetitions of one another. Again, why may not balconies, conservatory inclosures, and verandahs and outside blinds be of metal instead of wood, so inflammable a matter? I seek, as much as possible, to induce builders in my district to adopt iron trimmers to the fire-places, consisting of inch or inch and a quarter square or circular iron bar: the economy of expense both as to labour and material is remarkable; and there is this further advantage, that it prevents the constant recurrence of the question of the insertion of trimmers into or near the flues.

Again, I do not see why every external window and door-opening should not be required to have a cambered bar as well as the chimney-openings; for more frequently the weight is enormous which comes directly over the window-arches, particularly that now-a-days no attention is paid to make "voids over voids, solids under solids," and immense solidity would be added to external walls, if bars, say 2 or 3 inches wide and 3-8ths thick for ordinary houses, were introduced the whole length of the fronts, bedded in cement immediately over the openings, and relieving the arches from considerable strains.

Nor do I think that the Legislature would err, if it required, in the height of each story, two tiers of hoop iron bond, laid in one course with fresh cement and sand in equal quantities, and each tier consisting of at least two lengths of hoop iron not less than an inch and a half wide and 1-16th thick, a precaution the more necessary since wood bond has been so properly precluded from party-walls.

I am not sure that it would not be wise in the Legislature, as a sanitary precaution in order to keep out damp, to require that none but sound stock bricks be used in all external walls; and, as a constructive precaution, that none but stock bricks be used in the brickwork of the lowermost story and in the chimney-breasts and widths of the flues; allowing not more than one-third place-bricks to be used in the rest of the party-walls. The remission of the duties on bricks would justify such a requirement on the part of the Legislature.

I shall not allude to other expedients adopted usually by experienced architects and surveyors in the erection of buildings, and which might not be absolutely requisite in ordinary cases, and frequently vexatious. If it were thought necessary to contemplate all possible casualties by direct enactment, or to leave it to the responsibility of the district surveyor to require such and such increase of strength and addition of material, as he might think expedient, I fear the public would have to incur an enormous expense, as distributed over all the districts, more than equivalent (and I trust I may say it without being deemed as irreverently regardless of human life) for the comparatively few casualties which occur in the metropolis, and which do not exceed one per fifty thousand per annum, and most of which are caused by the negligence of the workmen themselves, more than through any defect of construction.

T. L. DONALDSON.

SOCIETY OF ARTS.—On Wednesday evening, 17th inst., Mr. Jacob Bell, M.P., delivered the third of the series of Exhibition lectures at the Adelphi. The subject was "Chemical and Pharmaceutical Products."

NOTES ON A FEW IMPORTANT QUESTIONS IN ARCHITECTURAL PRACTICE.*

INSTEAD of writing a paper upon any one particular subject relating to the profession, I have put together briefly my notions upon several. The subjects that I touch upon are these:—"The Nomenclature of what is termed Gothic Architecture;" "Copyism and Style;" "Ancient Lettering;" "Church Woodwork;" "Materials for External Work;" "Restorations;" and "Monuments."

I wish this paper to be viewed in the same way as we look over a sketch book, where we expect and indeed hope to find something fresh, though little elaborated, in every page we turn to. To begin, then, with

The Classification of what is termed Gothic Architecture.—It is any thing but satisfactory to find the buildings of this country continually being re-classified by our professors and amateurs: we have, amongst the numerous terms at present in use—Medieval, Gothic Church, Spiritual, Pointed, Christian, Middle Age, Ecclesiastical, and Romantic architecture; these meaning one and the same thing, being divided into styles, periods, or ages (all in a state of progress or transition), and up to this time called by at least 150 different names: so many, in fact, are the terms now in use that it is quite an exertion even for an architect to become acquainted with them. Notwithstanding all this, there does not seem to be any very great difficulty in describing a building to any one in the profession. Who, however, has not been sorely vexed while endeavouring to do so to one not acquainted with our changeable nomenclature? To talk to the public about a church being "Perpendicular," "Early Complete Gothic," or "Debased," is of little use: they naturally expect to understand us at once, and without the least explanation. If we speak of Grecian, Roman, Egyptian, or Chinese architecture, people know what we mean; but so long as we talk about "English Perpendicular," "Decorated Scotch," or "Irish Early English," they will not and cannot comprehend us. Why not, then, call our own architecture simply "English?" Every one will understand the meaning of "English architecture of the thirteenth century," also fourteenth or fifteenth century, Irish, Scotch, French, German, or Spanish: we shall thus get over all difficulties as to the transitional state of our buildings, and shall do away with the numerous styles, periods, and orders that have puzzled the learned and unlearned for so many years.

By so speaking about buildings, we not only give ourselves less trouble, but we are able to converse upon architectural subjects with the most uneducated without having to enter into long explanations as to the meaning of "Early Middle Pointed," or "Complete and After Gothic."

My second note relates to—

"Copyism and Style."—Those who come under the denomination of Gothic, or as we will now call them, English architects, abuse the classic ones for copying the temples of Greece and Rome: the classic gentlemen tell us that their opponents copy the churches of the thirteenth and fourteenth centuries: others abuse both, and while denouncing copyism altogether, tell us to follow the laws of nature and Venetian architecture. Now, Venetian palaces are much better in Venice than in Pall-mall. Grecian buildings, fine as they are in Greece, are not suitable for London. Italian ones should remain in Italy; and, certainly, Chinese houses, whatever merit they possess, had better keep to China, and China only. But although we should not copy the buildings of other nations, let us study them well; learning elegance from one—beauty, magnificence, and grandeur from others. Our own structures, however, must be really and truly English,—not that I wish old churches copied in the present day, or desire cusped windows, with quarried glass, in our offices or bedrooms; but improvements upon the old buildings, with our latest inventions introduced, the whole carried out in the spirit of the old architects, who, if they had lived till now, would have

* A Paper read at the ordinary meeting of the Architectural Association, on Friday, Dec. 12.

led us on in style instead of the other way, and would soon have shown us what to do with ventilators, plate glass, water pipes, stoves, and such things, rather than have concealed them, as is generally attempted to be done in the present day. Not only should we abstain from copying buildings, but also materials: thus, wood and cement should never look like stone or marble: chimneys sh^d. not be disguised as urns, or library doors be like rows of books: and in using iron-work, attempts should not be made to treat it as stone, which owes its effect to light and shade; for ironwork, properly arranged, trusts to its *form only*: anything, therefore, executed in this material is always perfect of itself, that is, it never requires any particular light or sunshine to show off its beauties: when seen at all, it is always to advantage. Mouldings, which have done so much for the architecture of all ages, are scarcely required in our use of iron, on account of the latter being so perfectly independent of that for which mouldings are used in other materials: they are only admissible when we require them for their *form*. A very great deal will doubtless be done in metal work before long, and if properly treated, a new and decided character will be given by it to the style of buildings erected during the latter half of the nineteenth century.

Ancient Lettering.—The bright, the elegant old letters of the twelfth and thirteenth centuries, illuminated with gold and colour, and as beautiful in execution as design, must be admired by all who search under whitewash and into the manuscripts of past ages. Is it, however, right, that in our love for them we should introduce their forms unaltered into the buildings of the nineteenth century? No; for when we come to think of it, it is truly ridiculous to put up prayers and texts in modern churches which can only be understood by a few architects and antiquaries. Surely these good people are not the *only* ones intended to have the benefit of what is written there: every one who can read at all ought to be able to decipher each word that appears on the walls of our places of worship: the more unlearned the man, the clearer the writing should be; for these sentences and commandments are not for the decoration of the church, or for the few to show how clever they are at being able to make them out, but that all, even the youngest and dumbest, may read and learn. Let, then, our writing be legible, but no one need fancy that he can spend too much taste or thought in ornamenting it either as to form or colour.

Church Woodwork.—Theatres are erected in such a way that the greatest number of persons may be accommodated therein with convenience, and that all may see and hear well: people are not placed in the lobbies or anywhere else where they cannot see the performance; neither is a gallery, nor even a single seat, erected to interfere in the least with the design or convenience of the building: as to the general effect, the design of a theatre is never considered complete until its numerous stalls and boxes are filled with human beings. If then we take so much care with our theatres, should we not have much more anxiety in the arrangement of churches? They should have proper sittings: every one should see and hear, and no one be placed in a gallery or in any other uncomfortable or conspicuous position, to the annoyance of himself and disfigurement of the building: all the sittings should be on the floor, and all face the east: they should have low backs and no doors: the ends of the sittings should be like the ends of benches, and not like pew-ends without doors. It is useless to talk either of moveable seats or no seats at all: we require them fixed, and not too near to each other. Most of the churches erected within the last few years have their sittings arranged most uncomfortably: they have been placed as closely together as possible, and in every little nook and corner, because the greater the number of seats provided the larger is the grant of money received from the Church Commissioners.

"Poppyheads" are not, I think, advisable: a few in an old or small building always look well; but hundreds of them in long rows are

bad, and people will hang their hats on them. The backs of seats are for people to lean against,—sharp mouldings should, therefore, not run along the tops of them.

As to the woodwork generally, if we are content to use deal, we should not be ashamed to own it: to stain or paint in imitation of oak, or any other wood, is, I think, wrong: we should either leave it in its natural state, varnish, or else paint the work of plain tints, using stripes, diapers, or running patterns if we please, but *without shading or graining* of any description. While thus paint improves an inferior material, people are not deceived; for they know that if the work were of walnut, rose, ebony, or of any other superior sort, we should not think of colouring it at all. Paint, then, in this way hides the wood, but does not disguise it.

Materials for External Work.—In taking a house that has been inhabited for some time, the first thing we do to make it cheerful and pleasant is to have the whole interior fresh papered, painted, and whitewashed: we wish to make it look as brilliant as possible; and in a few years, when all begins to look dingy, the same operation is performed, and the house is again decent. But as to exteriors, the matter is not so easy: houses are built of brick in London, and from their completion they get darker and darker every day of their existence: the reveals of windows and a few details get a coat of paint now and then, thereby making the brickwork all the worse. The consequence is, that London looks dreary and dismal wherever we go. Who ever enjoys a walk up Baker, Harley, or Gower streets?—No one. And no one can, so long as they remain in their present state. We must first make them look light and clean, and people will then seek after rather than avoid them. The buildings of large towns should be erected in such a way as never to look any the worse *except through actual wear*: they should *always* be clean and bright: smoke, mud, sunshine, and frost should have no effect upon them: they should be the same in fifty years as when just completed. To accomplish this, we must do away with our present bricks and stone for external work, and use glazed bricks, glazed tiles, porcelain, glass, and any other material that will preserve its colour, durability, and form. At present, if our buildings are of brick, stone, granite, or marble, in a short time they are all alike, quite black, the carvings and mouldings being lost in soot. As to the brick ones, the only way to improve them is to cover them with cement (as cement, and not jointed and worked in imitation of stone): we thereby strengthen the old walls and make the houses warmer: all our decorations become visible, and every now and then a coat of colour makes a place as bright as ever. If all our old houses were covered with cement, and if all the people in a row were obliged to colour them down of the same tints, and at the same time, every two or three years, we should no longer have London as dismal as at present: the streets would appear wider, less foggy, and very much warmer. These remarks apply to all our old brick buildings; but new ones, whether public or private, should be, as I said before, of materials that do not change their colour, durability, or form, and are never the worse, except through actual wear.

Restorations.—In restoring a building we should never try to make it look like a new one, or indeed to make any old portion of it appear new. Whether much or little be done it should correspond with the old work, so that at the completion of the job no one, upon seeing the place, might notice that workmen had been there at all. If, however, a tower or aisle has to be added to a church where no such thing existed before, I do not mean that it should be actually made to look like old work, but agreeing with the building as to character and proportion, it should still have every appearance of a 19th century addition. In alterations to late work how ridiculous it is to make them of an earlier period; yet many do this on account of their partiality to some particular date. Suppose the choir of St. Paul's had to be rebuilt, how would it look with even the beautiful apse of Westminster

Abbey or Cologne Cathedral? It is difficult, however, to lay down rules for restoring our buildings, for what will suit one will not suit another: the chief thing to remember is to take care of and to preserve everything of interest that we find: walls, windows, roofs, all must be made as secure as possible, but the less we alter or rebuild the better. The charm about a cathedral or old village church is often quite lost on account of the restorer doing too much, and trying to make the place new and uniform. It is far better to do *too little*, for when once a building is robbed of its individuality it no longer delights and instructs those who gain so much from the old buildings of this country.

My last note consists of a few remarks upon

Monuments.—The cross, the emblem of our faith, is the most appropriate and beautiful form by which to mark the last resting place of a departed friend. It should be substantial, to endure for ages: if of stone, it is better merely to pierce the cross, instead of elaborately carving upon the surface: the lettering deeply cut to be perpendicular, and never in a horizontal position. Crosses may also be of metal or earthenware, and a simple oak one put together by a village carpenter may last for ages. Formerly, people were buried in churches, but instead of having monuments to obstruct the passages, engraved brasses were used by being let into slabs level with the pavement: these, however, are not now required, as burials no longer take place within our sacred walls. When monuments are erected in public places to commemorate the good deeds of statesmen or heroes, the custom has been for a long time to put up columns with or without statues above them. Nothing can be in worse taste, for a column is merely a portion of a building, it is not complete either of itself or with a figure on its summit: we may just as well erect a tall factory chimney, or a great breast-summer to the memory of a noble duke or country squire, as works similar to those in Waterloo-place and Trafalgar-square.

Like an Eleanor cross, a monument should be of itself perfect: not as though a dozen would form a good portico, but as a monument and nothing else. When placed in a church it should not appear hanging against a wall as though it would slip off, but either be placed in a recess, or else carried down to the ground. A monument may also be in the shape of a new window, font, or screen: the inscription in either case records the name: the building gains in beauty.

In these few and brief notes I have perhaps shown that my views upon several points are not in accordance with those generally adopted. I have brought them, however, together, because it is only by learning and discussing opinions that we think and decide for ourselves. And as we do carefully settle our ideas upon such subjects, let them also be visible in our works; at the same time we must take especial care of how we think, and what we do, in the first few years of practice. We must spare no pains or trouble so to carry out our early works, that when we look back in after life, whether from the top or bottom of the tree, we may do so not with shame and regret at our infantine attempts, but rather with pride and satisfaction upon our first efforts to spring forward in the light of true architecture.

GEORGE TRUEFIT.

STRIKE ON THE GREAT NORTHERN.—At Grantham, the navvies, between 500 and 700, have struck work, in consequence, as they allege, of breach of faith on the part of their employers, and foul language on the part of one of their gangers. They demand a return to the daily rate of 2s. 6d. wages, which they appear to have been promised for the winter, on condition that they remained during last harvest, which they did, while others then quitted their employment. The men acted ultimately very peaceably, it is said, but the first malcontents appeared to have compelled others to quit work at the beginning of the strike.

THE EGYPTIAN OBELISK, USUALLY CALLED "CLEOPATRA'S NEEDLE."

WHEN ancient Rome was at the height of its power, it commenced plundering all the nations of the then civilized world. Long before the era of Augustus, the aristocracy of the Imperial and Eternal City had appropriated to themselves all that was valuable in Italy, Sicily, Africa, Greece. Whatever they could carry away they took: where this could not be accomplished, fire and demolition came to their aid. They were men of the sword, rapacious, unprincipled; elevated above all ordinary feelings and amiable weaknesses of human nature. Their desire to possess the noble monuments of Grecian art was not the result of any inherent taste or tone of art, but simply of a rapacious nature, desirous of becoming masters by violence, by the sword, of objects whose value they knew by their price in the money-market of the world. Should any of your readers doubt this, I beg to refer them to Cicero's Letters, in which they will find the character of the Roman aristocracy drawn unwittingly by a master hand.

This policy, as it was called, of enriching Rome, then cosmopolitan, at the expense of other nations, was continued by Augustus and his successors. Regardless of the heterogeneity of objects—beautiful and sublime when permitted to remain on the soil which gave them, if I may so say, birth, or, at least, existence—the arch-hypocrite continued to embellish Rome at the expense of the world.

Amongst other objects of plunder which he transferred to Italy and to Rome, was an Egyptian obelisk. It is now in Rome, with some others, the result of the continued plunder of Egypt, reduced to a province. Not having seen the Roman (!) obelisk, I cannot, of course, venture to speak of the figure it makes amidst the monuments of Grecian and Italian architecture,—of Greco-Italian, and of the architecture, partly Saracenic, partly Gothic, florid and simple, chaste and superfluously gaudy, which the various races, conquerors of Italy, bequeathed to the still conquered and depressed race of that unhappy country. How these spoils transferred to Rome look, amidst the heterogeneous architectural mass,—I pretend not to conjecture; but I have seen, the obelisk lately transported from Egypt to France, and now standing erect in Paris,—Paris, the capital of La Belle France,—the centre of taste and fashion,—the star of the civilized world;—and with your permission, I shall offer a few remarks respecting it, the Parisian obelisk, applicable, I think, to the proposal now on foot to erect somewhere in London an Egyptian obelisk.

When it was resolved in France that an obelisk, presented to the nation by one of the blood-thirsty savage rulers of Egypt, should be transported to France, and, of course, to Paris, which is France, men of taste, and they abound in France, were at first puzzled where to place it. It was in their estimation easy enough to transport it to Paris: there is abundance of mechanical ability in the world; but this was not the difficulty with this artistic race,—it was the question of position. After much consideration, and the drawing of numerous plans, sketches, and views, they decided on erecting it on perhaps the least objectionable locale which Paris afforded, on ground beautifully disposed, at a sufficient distance from other buildings which might, by their size or character, overshadow the gracefully tapering and elegant form of the obelisk, or mar and render ludicrous its antique classic and oriental character when contrasted with the gaudy, flaring, jaunty beauties of modern Paris. Still the result, admitted by the Parisians themselves, was not successful.

The impression made on my mind on a first and second view of the obelisk of Paris, I found to be in accordance with that of every man of taste I conversed with. Dislocated from the soil on which it was erected, from the glorious sunshine in which it basked on the Egyptian plain, from the shores of the Nile, from Thebes, from Gezeh and the Libyan Desert, it resembled the petrified mummy of a race no longer existing, of a genius which had passed

away—an emblem of another world. And so it is of an Eastern or African world,—that is, mind, with which neither Gaul nor Saxon have a spark of consanguinity: all is heterogeneous (I had almost said ludicrous), for from the sublime to the ridiculous there is but a step.

Around the obelisk flits the gay, busy, trifling mob of Paris. They look at it and wonder what it means. They have some recollections of Egypt, it is true, and that their great emperor was once there. That is all: the rest had better be forgotten. The *Grand Ouvrage sur l'Egypte* is a much nobler memento of their expedition. No military trophies (supposing them appropriate in this case), can be compared with this. The French expedition to Egypt produced the *grand ouvrage sur l'Egypte*, and nothing more: the English descent on the land of the Pharaohs led to the capture of the trilinguistic stone of Rosetta and the dislodgment of the French: that is all. Egypt remains precisely where it was,—barbarous, savage, uncivilized. Neither Roman, nor French, nor English interference has ameliorated her lot; a fact which historians will relate without the aid of any obelisks, however obtained.

Should any one ask me then why the French transported an Egyptian obelisk to Paris, I should feel at a loss to answer him, and I am sure that the Parisians themselves would be equally at a loss. It is no embellishment to their modern city, the representative of Celtic taste; its very form and meaning incomprehensible to the Celtic and European mind. It cannot be intended to mark by it that they were once in Egypt: history will secure this recollection, and also the fact that Menon surrendered the country, and with it the black stone of Rosetta, to an English force. Why, then, erect a pyramid or obelisk on the soil of France? If by doing so you think to immortalize the greatest of men who led you there, I beseech you, in the name of common sense, to give it up. The name of Napoleon will be fresh in the memories of men when your race and nation have vanished from the earth.

And now, having endeavoured at least to show the false step committed by the French people in erecting an obelisk in their capital, I am prepared to hear some one say, What would you propose doing with it? how would you dispose of it? These questions bear directly on the proposed removal of the Egyptian obelisk to London. Let me speak first of the Parisian one.

There can only be two modes proposed of disposing of the Parisian obelisk. The first is, to send it back to Egypt, and with a solemn request to the present cut-throat Government, that, in consideration that mankind has a history, that they are not mere beasts, and, above all, that in the history of Egypt is deeply involved the history of civilization and of the human race, the rulers of the valley of the Nile will at least protect those monuments they never did nor ever will comprehend.

The next best mode of disposing of the Parisian obelisk is, to transport it to the shores of the Mediterranean, and there, on the lonely sea-beach, apart from all other objects, raise up that obelisk as near as may be to the spot on which stood, prior to the embarkation for Egypt, the mighty Napoleon.

The Egyptian expedition was a comparatively profitable one to England, and therefore, and more especially since the French have got their obelisk, the English have resolved to have theirs. But, supposing the obelisk fairly transported to London, and safely deposited near Westminster or London-bridge, have you thought of where it is to be placed? Where will you erect this emblem of the Coptic mind? of the dreamy race who imagined and built Carnak, and the Pyramids, and the Memnonium? remains of a race to which you and your buildings—your big glass house, and your big nunnery at Westminster-bridge—your eternal common-place—your model houses and model churches are wholly antagonistic? Will you erect this mighty shadow of the remote past in Trafalgar-square?—or in the park?—or in the Tower?—or at Wapping Old Stairs? Or will you turn it to account, as is your nature, and set it somewhere where it may be

useful?—place a gaslamp on its summit, erase some of the hieroglyphics to make room for the letters V. and A., and the name of the then Lord Mayor? From what you have already done none of these steps would surprise me or any other person who had lived some time in London.

As with the Parisian obelisk, so it is with the one which England purposes bringing from Egypt. There are two ways of disposing of it: the first is, to leave it in Egypt, urging on the ruler of the country to respect the remains of antiquity: but should it be brought to England, avoid London, that heterogeneous mass of attempts at all the architecture of the earth: avoid placing this graceful and beautiful object in contact with a race who understand it not; to whom it is not merely foreign in the ordinary sense of the term, but wholly antagonistic to their mental characteristics. Do not allow men's ears to be afflicted with the painful question of the Saxon utilitarian, what is the use of it? how much did it cost?—it is not so high as St. Paul's, and nothing like the Duke of York's monument in thickness. Spare us these dreadful questions, which are sure to be asked daily by thousands of London's educated and polished people. This you may easily do. The obelisk can have with the British mind but one association—NELSON. Sweep from the beach of Southsea those dreadful-looking figures to which I alluded in my last letter to you,* and erect in their stead, close to the entrance of your great naval harbour, this obelisk, raised on a base or pedestal of Egyptian granite corresponding to that on which it once stood. Erect it, at least, in sight of that harbour from which sailed the armament on whose success depended your existence as a nation; and as near as may be to the spot where embarked the man on whom your fate depended. Be for once dignified. Forget the "Gallic cock;" consign him, with the "British grenadier," to the pot-house frequenters. Leave gasconading and bravadoes to your younger brethren, on the other side of the Atlantic: even they will become ashamed of this, with time. And should any one inquire of you what brings this obelisk here, standing alone upon this lonely beach, you may point to the letter N cut deeply on its granite basement.

R.

AMERICAN ART AND ARCHITECTURE.

The Astor Library.—We learn from the *New York Journal of Commerce*, that the building for the Astor Library is now being plastered, and will be ready for occupation in the course of next spring. Its dimensions are 65 feet front and 120 deep, and it covers the whole lot. It is 70 feet high, and is built of brick, with a basement faced with brown stone, and is without pretension in its architecture. The building is to cost, including the ground, 100,000 dollars, one-fourth of the sum applied by Mr. Astor to the whole object. The rear of the building is devoted to the purposes of a lecture-room, and its walls are lower than those of the main structure, so that light and air are admitted from the front and rear, and also from the top, into the library room, which constitutes nearly the whole of the interior of the main structure. The floor of this room is elevated about 20 feet from the ground, and is ascended by means of a wide stone staircase, which rises from the vestibule of the building, and terminates in the centre of the library. Having reached this point in the large room, one stands immediately under the dome, which lets down a flood of light on the main floor, and on the gallery situated midway between it and the roof. From the presence of frequent light columns reaching from the main floor to the dome, and supporting partially the gallery, it would seem that the shelves for books are to reach from these columns to the wall, at right angles to the wall, and thus form alcoves on each floor, opening towards the light and closed on three sides, in which a person consulting the books may ensconce himself. The feature about the building most to be commended, considering the uses to which it is to

* See p. 768, ante.

be applied, and the importance of preserving, the library for ever, is its construction in a mode to prevent injury to books, and to guard against fire. The walls of the building are hollow, which permits the plastering to be laid immediately on the bricks, instead of on laths, nailed to furring, according to the common practice.

State-house at Columbus.—We understand that the new State-house, now erecting at Columbus, Ohio, will be, when completed, a magnificent edifice, far surpassing any similar state public building in the country.

Public Parks.—The *Boston Evening Transcript* says:—“Why will not our cities, great and small, old and new, make timely and liberal provision for public parks, before land has become so high as to become unpurchasable for such objects? Shall the experience of ages—and the “precepts upon precepts” of physiologists and physicians have no effect? The County Medical Society of Philadelphia have lately had a meeting, at which they adopted strong resolutions on the subject.”

American Sculptors in Italy.—A correspondent of one of the American papers gives particulars of all the American artists in Italy. He says, “Powers’s studio is filled with the works of his mind, and is resorted to by all the American and many of the English tourists. His allegorical statue of California is a fine work of art. It is now nearly ready to be cut in marble. Greenough has nearly completed his great work for the capital. He is now on a tour through Switzerland, having left Florence some two months ago, to refresh himself after a hard year’s labour. Kellogg, the painter, has recently returned, after an absence of four years in the United States. He is now engaged in making some paintings descriptive of Oriental life. Among the attractions in Florence at this time, in the way of modern art, is the statue of “Ruth,” by Mr. Randolph Rogers, of New York. The hair falls in long natural masses over a neck and shoulders of exquisite form and delicacy. In one hand rests a few ears of wheat, and the other seems timidly arrested over the scattered stems, as if she hesitated in the continuance of her task before the great Boaz. One knee is still upon the ground, and the other slanted as if in the act of rising: a loose robe falls over the left shoulder, and the folds of a cincture cover the lower portion of the figure, leaving the outline distinctly developed. I understand that it has been purchased by Mr. Dudley Seldon, of New York. Mr. Hart, the Kentucky sculptor, is busily engaged upon a round of ideal studies. Kentucky may well be proud of the stone-mason, who, rising from his humble sphere by the unaided force of his talents, modelled the best bust that has ever been made of Kentucky’s greatest statesman. Mr. Galt, of Virginia, is engaged upon a bust of Psyche, which, I understand, has been ordered by the young men of his native town, in token of their high appreciation of his talents.”

Brick Machines.—Amongst the recent patents we find several for improvements in brick machines. J. Riddle, of Kentucky, says:—“The object of my improvement in the manufacture of brick by machinery, is to bring and maintain an equal pressure upon all parts of the brick when in the mould, and thus to avoid a disturbance of the substance of any part subsequent to pressure, and the consequent liability to crack and separate. Having thus fully described the nature and construction of my improvements in brick machines, what I claim therein as new, is the block or lip, substantially as described, hugging closely the mould wheel, immediately behind its point of contact with the pressure roller, in order to prevent any disturbance of the mass after having passed the point of contact.” Isaac Gregg, Pennsylvania, says:—“What I claim as my invention, is the placing the auxiliary pressure roller, or its equivalent, between the main roller and the knife, for the purpose of subjecting the surplus clay, after it is elevated above the tops of the moulds, to the action of pressure, before removing the same by the said knife, substantially as herein set forth. I also

claim the subjecting the upper surface of the clay in each mould to a rubbing pressure by means of a plate or its equivalent, placed above the tops of the moulds, in combination with some mechanical device for forcing up the moveable bottoms of the said moulds, whilst passing under the said plate, substantially in the manner and for the purpose herein set forth.”

Iron Tombs.—In the list of designs registered is one by H. K. Flinchbaugh, Pennsylvania, for a cast-iron “cemetery tomb,” ornamented as described.

Mortising Machine.—A very ingenious rotary mortising machine has been put in operation in Phila. It consists of a circular saw, so constructed as to make a perfectly true, square, and clean mortise of any dimensions, in either hard or soft wood, and completes the work in about the same time required to remove the chips of the ordinary machinery. The operation of the machine is effected by placing the board edgewise upon an iron bed, which is balanced above the saw by weights suspended on either side of the framework. The bed is moved downwards, and by this process the saw passes through an opening in the bed and is brought in contact with the wood, through which it cuts instantaneously.

Steam Stone-cutting.—Not long ago, Mr. Charles Wilson, of Springfield, Mass., invented a machine for dressing and rubbing stone, which has proved, in practical application, to be astonishingly effective. The dressing of stone by hand will soon in a great measure be done away with. The slow plodding of the mallet and chisel contrasts strongly indeed, with the rapid evolution of the steam cutter. At the foot of 28th-street, East River, New York city, the works of the Empire Stone Dressing Company are located. The establishment is conducted on a most extensive scale, occupying about five acres of ground, and employing a steam-engine of 100 horse power. Huge blocks of stone are lifted by beam from the vessel at the dock, and placed upon a railroad track extending to the main building, and conveyed by means of a truck to the remarkable machine. The adjustment of the cutters is but the work of an instant, and then, by the push of a lever, the stone chips begin to fly like shavings from a board. One of these machines can do more work in ten minutes than a man can do in a whole day by hand. Our mechanical readers can form an idea of the appearance of the steam stone-cutting machine when we tell them that it closely resembles Daniel’s board-planing machine, the cutters of which are placed at the extremity of horizontal arms, and with them revolve, cutting the wood as it passes slowly along below. The cutters of the stone machine consist of small thin steel wheels sharpened to an edge, so that, while passing over the stone, they revolve, but at the same time cut. It is in this peculiar formation of the cutters that the value of Wilson’s patent consists.

Ease for Man.—By the year two thousand, says an American paper, it is probable that manual labour will have utterly ceased under the sun, and the occupation of the adjective “hard-fisted” will have gone for ever. They have now, in New Hampshire, a potato-digging machine which, drawn by horses down the rows, digs the potatoes, separates them from the dirt, and loads them up into the cart, while the farmer walks alongside, whistling “Hail Columbia,” with his hands in his pockets.

Hotels.—New York probably is destined to become one vast assemblage of spacious hotels, with magnificent stores under them. The Cooper House, in front of Nible’s theatre, is drawing towards completion, and will be opened before May. This will be one of the largest houses of entertainment in the world. It will contain six hundred rooms, which is two hundred more than the Astor. The St. Nicholas, also, is assuming its beautiful marble front space, and will be ready for occupancy when the birds and merchants come back.—*Home Journal*, Nov. 22.

Art-Union of London in America.—The subscription-list to the London Art-Union, at

Boston, to the present time, numbers 189. The engraving for the present year, “An English Merry Making in the Olden Time,” may be obtained at once, both there and in England.

Tile Fronts to Houses.—Fronting houses with tiles has been introduced into Philadelphia. The tiles are four inches thick, cut into squares, and cemented together by the ordinary process. They are of white clay, with exceedingly close grain, are differently coloured, and hardened by the highest heat used in the manufacture of earthenware. The surface presents the smoothness of glass, and the colours are vivid.

RECOLLECTIONS OF VENICE.

HISTORY, poetry, and art, have given associations to Venice which cannon-balls cannot destroy. There seems every reason, however, to expect, that many of the material pegs on which they hang, remnants of ancient beauty touched but with gentle hands by Time, will yield to “villanous saltpetre,” arrangements having been made by the Austrians to effect their destruction on the first convenient opportunity. With increased gladness, therefore, we hail the progress of Mr. Ruskin’s Examples of its architecture, and earnestly hope that Mars may be kept down, and Apollo and the Muses remain in the ascendant, at all events long enough to enable him to complete his work.*

A first visit to Venice is, indeed, a delight. Every thing about it is novel to a foreigner, and full of fascination. What is that long, low wall, with openings in it to let the tide through? “This is the railroad bridge, conspicuous above all things. But at the end of these dismal arches there rises, out of the wide waters, a straggling line of low and confused brick buildings, which, but for the many towers which are mingled among them, might be the suburbs of an English manufacturing town. Four or five domes, pale, and apparently at a greater distance, rise over the centre of the line; and the object which first catches the eye is a sullen cloud of black smoke brooding over the northern half of it, and which issues from the belfry of a church. It is Venice.”

After traversing the railway bridge, nearly a mile and a-half in length, which stretches across the Lagoon, the first words which greet the ear on emerging from the station are, “Gondola, Signore?” and you, with your “impediments,” are waited to your hotel in this very un-English railway cab. But even in Venice the merely useful gradually drives out the ornamental, and the apparition of ugly, yellow, barge-looking craft, with “*Omnibus alla Strada Ferrata*” painted on them, gives a shock to one’s romance. On all sides one is reminded of what our own poets have said of the sea-girt city. Byron’s memory still haunts the spot his genius has immortalized. One sunny afternoon, a few weeks ago, the writer was taken across in a gondola to the Armenian Convent, whither Byron went to study the language. On asking the *père* who accompanied us over the establishment, if Byron’s name were still remembered there, he answered with energy, “Oh yes, and we are now about to print in English an Armenian work which he translated.” This convent contains at present about fifty persons, twenty *pères* and thirty scholars. Even going to and returning from the theatre at night in a gondola, as many of our readers will remember, has in it something romantic; leaving the brilliantly-lighted house and coming out immediately on to the dark water, with the strange outlines of the black gondolas dimly shown by the glare of a torch, or the glimmer of the rowers’ lanterns. The Fenice is a handsome house: the decorations are white and gold; but it was only half-full when we were there, and looked cold and deserted. Soldiers with fixed bayonets were stationed at intervals in the pit, and out of a group of fifteen persons near the centre entrance, seven or eight were in military costume.

We have no occasion to speak of the

* Examples of the Architecture of Venice, selected and drawn to Measurement from the Edifices. By John Ruskin. London: Smith and Elder; P. and D. Colnaghi. 1851. Parts I. II. and III.

Cathedral of S. Mark, with its profusion of marble columns, its bronzes, and its endless mosaics, covering the ceilings and walls of the interior, and the alcoves and gable exteriorly. Notice the statues before the high altar, four of which—the Evangelists—are by Sansovino. On the left, and opening into the sacristy, is his famous bronze door, on which, say they, he expended twenty years of life. You will notice it is divided into two panels, the subjects being the Death of Christ and the Resurrection: in the border are some exquisite busts, one of which—forming the handle to the door—is Sansovino's portrait. By accident, it bears, too, a strong resemblance to Byron. Many of the delights of Venice are not to be described: it should be seen to be appreciated. Who that has been there will not remember some half day spent leaning over the balcony, shaded from the sun, and in the soft, mild air—too warm to suggest the idea of taking cold, but sufficiently cool to be enjoyable,—and contemplating the waters of the *canal grande* sparkling in the sunshine, and incessantly stirred into motion by the silent oars of the dusky gondolas, bearing gaily-dressed pleasure-seekers, or busy lionizing English, *Murray* in hand? Immediately beneath stretches the broad quay, crowded with vendors of water, fruit, cigars, and cakes: eager pedestrians are hurrying to and fro; and lazy *gondolieri* are sleeping in the sunshine while waiting to be hired.

There are, it is true, many melancholy spots of desolation in Venice, and even on this same canal, only a hundred yards farther on, the eye rests with regret on once beautiful palaces now mouldering into ruin, their noble steps jarred and broken with the transit of coarse burdens, and their magnificent halls degraded into store-rooms for wood and coal. Nevertheless Venice is still lovely, even in desolation and decay, and fruitful in suggestions. As one says truly, "Her history is written upon her front, from the rude massy frowning architecture of barbarism and power, to modern elegance and imbecility."

The three parts already issued by Mr. Ruskin contain plates mostly of detached portions of buildings on a large scale. Some are given in mezzotint (which accurately conveys the peculiar style of drawing adopted by the author), and others in tinted lithography. Mr. Ruskin says, "In completing studies of this kind, it has always seemed to me, that the most expressive and truthful effects were to be obtained (at least when the subject presented little variation of distances), by bold Rembrandtism; that is to say, by the sacrifice of details in the shadowed parts, in order that greater depth of tone might be afforded to the lights." The result of this system is a strong resemblance in many of the plates to copies of daguerreotypes. Plate 2.—Arabian windows, in *Campo Santa Maria Mater Domini*, is a good example of this. A curious point is observable in this, and in nearly every group of windows in Venice belonging to this transitional or Arabic period, which is, that one of the lateral openings is larger than all the rest!

The southern portico of St. Mark's, a Byzantine ruin, in *Rio di Ca' Foscari*, with a conjectural restoration, and three plates of doorheads, are amongst the most interesting examples in the work. The doorways of Venice are almost always formed by an arch or gable above a horizontal lintel, the enclosed space being sometimes left open, and merely defended by iron bars; sometimes filled with masonry, and charged with ornament. "The methods of doing this are various and beautiful; but in the earlier ages, all agree thus far, that the name of the family is told, and, together with it, there is always an intimation that they have placed their defence and their prosperity in God's hands; frequently accompanied with some general expression of benediction to the person passing over the threshold."

Enough, however, of Venice just now: Mr. Ruskin's future parts will enable us to return to it, and always with pleasure:—

"Her palaces are crumbling to the shore,
And music meets not always now the ear:
Those days are gone. But Beauty still is here."

THE ROYAL ACADEMY MEDALS.

GENEROUS EMULATION.

ALL were extremely gratified to hear from the lips of the President of the Royal Academy, on the 10th inst., when the prizes were distributed, the compliment paid by Sir C. Eastlake to the talent of the unsuccessful architectural student, who missed the prize because he had not climbed to the top of Bow spire to measure the actual height of the uppermost feature of the composition. He said it was the unanimous opinion of all the architectural members that a more beautiful set of drawings had never been submitted for the silver medal. The refusal of the Council was wise and just, not to admit into the competition one who had not fulfilled the strict letter of the conditions,—to make the drawings from actual admeasurement; and all must lament the want of energy, determination, and spirit, which induced the student to fall short of his duty. It is said, however, that, by a curious chance, there was a great variety in the proportions of those who had measured the spire, and he was the mean between their extremes.

But I am anxious to express my disbelief of a report, current in the rooms at the time, that the other competitors, fearful of the superiority of their rival, had memorialised the Council to exclude him on the ground of non-compliance with the instructions. I cannot believe so ungracious a proceeding. I would rather imagine our young friends, with a generous enthusiasm creditable to themselves, and from respect for the brilliant talents of their able antagonist, if they had thought of the possibility of exclusion, to have prayed the Council to have still allowed him to compete; rather than upon a question, not involving an error of serious amount, to get rid of a dangerous rival, in order to secure the prize to those second in merit in point of execution. Such a proceeding would have been honourable, and would have impressed this noble principle upon their minds for their future struggles in life,—that in a liberal profession it is not merely he who is successful, but he who is successful honourably and generously, that wins the respect, the confidence, and esteem of those around him.

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IRISH ARCHITECTURAL AND RAILWAY NOTES.

THE Royal Irish Beet Sugar Company are converting extensive premises at Mountmellick, in the Queen's county, into a factory. The works are at present in active operation, all the necessary surveys and plans having been completed. The buildings will contain crystallizing and defeating pan, press and engine rooms, &c. Eighty-one packages of machinery, and 301 packages of animal charcoal, have been forwarded from Antwerp, and it is confidently expected that all the machinery, which is being fixed under the inspection of the manager and patentee, Mr. H. Crosley, of London, will be in a fit state to turn out the first produce about the middle of December. At Donaghmore, also in the Queen's county, a cutting and drying station is being established, and all the necessary plans, &c., have been furnished for the immediate erection of the required buildings. Factories will also be erected by the company at Cork, Belfast, Galway, and other provincial towns, and a model dépôt is to be built at Dublin, when the experiment receives a fair trial. Several contracts have been entered into with the neighbouring landed proprietors, and the new factories will give great employment to the poor.

The Lords of the Admiralty have applied for tenders (for the erection of the new pier at Queen's-town) to two London, three Dublin, and five Cork contractors.

The Limerick and Foynes railway is being marked out: the first sod will be shortly laid: there will be stations at Limerick, Patrickswell, Adare, Rathkeale, and Foynes. Mr. Dargan, the contractor, has subscribed 10,000*l.* and the Waterford and Limerick Company a similar sum, towards its construction.

A new flax spinning manufactory is to be

erected at Lough Erne, near Ballyshannon, and Thos. Connolly, Esq., M.P., has given a free-site for the purpose.

The Midland Great Western Railway Company are about having the electric telegraph constructed between Dublin and Galway. The new terminus at the latter place, fully described by us some time since, is almost complete. The corrugated iron roof, 400 feet long by 80 feet wide, in single span, has been constructed and finished by Mr. Richard Turner, of Dublin. The stone work of the hotel (which fronts Eyre-square, and which is being erected by the company in connection with the terminal buildings) is in a forward state, and a large number of hands are at present engaged in its erection by the contractor, Mr. Dargan.

Sundry works are to be executed at the Tullamore and Listowel auxiliary workhouses, and a new drying closet at Mullingar, under the direction of the architect to the poor-law commissioners.

During 1852, or early in 1853, railways will be finished and opened from Mallow to the Lakes of Killarney, from Dublin to Bray and Wicklow, and to Belfast over the Boyne.

NOTES IN THE PROVINCES.

Upton (Slough).—The venerable old church of Upton-cum-Chalvey has, at length, in accordance with our wishes, been restored, enlarged, and reconsecrated. The building has been completely restored, internally and externally, and a new aisle added. The seats are all open, and half of them are free. The groined roof of the chancels has been restored to its original character under the hand of Mr. Willement, who, at his own expense, has placed two stained-glass windows over the altar. There is a third stained-glass window near the pulpit. The nave is now double its ancient dimensions. The south porch, an enriched Norman design, forms the principal entrance. The outer wall has been made principally out of the old materials: the flints and pieces of conglomerate, which had defied the weather for the last 800 years, have all been worked up again. The old wall, it is said, was firm as a rock, and the hardest portion of the contractor's work was the getting it to pieces. A vestry-room has been added as a sort of lean-to to the tower. Built up in the wall, on the south side of the chancel, near to the altar, was found an ancient *piscina*. It has been preserved in the position where it was found. Two arches, 20 feet in height, form a new foundation to the tower, and are the means of communication to the chancel on the one hand, and the nave on the other. On the north wall of the tower has been replaced the monument to the great astronomer, the elder Herschel, who was an inhabitant of Upton, and lies buried in the church. In the southern wall of the nave was found a figure about two feet high, wrought in alabaster, of the Holy Father holding the Son, on the cross. The head of the principal figure is wanting, and the other portion is broken. Whilst repairing the walls of the nave, some other relics of antiquity made their appearance. There were traces of colour in every direction; but the colours had been so eaten into by the lime, that it was seldom that even the outline could be guessed at. The architect was Mr. Ferrey. The mason work was executed by Mr. George Harley, of Slough. The other portions of the building were completed by Mr. Snowball, of Slough, who took the contract. Stoves were put up by Mr. Potter. The total cost is estimated at about 1,600*l.* nearly the whole of which has been raised.

Hastings.—Amongst recent improvements here, is the erection of a new assembly-room and market-room, which was lately inaugurated in the latter capacity.

Hythe.—New national schools were opened here on Tuesday week. They are situate at the west end of the town, facing the public green, and are in the old English style. The walls are of native stone (presented by Mr. William Deedes, M.P.) The windows and porches have mouldings and dressings of Caen stone. The roofs are covered with ornamental

tiles: the ridge tiles are also of ornamental design. Internally, the walls are plastered and the roofs open and stained. The buildings provide accommodation for 160 boys, 160 girls, and 160 infants. Each school-room has attached a class-room and a room for hats, cloaks, &c., and each has a separate entrance for visitors and for children. In the centre of the group is the master's residence, its architecture partaking more of a domestic character. Attention has been paid by the architect to the classification, ventilation, and drainage. The whole of the works have been done by the Messrs. Horton, builders, from the drawings, and under the superintendence, of Mr. J. Messenger, of Folkestone and London, architect.

Southampton.—The new inner dock, for colliers and sailing vessels, has been opened, and is now in use.

Salisbury.—Mr. Sidney Herbert is causing to be fitted up a large and commodious lodging-house for as many of the unmarried labourers of the parish of Wilton as may be disposed to take the benefit of it. The house will be furnished with every convenience, and a housekeeper will be provided. The meals will be at stated hours, and the dietary will be ample but plain, and each inmate will have a separate bed. A library will be attached, and as one of the curates of the parish church will reside in a part of the house, he will occasionally deliver a lecture to the labourers. For all these advantages each labourer is to pay 4s. 1d. a week only.

Cardiff.—The tender of Messrs. Hemingway and Pearson, says the *Cardiff Guardian*, for the formation of new docks, has been formally accepted by the trustees of the Marquis of Bute. The contract will involve an outlay, it is conjectured, of 250,000l. to 300,000l.: that sum will be laid out in forming the docks alone, as they are to be extremely spacious. The time for commencing is stated to be in February.

Wolverhampton.—It is proposed to apply to Government for aid in the establishment of a School of Design for South Staffordshire—the principal school to be established in Wolverhampton, and elementary schools to be instituted at Lichfield, Walsall, Dudley, West Bromwich, Bilston, Tipton, Wednesbury, Sedgley, and Willenhall.

Rochdale.—A stained-glass window by Willement has been placed at the east end of the parish church of Rochdale. It consists of five compartments. Under four of these are the arms of the donors, the Vicar, Mr. James Dearden, lord of the manor of Rochdale, Mr. R. G. Townley, M.P. for Cambridgeshire and Bedford, in Rochdale, and the Newalls of Townhouse and Littleborough. The fifth compartment has no coat of arms, but is understood to have been contributed by the Chadwicks of Oakwood.

Coalbrookdale.—The foundation stone of a new church has been laid in this village. The cost of erection, together with endowment and parsonage house, is the gift of Mr. Abraham Darby, of the White House, Coalbrookdale, and Stoke Court, Buckinghamshire, chief partner in the Coalbrookdale Company. The workmen of the company have resolved to present a peal of eight bells. The architects are Messrs. Reeves and Voysey, of London; and the builder, Mr. William Hinkley.

Preston.—It is proposed to apply to Parliament for powers to build a covered market between Cheapside and Chapel-walks, Preston. The market will be 110 yards in length and 60 yards in width. The plan includes a new street leading out of the market-place and 20 yards wide. Other improvements are projected in connection with the scheme.

Halifax.—Mr. John Crossley, ex-mayor of this borough, has fitted up Mulcture Hall, the oldest mansion in the town, as a model lodging-house. The parlours and drawing-rooms have been converted into large store-rooms, reading-rooms, and dormitories. Spacious kitchens, with cooking apparatus, have been fitted up, and a large washhouse appropriated to the use of the inmates. The lodging-rooms are fitted up with every convenience, and the whole fitted up with gas, and ventilated.

The number of inmates will be restricted to fifty, and no females will be admitted. The charge will be 3d. per night's lodging.

Wigan.—A Temperance-hall is to be erected here by a company, in 3,000 shares of 1l. a share.

Edinburgh.—Various public buildings have been slightly injured by a recent gale. At Stewart's Hospital some damage was done to incomplete parts of the building, and two of the small turrets on Newhaven Church were blown down. Chimneys and chimney-cans by dozens appear to have been brought down by the wind.—"Steeple Jack" has had a "Government appointment" to put up a lightning-conductor on the Assembly-hall spire. The main conductor is to be a solid copper rod, three-quarters of an inch in diameter, provided with a platina point. This passes down the spire and enters the ground, under which it runs for some distance away from the building. The other turrets connected with the building are also to be protected by rods—the whole system joining with the great conducting rod. Although this building was not very long ago struck by lightning, and, although, standing on the castle hill, with a spire towering upwards to a farther height of 240 feet, its pinnacle forms the highest and most prominent object in this hill-seated city, the corporation on being applied to by the Woods and Forests, refused to be at any expense in the erection of a lightning-conductor to a public building which thus not only stood in such perilous need of it, but which was actually built partly out of the City funds, managed by this same corporation. The Woods and Forests fortunately were not only wiser, but more liberal or less stickling and punctilious, and ordered the conductor to be put up at their sole expense. No scaffolding, however, will be needed in Steeple Jack's process, so that the expense cannot be great.

THE APPIAN WAY.

A NOTE FROM ROME.

I LEFT ROME by the S. Sebastian-gate, drove along the course of the Appian Way—the old pavement often showing—passing the Circus of Romulus, the tomb of Cæcilia Metella, and entering upon the open Campagna, about four miles from the city walls. Here begin the new excavations making for the purpose of giving a direct road from Rome to Albano—restoring it nearly to the course of the old Appian Way. A considerable number of workmen have been employed in blasting and destroying those of the frequent shapeless masses of old unknown tombs which are in the way, in levelling road, and in carefully excavating its foundations, so that nothing worthy may be buried, in pursuing on either side anything that offers to tempt the search. All that are found of ancient remains are collected and stored up temporarily on the roadside (being numbered for the sake of reference): the best are removed at once to the Vatican: the imperfect and inferior ones remain till further search may have brought to light other portions; or if still found unworthy of removal, to be built into those sorts of monumental walls by the road side, suggested by Canova for this purpose, and already made by him in the first part of the Appian Way. The utterly useless fragments are broken up to make the road, or to build the loose stone walls that on either side line and enclose the road, and on which are painted numbers corresponding to those painted on found fragments. The lesser articles, as bronzes, lamps, &c. are placed in a small temporary building close by the office of the superintendent, whence they are every day or so removed to the Vatican. It was here I procured the lamp I now send you for the *Noviomagians**—of no peculiar value in itself, as it is well known these are common enough, but from its

genuineness, and having procured it myself on such a spot of great interest and value to me: I remained at the excavations,—sometimes wandering about watching the workmen, who each minute would turn up something fresh—here a fragment of a statue, there a frieze—an inscription—a broken column—uncover perhaps a tessellated pavement, or often would break through into a tomb, on looking into which would be seen the bones, cineraria, lamps, &c., *in situ*, as first placed. The constant interest of this can be conceived by all, while those who have been to Rome know well how beautiful is the surrounding scenery: the fine open Campagna, with its long, though broken, lines of arched aqueducts; its frequent masses of ruins; the near foreground occupied by buffalo, and herds of the famous dun-coloured oxen, tended by wild-looking and skin-clad men; the near hills of Albano, Frascati, Tusculum, Tivoli, &c., beyond; the snow-covered Apennines, and, above all, the brilliant Italian sky, all formed a glorious scene that will ever be to me a most grateful recollection. F. W.

NOTE FROM DERBY.

THE gas company here have been making extensive alterations at their works, consisting of a new gas-holder, 90 feet diameter by 25 feet deep, calculated to hold about 152,000 cubic feet of gas, constructed and erected by the Horsley Iron Company, of Tipton, Staffordshire. The tank, 93 feet diameter, was excavated and built by Mr. John Wood, contractor, of Derby: larger pipes have also been laid in the works and town to meet the increased supply required for this fast improving town.

New waterworks, as our readers know, are now in operation, constructed on the system of constant supply, at a high pressure, from the plans of Mr. Hawkley, who has introduced a new "service box" to be used with the common earthenware soil-pans: these boxes are supplied to customers by the water company at a small rental, thus diminishing the cost of water-closets to the labouring classes. This "service-box" is constructed to prevent undue waste of water by constantly running through the closets: the act of opening the valve to supply the closet shuts off the supply from the main by means of a new plunger cock.

The "Hydrant," an improvement on the old fire-plug, has been extensively used, and is fixed in every street where the mains are laid, for the purpose of extinguishing fires, as the hose and other apparatus can be attached in a very short time, and, where the pressure is sufficient, no fire-engines are required. The above works were constructed by the following parties:—

Pipe Laying and Services.—Thomas Crump, Derby.

Buildings.—Charles Moody, Derby.

Reservoirs and Culverts.—Robert Carlisle, Beighton, Yorkshire.

Engines and Pumping Apparatus.—R. W. Hawthorn and Co., Newcastle-on-Tyne.

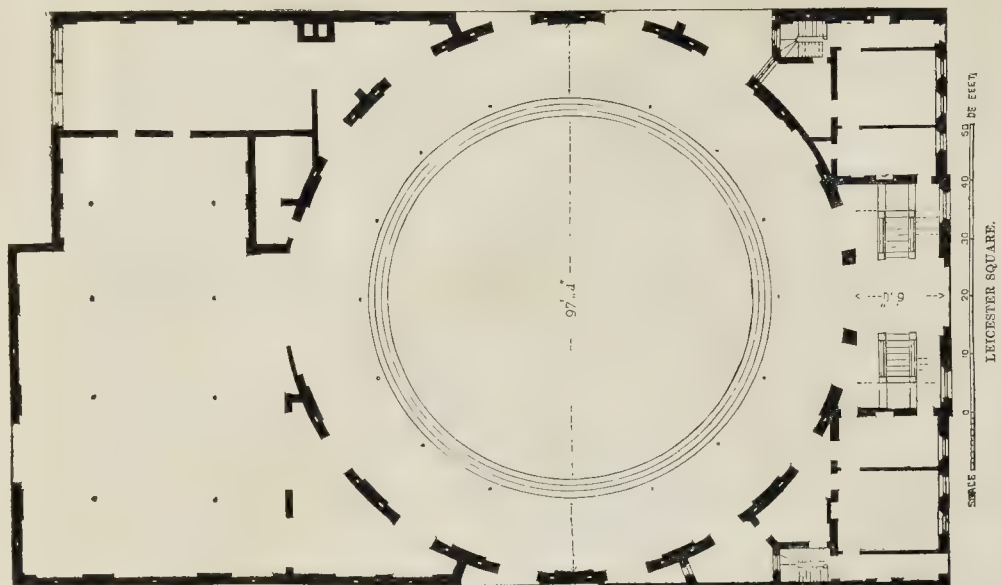
PARK-LANE, PICCADILLY.—With reference to the great necessity for enlarging this thoroughfare, it appears to me that the only and obvious improvement is to carry a road directly through *Hamilton-place* in a straight line to Stanhope-gate, of course cutting through the triangular garden, which, together with the site upon which *Hamilton-place* and the terrace stand, has been filched from the park, and therefore from the public, as the old maps of London prove. There would be doubtless a great outcry of the aristocratic inhabitants about making *Hamilton-place* a thoroughfare, and the high-bred priggatics of the garden in question will vote this arrangement a nuisance,—a horrid bore; but this and all other complaints should not stand in the way, the improvement being for the safety and comfort of thousands.

FLAT-FOOT.

Comptroller Saunders, Mr. Stevenson, and Mr. W. Wansley. The late A. J. Kempe was one of its founders on the occasion of the discovery of the ruins of *Noviomagus*. Joking minutes are kept, in which would be found many known names, either as visitors or associates,—Theodore Hook, Sir Henry Ellis, Britton, Dickens, Thackeray, John Bruce, Jordan, Planché, Bell, Macleise, &c. &c.

* The "Noviomagians" are a quaint unpretending club of Fellows of the Society of Antiquaries, who dine together once a month during the season, at an odd place, next Joe Miller's burial place, in Portugal-street, for the promotion of good fellowship and antiquarian pursuits. The present members are Mr. Crofton Croker (who has been President more than twenty years), Mr. G. H. Corser, Sir William Betham, Mr. Fairholt, Mr. Godwin, Mr. S. C. Hall, Mr. Lemon, Lord Lonsdale, Mr. ...

PLAN OF THE PANOPTICON.



ROYAL PANOPTICON OF SCIENCE AND ART.

THE space on the east side of Leicester-square, long vacant, is now being covered with a building, as our readers have already heard, for the Panopticon of Science and Art, and in our present number we give a view and plan of the intended structure.

The objects which it is the intention of the council of this institution to carry out are principally the promotion of science and the useful arts, by the means of popular lectures, and the illustration of history and literature by pictorial views and representations, to be accompanied by music. In addition, however, to these attractions, the Panopticon, it is said, is to afford the opportunity of observing, in all their varied ramifications, the industrial and mechanical arts, from the first state of the raw material up to the most highly-finished stage of perfection. The council propose to secure in all respects the most efficient auxiliaries, both as regard music and science; and the orchestral instrument, which is now in process of construction by Messrs. Wm. Hill and Co., will, it is stated, be second to none in the metropolis, while the scientific apparatus will embrace, among other novelties, a stupendous electrical machine, with a glass plate of 10 feet diameter, which it is proposed to work by means of a steam-engine.

An important feature in the intended arrangements of the Institution is a plan whereby a great impediment to the success of Mechanics' Institutes, particularly in the country, may be removed: it has been found that the funds of such societies are seldom sufficient to procure the requisite apparatus for the illustration of their lectures, which are consequently divested of much of their interest, and in order to obviate this difficulty, the council of the Panopticon propose to form a large collection of apparatus, suitable for lectures in every branch of natural and experimental science, which will be lent out on hire upon moderate terms.

It is proposed to have two daily exhibitions, one in the morning devoted more especially to scientific information and research, while the evening entertainments will partake of a lighter and more amusing character.

The plan of the building, which was de-

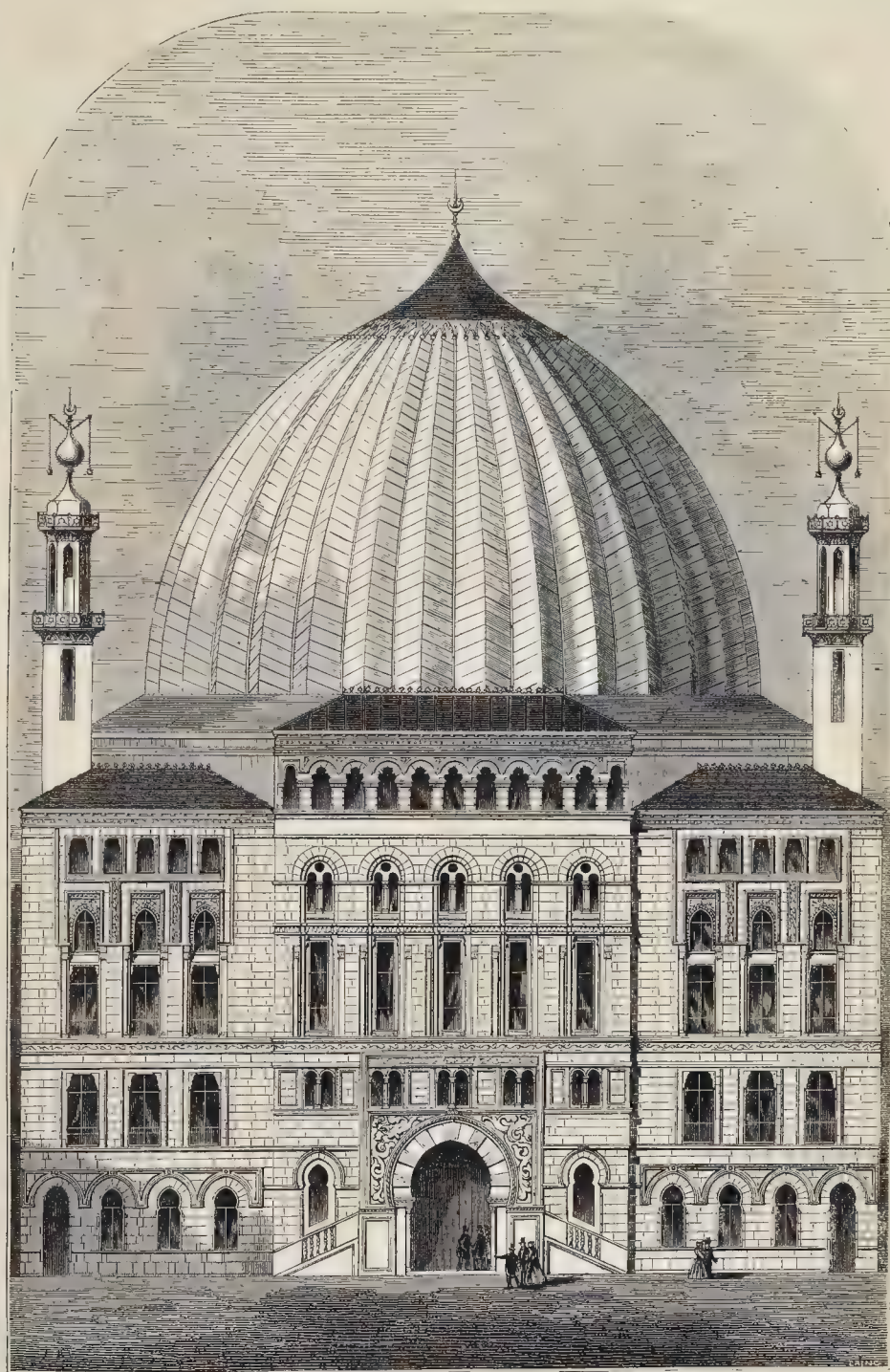
signed and is being carried out by Messrs. Finden and Lewis, comprehends a grand central hall, 97 feet diameter, domed over for the exhibition of machinery, manufactures, works of art, &c., and for exhibitions of various descriptions. There will be a lecture-room, laboratory, &c. All the buildings are designed in the Saracenic style, after models and details, chiefly from the existing remains at Cairo. The contour of the dome is taken from a daguerreotype of a dome at Cairo. It will be formed of glass and iron on the ridge and furrow principle. The façade will be formed in cement.

WORKING MENS' READING-ROOM, CARLISLE.

THE opening of the new reading-room recently built by the John-street (Butcher-gate) working men, was celebrated on Monday week by a public *soirée*. The architect was Mr. Hogg, who acted gratuitously for the members. The whole of the building work was executed by Mr. Thos. Lattimer, and the woodwork by Messrs. Coates and Little. The building is in the Elizabethan style. The area of the ground is 70 feet 6 inches by 52 feet 8 inches, or 412½ square yards, containing—reading-room, 53 feet long by 24 feet wide; area, 1,272 square feet; school-room, 25 feet by 24 feet 6 inches, area, 612 square feet; committee-room, 24 feet 6 inches by 10 feet 2 inches wide, area 259 square feet; library (a gallery above the committee-room), 24 feet 6 inches by 14 feet 6 inches, containing 355 square feet. The reading-room, school-room, and committee-room, occupy 2,143 square feet, leaving for the necessary back offices and yards 1,570 square feet, or 174½ square yards. The building was decorated for the occasion. The mayor took the chair, and about 500 persons were present. The Dean of Carlisle, Mr. W. N. Hodgson, M.P., the mayor, and various other gentlemen addressed the meeting, and letters of apology for non-attendance by Lord Carlisle, Lord Brougham, Sir James Graham, Mr. Thomas Carlyle, and Mr. Dickens, were read. Mr. Carlyle's epistle was a characteristic one. "It is not," he remarks, "by speaking visitors and transient strangers, however wise and well-disposed, that any benefit

can be done you: it is only by the wisdom daily present and busy among you that your institution can be wisely guided and have good success; and I have remarked that merely speaking figures, in such cases, yield little permanent help, and often even none, or less than none (if we compute it rightly); that the helper who will help steadfastly in *silence*, and, with continuous loyalty, exerts himself by the silent methods, is the only profitable one in the long run. I hope there are many such among you; and that by degrees your reading-room (furnished with good and wise books, not with bad and foolish ones, which are worse than none), may become the rallying point of all the sincere and serious-minded workers in Carlisle, that they may try with their best skill what can be achieved towards self-culture (the true aim of every human soul), by honest co-operation in this kind. Mechanics' Institutes, and the like modern establishments, when I have looked at them, seem to me to have died, or to be dying, very much because of their fatal belief in the efficacy of platform operations and the saving nature of public speaking; a frightful though a very common error in these times! An army that spends much of its strength in beating drums and sounding trumpets is not in a good way. Better march with steady hearts and pace, and with a *minimum* of drumming!"

CONSUMPTION OF SMOKE.—The operation of feeding a large steam-boiler furnace without producing smoke is thus described by the *Glasgow Mail*. This satisfactory result is secured by the adoption of a newly-invented description of boiler made with two furnaces, in which the flame from the one furnace meets with and consumes the smoke from the other. Of course the furnaces require to be fed alternately, so as to secure the having one furnace only at a time in a green state. The principle of alternate firing is not new, but we understand that until very lately no boilers were made by which the principle could be carried into practical operation. The one we saw has been made by Mr. Gray, of Washington-street, for the Messrs. M'Farlane, distillers, Port Dundas. A well-sustained effort for the general adoption of such means will go far to remove from us the plague of smoke.



THE ROYAL PANOPTICON OF SCIENCE AND ART.

Messrs. FINDEN AND LEWIS, ARCHITECTS.

THE INCORPORATION OF ARCHITECTS.

THE position which the profession holds in public estimation is of serious importance to both parties, as it involves the vitality of the pursuit, and its advancement. The incorporation of the profession has at times been suggested as the most effectual means of amending the anomalous position of architects; and though at one time strongly averse from such a step, I am now disposed to think that it should form a primary object of attainment. There can be little doubt that all incorporations constitute monopolies, less or more exclusive; and it is, therefore, incumbent upon those who advocate their formation that they should show good cause for such a proceeding. But, first, let me correct an impression which, though very general, has, I think, been very hastily adopted,—namely, that monopolies *per se* are contrary to the spirit of the age: so far from this being the case, I do not think that history can adduce any period of equal duration, within which so many monopolies have been constituted, as within the last five-and-twenty years. Monopolies which subserve the advantage of a few at the expense of large portions of the community are justly considered hurtful, and are removed; but those which promote the advantage of the community as well as that of the individuals incorporated, are greatly encouraged. Now, believing as I do, that incorporation upon a liberal basis would be highly advantageous both to the public and to the profession, but especially to the former, I am desirous of urging the necessity of its adoption upon the attention of your readers.

In the following outline I have endeavoured to meet all the reasonable suggestions which I have heard from time to time; but of course I do not conceive that all the details are completely worked out, even as far as sketched: they are in fact introduced more for the purpose of giving distinctness to the general features, than for adoption.

I propose that the college should consist of four grades or classes, viz.:—

1st. Graduates, or students, being those who are articulated clerks in the office of a practising architect, and who should be required to pass through a certain course of examination at the termination of their apprenticeship, in order that they may yield evidence of the kind of instruction which has been given to them, and of the use they have made of the opportunities afforded them. The period of apprenticeship might be varied in duration, according as the graduate has spent any time either at college or in the workshop; but at least one year of his articles should be occupied as assistant to a clerk of works, for the attainment of that practical knowledge and experience which no office can give. The examination might comprise the mathematics, with especial reference to geometrical form, the equilibrium of arches, hydraulics, and land surveying. The details of construction, including the more abstruse portions of carpentry and stonework, with the strength of materials, building, surveying, and measuring; the getting out of detail drawings in the presence of the examiners, with the history of architecture and its various styles, with their most remarkable characteristics, illustrated by sketches made, on the spur of the moment, from memory.

Having passed through an examination of this kind the graduate would then be admitted into the

2nd class, or the Associates. These would be eligible to be assistants to practising architects either in the office or as clerks of works, or to take private business, under the supervision of a member of the third or fourth class as a consulting architect. The Associates should be required to practise as such for years, and to pass through a less elementary, but more searching practical examination previous to admission into the

3rd class, or the Licentiates, who should be practising architects, with privileges nearly as full as those of the next or highest class; and after years' practice as a Licentiate, they should be advanced into the

4th class, or the Fellows. Every promotion

would, of course, be dependent upon the aspirant having passed through his probation without any imputation upon his professional integrity and competence.

The government of the college, or guild, I propose to vest in a senate elected from the class of Fellows only by the votes of the three superior grades: one senate being elected by the profession throughout Great Britain and Ireland: to be metropolitan, and to have the complete supervision of professional practice in all its details, and provincial senates for London and each district, who should make *ad interim* arrangements, to have force in the intervals of the sitting of the metropolitan senate, and to be affirmed or negated by that body at its annual meeting: the provincial senates to meet monthly or quarterly, as may be deemed most advisable, and at the most central point of the district; the metropolitan senate to meet annually; to be peripatetic; and no three consecutive meetings to be held within fifty miles of each other.

The Fellows I should emancipate from the fetters of the several Building Acts: they should be at liberty to adopt any form of construction, and any material they might think fit; but they should also be responsible for any accident, thence resulting, which should occur within years of the erection. But should the surveyors under the Building Act see fit, they may require a special meeting of the provincial or metropolitan senate, to be convened; and if the proposed construction is approved by that body, it may be adopted. The Licentiates should be excluded from this great privilege; unless the proposed deviation from prescription be approved of the senate (provincial or metropolitan), when they may be licensed by that body to make use of it. Of course records of the proceedings of the several senates must be preserved, published annually, and a copy deposited in the library of each provincial senate, for the instruction of the profession generally.

The monthly meetings of the provincial senate might be succeeded by meetings of the provincial guild, at which papers on professional subjects should be read and discussed, as at the meetings of the Institute, and of different local societies. The metropolitan senate, by changing its place of meeting in each succeeding year, would bring the heads of the profession into immediate contact with its more outlying members; and the occasion of its meetings might be adopted for the purpose of investigating ancient and modern edifices within an accessible range of the place of meeting.

With a profession thus constituted the public would have some guarantee for the ability and experience of the architect, in all save the artistic department of his practice; and this no system can secure them, until the mode is patented for making poets, &c. to order; but the public will not be in this respect in any worse position than they are now, whilst for scientific and commercial purposes they would be much benefited.

Within the profession the effect of the system would, I think, be highly beneficial: young men would give more attention to the business transacted before them: they would be more on the alert to learn, and improve their opportunities; and knowing that of necessity a certain period must elapse before they can be admitted to practise, they would not be so impatient to engage in competitions, or to open an office, as they are now. On the other hand the principals would feel that, to some extent, their credit was involved in the creditable examination of their pupils, and would, therefore, give them rather more attention than is included in "the run of the office," and would more faithfully discharge their duties towards their adopted neophytes.

There is one class who may appear to be excluded from the foregoing arrangements; namely, those who are never articulated, but who, after working at the bench or as stonemasons, become clerks of works, and eventually architects. I should be very sorry to offer any insurmountable obstacle to the advancement of such as these, after they are qualified, and I think their case can be met by

some modification of the second, or associat class.

I think also that a class might be advantageously constituted to comprise those builders and contractors of high character and ability whom it is desirable to distinguish from the inferior members of the trade; and thus impose a check upon jury-builders, and "scamp" work; but I feel that I have now trespassed at great length upon your space, and must defer any further observations to some future opportunity. J. B.

ROYAL INSTITUTE OF ARCHITECTS IN IRELAND.

THE annual general meeting was held on the 26th November, Mr. G. W. Papworth in the chair. A resolution was passed deploring the loss of one of the late vice-presidents, Mr. W. Farrell.

The following officers were elected for the session 1851-52:—President—Marquess of Clanricarde. Vice-Presidents—Sir T. Deane, Messrs. Owen and Wilkinson. Secretaries—Messrs. P. Neville and James Owen. Treasurer—Mr. William Murray. Auditors—Messrs. Nathaniel Montgomery and Alexander Tate. Council—Messrs. J. Welland, P. Byrne, G. Papworth, F. V. Clarendon, A. Denny, J. Paine, and C. Lanyon.

HOUSE AGENTS' CHARGES.

TROLLOPE AND OTHERS v. HOSKING: IN WESTMINSTER COUNTY COURT.

THE plaintiffs in this case are the well-known house agents in Parliament-street, and they have a branch office in Grosvenor-street, East-quare. They sued the defendant for 104. 10s. for commission, for letting a house in Eccleston-square.

Mr. Pollock, counsel for plaintiffs, stated, that he believed there was not much dispute between the parties on the facts of the case, but that the defendant had made a mistake as to his liability. The plaintiffs were house agents, and the defendant was owner of No. 66, Eccleston-square, and wanted to let the house. Messrs. Trollope, who were concerned for Mr. Cubitt and others in letting houses in that neighbourhood, had a general commission from Mr. Cubitt for letting his houses. They (plaintiffs) at first thought the house was Mr. Cubitt's, but afterwards found it belonged to the defendant; but Mr. Dangar, the builder, had authority from that gentleman to let the house, and employed the plaintiffs to find a tenant. The defendant was liable for the employment by his agent, and, in fact, had written a letter in February, 1851, which amounted to an admission of his liability; for although he denied being liable to commission, he authorised Mr. Dangar to pay what was right. The plaintiffs gave a card to view the house to a lady named Balfour, whose husband ultimately took the house, and although, after the introduction of Mr. Balfour by the plaintiffs, Mr. Hosking, or his agent, Mr. Dangar settled the terms; yet the plaintiffs were not to lose their commission, although the house was let behind their backs. As to the commission, he would call as witnesses some of the most respectable house agents in London, who would prove that the general custom of house agents was to charge 5 per cent. commission on one year's rent in every case where they had been the means in any way of introducing parties who afterwards took a house, although they might not have any trouble about negotiating the terms. It had been laid down by Best, Chief Justice, that "if there were a general custom, the employment was to be considered according to the custom." He cited the cases of *I Carrington and Payne*, 892; *Rainy v. Vernon*, 9 Car. & Payne, 559; *Robins v. Burke*, Law Times, 1845; in all which cases the plaintiffs, who were house or land agents, had recovered full commission, although the property had been let by private contract, or sold before the time advertised for sale. He therefore had no doubt his Honour would give judgment for the plaintiffs for the amount they claimed.

Several witnesses were called on the part of plaintiffs; amongst others, Mr. John White, the manager of Messrs. Trollope's office in Grosvenor-street, who stated that he had a general commission from Mr. Cubitt to let his houses. He remembered that in February 1849, Mr. Balfour was looking out for a house. He gave a card for viewing the house in a house. He said that he had built the house, and had sold it to Mr. Hosking, and if let, he would pay the usual commission if they found a tenant. Witness had one or two communications with Mr.

Balfour. When he found the house was let, he sent in the account, charging the usual commission to which Messrs. Trollope were entitled as having introduced Mr. Balfour; and he produced a card, showing the terms of letting. On cross-examination, White admitted that his first knowledge that the house was to be let was seeing the house built; but he considered it one of Mr. Cubitt's. The house had never been put on Messrs. Trollope's books, and he would not have taken any steps unless Mr. Dangar had called upon him and authorized him to let it the day after he had been to Mr. Cubitt's. He said that the statement he had made in his letter to Mr. Hosking (which defendant's attorney showed to him), "that he did not know that Mr. Hosking was the owner until after the house was let to Mr. Balfour," was written in a hurry, under a mistake; but that he had known that he was the owner before Mr. Balfour took the house.

Mr. Dangar stated that his firm had built the house and sold it to Mr. Hosking; that in consequence of Mr. White, Messrs. Trollope's manager, having made inquiries about the house, he called at their office; but this was subsequently to Mr. Balfour having been about the house. When he saw Mr. White he told him that as he had sold the house, he was anxious to find a tenant soon. When he wrote the letter about Mr. Hosking paying commission, he had no authority from Mr. Hosking, but if, as stated in the letter, Messrs. Trollope were the first to refer a party, he thought Mr. Hosking would pay commission; but witness did not go to Messrs. Trollope until Mr. Balfour had been to him several times about the house.

Mr. Jervis (of Rushworth and Jervis's), Mr. Jay (of Snell and Co.'s), and other house agents, stated the invariable custom of the trade to be to charge commission in cases where given, which led to a party taking a house or making a purchase, although they were not called upon to do any thing further in the matter. To questions by defendant's attorney, they agreed, that if more than one agent were employed, it was the one who gave the first information who alone was entitled to the commission. Mr. Jay, however, stated an instance in which a gentleman had employed three agents, and had to pay them all; but he considered this was wrong. No charge was made for merely putting descriptions on the books.

Mr. Balfour was called, and stated very distinctly that his first communication about the house had been with Mr. Cubitt's people, and entirely through their recommendation was induced to follow up the treaty. He was referred to Mr. Dangar; and he had settled the whole with Mr. Dangar, who acted for Mr. Hosking, and he had not seen or known Messrs. Trollope throughout the matter. He understood that his cook had got a card from Messrs. Trollope; but he believed it was after he had seen Mr. Dangar. Mr. Balfour's cook was called, and stated that she had got a card to view the house from Messrs. Trollope for her mistress; but stated it was on the last day of February. This was the plaintiff's case.

Mr. W. L. Donaldson (solicitor) said he appeared for Professor Hosking, who was a gentleman of high character, and would not have resisted this claim if he had considered that Messrs. Trollope had the slightest ground for making it; but he resisted it because, as the evidence showed, Messrs. Trollope had never been employed by him or by Mr. Dangar as his agent; nor had they been the means of procuring Mr. Balfour as a tenant. Mr. Hosking had purchased the house of Messrs. Avery and Dangar as an investment, and he simultaneously purchased the ground-rent of Mr. Cubitt. Mr. Dangar, on selling the house, had engaged to use his best endeavours to find a tenant, and without any charge or expense to Mr. Hosking. Notices were put up on the house referring to Messrs. Avery and Dangar's office, and also to Mr. Cubitt's office in Lyall-street, by permission of Mr. Cubitt, at Mr. Hosking's request. Almost every one who wanted a house in that neighbourhood went to Mr. Cubitt's office in the first instance, and this Mr. Balfour did, and saw the house described there, and was referred to Mr. Dangar, with whom he subsequently arranged all the terms, without seeing or knowing anything of Messrs. Trollope in the transaction. Although Messrs. Trollope might have given the card to Mr. Balfour's cook, it was after Mr. Balfour got the information; for the cook stated she got the card on the 28th of February, the last day of the month, and Mr. Balfour stated that it was towards the end of February he had begun the treaty—it was, in fact, two or three days after Mr. Balfour had seen Mr. Dangar. Messrs. Trollope, therefore, did not give the first information. Besides, they were never employed by defendant or by Mr. Dangar as his agent. It was not because a house agent went and looked about

to see what houses were to be let, that the owner was to be liable to pay commission, even if the agent introduced a party who took the house. The owner might determine not to employ a house agent, being unwilling to expose himself to any such claim as the present; and was he to be forced to pay commission by the unauthorised interference of any house agent? The letter written by the defendant was relied upon as an admission of his liability; but what did it amount to? He distinctly denied his liability to commission, an account for which had been sent, to his great surprise, after the lapse of a year after the house was let. Mr. Hosking said,—"I am not in any way liable; but if you have put the house on your register, and have had trouble on my account, Mr. Dangar may pay you a guinea or two, if he thinks it right, and I will repay him." There was no pretence for the claim, and the transaction was as Mr. White stated in his letter, (but which he now says was written in mistake); that Messrs. Trollope knew nothing of Mr. Hosking until after the house was let, and then wrote to Mr. Balfour to know the terms, in order to make up a charge against Mr. Hosking.

As to the 5 per cent. commission, all the cases quoted by the learned counsel show that there had been some original contract between the parties; but in this case there was no retainer or contract at all, and therefore the cases do not apply. All the agents called by the plaintiffs admit that there was no claim for putting a house on the books, but even this was not done; for White admits this house had never been put on the plaintiffs' books. The defendant, under these circumstances, resisted the claim. If defendant had incurred any liability, he (defendant's attorney) believed Mr. Hosking would not have raised any question as to the amount of commission, whatever objection he (defendant's attorney) might have raised upon that point; but the evidence clearly showed that Messrs. Trollope had never been employed. They interfered without any authority, and then only after Mr. Balfour had got information of the house at Mr. Cubitt's office, and had begun his negotiation with Mr. Dangar. Mr. Donaldson doubted the judgment of the Court would be for his client.

The judge said, "judgment must be for defendant: he had derived no benefit from plaintiffs' services. The defendant never employed the plaintiffs."

SURVEYORS' CHARGES.

FRASER v. POCCOCK, in the Exchequer. This was an action to recover 154*l.* for work and labour done.

It appeared that the plaintiff was a surveyor, and that the defendant was the proprietor, in 1847, of some extensive brick fields near the Caledonian-road, Islington, which were about that time required by the Great Northern Railway Company. The defendant demanded a high price for his land, on account of its value for brick making. The sum he asked was 43,000*l.*, and his claim was referred to an arbitrator, who awarded him between 23,000*l.* and 24,000*l.* Whilst this business was pending the defendant employed the plaintiff to make an estimate of the value of his land, which he did. For this work the plaintiff charged a percentage on the amount of the award, which, together with other expenses, amounted to 154*l.* The defendant refused to pay this sum of money, but paid 4*l.* 19*s.* into court, as a sufficient compensation, and pleaded never indebted as to the rest.

The defendant denied ever having employed the plaintiff to survey the land, but had merely asked him to state his opinion before the arbitrator of the probable value of the land with regard to ground-rents.

The defendant, in his evidence, said he had received 17,000*l.* from the company for five acres and a half of freehold land, and 4,980*l.* for brick earth. About 100 sites, or frontages were planned out, and other sites were not touched by the railway. He had paid Mr. Barnard, his own surveyor, 100*l.* for the valuation he had made, but the plaintiff had only been authorised to ascertain the value of the ground-rents of the houses which might have been erected on the land required by the company. Proceedings had been taken by three other persons for valuations of other portions of the property, and they had all recovered verdicts for sums of 90*l.* or 100*l.*

The jury, after a short address from his lordship, returned a verdict for the plaintiff—Damages, 110*l.*

OPENING THE AREA OF ST. PAUL'S.—The dean and chapter have somewhat bluntly refused to hear any further conference on this subject till measures are taken by the City to enlarge the approaches.

LIGHTHOUSE FOR THE GODWIN SANDS.

I HAVE read with much attention the observations of Mr. Gearing and Mr. Hoblyn on the laudable endeavour to establish a lighthouse on the Godwin Sands. I have myself, on a former occasion, given much attention to the subject, on a different principle to that of either Mr. Gearing or Mr. Hoblyn; but the great and insurmountable difficulties were such as to induce me to abandon it, from the practical observations of those in connection with the Godwin Sands, and from their own practical experience, considering such an undertaking hopeless or almost useless, for the following reasons:—The Godwin Sands extend for a distance of nearly 14 or 15 miles and about one in breadth on an average, and their depth has never yet been ascertained either by the Trinity House or others,—and the late Dr. Potts, I believe, went lower with his beautiful and simple operations of hollow piles than any other person. From the great extent of the sands, and the necessity of giving vessels all the warning and precaution possible, the Trinity House have moored vessels with floating lights at various distances round the sands, and the only practical mode appears to be if say four permanent lights could be established at N., S., E., and W.; so that vessels should always keep outside of the lights. Then if Mr. Gearing's idea could be carried out, of a suspension bridge across one of the narrowest parts, it might serve as a place of refuge if a boat could make its way to the lights.

The subject is well worthy consideration, in order to save life and vessels.

A SUBSCRIBER.

GAS AND WATER SUPPLY.

Newport (Isle of Wight).—The new gas company have begun to lay their pipes. The water company, who have a clause in their Act preventing the laying of any gas-pipe within four feet of a water-pipe, had just advertised for tenders for water-pipes to be laid on the same spot, viz., a narrow lane called Deadman's-lane. The new gas company have therefore stolen a march on the water company.

Sheffield.—A public meeting, says a local paper, convened by the mayor, has been held, at which Mr. Laidlaw, of Glasgow, gas engineer, attended, and presented an estimate of the cost at which gas might be produced, which showed that, after allowing for all contingencies, the gas could be sold at 3*s.* per 1,000 feet, and, if there were 100 millions sold, would give the shareholders a dividend of at least 7½ per cent. Another speaker, Mr. Flintoff, of London, stated that estimates laid before Parliament in 1847 showed that for a consumption of 28 millions the price ought not to be more than 3*s.* 2*d.*, paying 10 per cent. A party employed by the committee to test the figures formerly brought forward informed them that gas could be made under 2*s.* 6*d.* per 1,000, and, considering losses and other contingencies, they were justified in offering it at 3*s.*, with a strong probability that in a few months the price might be further reduced to 2*s.* 6*d.* per 1,000. The meeting, which was very numerous, passed a resolution, with only one dissentient, expressing its satisfaction with Mr. Laidlaw's report, and pledging itself to support the new company.

It is also stated in a local paper that at an ordinary meeting of the chemical society, Dr. Frankland, the chemical professor at Owen's College, Manchester, communicated to the society the result of his investigations of the process recently patented by Mr. White, for the manufacture of gas from water and carbonaceous matter at a high temperature. It had been maintained that the hydrogen of the water combined with the carbonaceous matter, producing gases of highly illuminating properties. This supposition Dr. Frankland showed to be erroneous, but at the same time pointed out some advantages of the process. His experiments were conducted upon resin. The illuminating gases which this as well as coal produce, are known to suffer rapid decomposition by the heat of the retorts in which they

are formed before it is possible for them to escape. The great loss thus occasioned has induced some gas manufacturers to employ large exhausters, to draw the gas rapidly from the retorts. But by the use of water gas, as specified in White's process, not only is this end attained much more effectively, but a large quantity of valuable material upon which the illuminating power depends, which would otherwise remain in the tar, is taken up and converted into valuable gas, besides other minor advantages. One of the difficulties in the generation of water gas is to obtain it free from carbonic acid. Dr. Frankland has not been able to prevent its formation entirely, and therefore proposes, as an efficient means of removing it, a solution of caustic soda, through which the gas is made to pass before entering the holder. Neither wet nor dry lime are suitable for the separation of this substance from the gas. The cost of this mode of purification does not exceed 3d. per 1,000 cubic feet. The illuminating power of the hydrocarbon gas thus made, it is added, was found to be superior to that of Manchester coal gas in the relation of 100 to 88.9, or that 1,000 cubic feet of hydrocarbon gas was equal to 1,125 of Manchester coal gas. Another advantage consisted in the fact that unpurified hydrocarbon gas does not contain any ingredients which prevent its use, as in the case of the gas from coal. Dr. Frankland also stated that he had extended his experiments to the application of this process to coal, the very interesting results of which he would communicate to the society on a subsequent occasion.

South Shields.—It is proposed to extend the Sunderland water-work pipes to South Shields, a distance of seven miles, by Cleadon, Harton, and Westoe. The supply, according to the plans, would be constant, and at a pressure sufficient to raise it to the tops of the houses in Shields.

Dunstable.—The *Fife Herald* states that a gas-work, to cost between 600*l.* and 700*l.*, is nearly completed in this little village. The inhabitants are principally hand-loom weavers, who had long sighed for a substitution of "the new light" for the old "weaver's lamp," and at length formed a committee, who canvassed the village and vicinity, and succeeded in collecting the necessary shares, in which they were materially aided by a neighbouring proprietor, Mr. O. Tyndal Bruce, of Falkland House, who will no doubt benefit by the improvement as well as his humbler neighbours, who have not only the merit of establishing a gas-work but also "a spacious and handsome hall, in which they assemble for improvement," and which was erected some years since. Such efforts merit note as an example of laudable ambition, and may show to thousands of villages throughout the country what can be done with industry and resolution.

St. Neots (Hants).—Mr. Bower, of St. Neots, says the *Manchester Courier*, "has constructed a patented apparatus for making gas from coal, so small as to be adapted for private houses, inns, and other places where ten or fewer lights may be required. It is inclosed in an iron frame, occupying but little space, and may be managed by the errand-boy. Beautiful gas is said to be made by this plan, at the paper manufactories of Messrs. Towgood, Cambridge, at a cost of 1s. 6d. per 1,000 cubic feet. The patent consists in getting hydrogen gas from steam (generated by the same fire that heats the retort), and in converting that vapour into gas, which otherwise would be converted into tar."

Leighton Buzzard.—Some weeks ago a meeting of the inhabitants was held in the Town-hall, for the purpose of considering what steps should be taken to secure a reduction in the price of gas. All the consumers (with the exception of two, who are shareholders) pay 10s. per 1,000 cubic feet. Several resolutions, says the *Bedford Times*, "were passed unanimously, the last being in effect, that application be made to Mr. Brothers, the contractor, to ascertain if he would consent to reduce the price of gas, suitable to the present time, and agreeably to the cost in other towns. It was very sensibly pointed out that if a reasonable reduction were made, many inha-

bitants, who at present burn candles or oil, would be induced to patronise the gas company, and thereby a more liberal return for the capital invested would be effected." The contractor did not condescend to notice the application till urged to do so, when a formal acknowledgment merely of receipt of the communications was sent. Further steps are in contemplation. Dunstable is supplied by the same contractor, and much dissatisfaction also prevails in that town. Offers have been made by other companies, and new arrangements are likely to be gone into.

Ryde.—A report has been made on a projected water supply for the town of Ryde. It is intended by it that the water should be obtained from Alverston, on the south of Ashydown. The length of the river at Niton to Alverston is about eight miles: the valley through which it flows is purely agricultural. The supply is available without any engineering difficulties: it is only necessary to raise the water to the top of the down. The report concluded by urging the necessity of the Health of Towns Act.

Books.

The British Almanac and Companion, 1852. London: Charles Knight.

This excellent work maintains its reputation and will be found useful by all, we might almost say indispensable. The "Companion" contains articles on the Invention of Fluxions, the Great Exhibition, the Census, County Courts, Railways, Public Debts, and Public and Architectural Improvements, and abstracts of Important Public Acts passed during the year.

The section "Public Improvements" occupies 24 pages, and has eight illustrations. It is but weakly written. We give the writer's notions regarding modern churches, as a bettermost specimen:—

"Though there be plenty of Gothic precedent, in every period of the style, for making side aisles as high as the centre, as in Austin Friars' and the Temple, London, and still older churches in Germany, you will find our imitators, when there are to be side galleries, always choosing some model with low sides (cut lower to suit modern parsimony), and cramming the two flats of worshippers into about half the height and breathing-room allowed to the single floor of them in the centre; and this even though the additional height of the latter be an utterly useless affectation, the 'clear story' (or lantern story) admitting no light. And though this generally brings the heads of the people in the galleries behind the spandril walls of the arches (which it never seems to occur to them to lighten by a single perforation)—though in such cases we have ample precedent, even in the high 'lancet' style, for the use of low depressed arches (as in the Salisbury triforium galleries) to bring their springing above the heads of the occupants; our moderns invariably choose arches of the highest proportion. But the climax is perhaps seen in the present way of supporting such galleries. Though common sense would seem to suggest that the same pillars which bear the gallery could be continued up to bear the roof, as at William the Conqueror's chapel in the Tower, and every succeeding church with galleries and not roofed with one span, down to 1840; and though there is ample 'precedent' for every possible distance of the pillars from the walls, from 2 to 20 feet, our moderns now always put them a little further out than the gallery is to project; and (though they be, as we have said, more massive and far less loaded than in old churches) support the gallery (which, perhaps by way of contrast to the Gothic lightness and elegance, they now assimilate as near as they can in style, to the tubular bridge) on a distinct row of pillars, or rather posts, a foot or two behind the others.

For what purpose were these structures built? We believe the question would sorely puzzle any society of antiquaries that should alight on them with no historical clue. Is there evidence in them of any other object than to look pretty and mediæval?

We have not gone into their looks. If we had, we should find it as difficult to discover wherein they follow the precedents of mediæval æsthetics as of mediæval common sense. In mediæval times, as well as all others, there was an instinctive sense of the propriety of making temples (if not larger altogether) bolder in scale, or size of parts, than the neighbouring secular buildings; but in our towns, where the latter have been constantly growing and

the former dwindling in total magnitude till their relations have been just reversed, we seem to aim at making the contrast more glaring by repeating needlessly in the scale of parts what is unavoidable in the whole. Our designers have hard work indeed to make the shell that holds but one church, appear a cluster of fragments, and members diminutive as those of cottage work, but they succeed perfectly. In details, too, the mediæval church builders plainly aimed at as much boldness as their small mechanical appliances would permit, only turning an arch in several orders of stones, or a pillar in several shafts, because they could not make them in fewer. But we who use great blocks, cut each to give the appearance of several narrow arch-rings or several little shafts; and by diminishing all details in proportion to the lessening of general scale, seem to aim, among our swollen town architecture, at distinguishing the temple by a character of village or rather toy-like diminutiveness."

The "En Commandite," "Anonyme," and "En Nom Collectif" Partnerships. Extracted from the French Code of Commerce (articles 18 to 64), and translated into English; together with an Appendix illustrating the liabilities of Partners under the French and English Systems. By FREDERICK M. HAMBER, Esq. Barrister at Law, Royal Exchange, London, 1852.

SINCE we first drew the attention of our readers to this important subject, the creation of several important companies in London under the French law of partnerships, it appears, and recent discussions in the Court of Bankruptcy on the subject, have occasioned an almost universal inquiry in the mercantile world as to what the system really is; and as few comparatively know anything about it, Mr. Hamber, feeling, to a degree, convinced of the practicability and probability of the introduction, into our system, of the partnership laws of our continental neighbours, has thought it worth while here to submit to the public a copy of such part of the original French code of commerce as relates to the subject, together with such explanatory notes as suggested themselves. The whole extract is lucid and simple, and comes within the compass of a very few pages. An appendix treats of the consequences of limited partnerships under our present laws, and points out what is necessary to their full and safe establishment.

The Family Almanack and Educational Register for the Year of our Lord 1852. To be published annually. Parker, Strand.

THE information given in this almanack is very varied. Besides the usual contents of an almanack, it contains a valuable register of educational establishments in England, Scotland, and Ireland, which the publishers are anxious even to extend, and accordingly invite particulars, although the register already occupies upwards of two hundred pages. There is also a list of the universities, with various details; and of the colleges connected with the Church of England, the various Dissenters, and the Roman Catholics. The educational register contains an account of the scholarships and exhibitions attached to schools, &c., and at the end is a list of national educational establishments in the United States of America.

MUSEUM OF PRACTICAL GEOLOGY.
GOVERNMENT SCHOOL OF MINES AND OF SCIENCE
APPLIED TO THE ARTS.

Inaugural Discourse at the opening of the School, 6th November, 1851. By Sir H. DE LA BECHE, C.B., F.R.S.

On the National Importance of studying Abstract Science, with a View to the healthy Progress of Industry (being an introductory Lecture to the Course of Chemistry, Session 1851—1852). By LYON PLAYFAIR, C.B., F.R.S.
The Relations of Natural History to Geology and the Arts (a Lecture introductory to the Course to be delivered during the Session 1851—1852). By EDWARD FORBES, F.R.S.
On the Importance of cultivating Habits of Observation (being the introductory Lecture to the Course on Mechanical Science, Session 1851—1852). By ROBERT HUNT, Keeper of Mining Records.

THESE brief but excellent discourses,—some of which we have already quoted,—if they are

purchaseable, or otherwise to be had, by our readers, will be found to be well worth any trouble that may be taken in procuring them.

Miscellaneous.

ELECTRO-TELEGRAPHIC PROGRESS.—The Submarine Telegraph Company are getting made several new metallic cables, in addition to that already in operation—one conductor being already insufficient to convey the multitude of despatches now exchanged between London and the Continent. The facility and certainty with which the telegraph has worked have already effected a great revolution in commercial arrangements, which would be thrown into confusion by the rupture of the communication. Night and day it is carried on. There is still a space of about a mile (from East Cliff to the South Eastern Telegraph Office) unconnected by the wires. The distance has to be done by horse express, and, consequently, causes a few minutes' break in the communication. The desideratum is, however, to be speedily supplied. The number of telegraphic stations now open and in connection with the central station of the Electric Telegraph Company in Louthbury, amount to 226, embracing all the principal towns in the kingdom. Nearly seventy are principal commercial stations, at which the attendance is day and night: the length of the lines of communication extend over 2,500 miles, with 800 in progress of suspension. Since the partial reduction of charges, it is said, persons of all classes are availing themselves of its advantages for business purposes.

MASTERS AND WORKMEN: BREACH OF AGREEMENT.—On Friday week, a case came before the Hon. G. C. Norton, at the Lambeth Police Court, in which Mr. George England, of Old Kent-road, engineer, was pursuer, and Thomas Riding was charged by him with quitting his employment, while under a written agreement to act as his foreman, and re-engaging himself as foreman to Messrs. Langrange and Co., of Biddington, near Newcastle-on-Tyne, in whose service he was said to have made use of his experience in the construction of "The Little England" locomotive to the prejudice of the complainer. It appeared from the proceedings that Riding was under terms to work for Mr. England, at the rate of 7s. a day of ten hours, and that Messrs. Langrange gave him a salary of 200*l.* a year, besides a percentage on every engine he finished for them, and that his services were estimated as worth 500*l.* to the latter firm. For Riding it was stated that Mr. England had not given him 42s. a week, according to his agreement. This Mr. England denied, stating that his time some weeks averaged eight days, and, on the whole, must have averaged the sum contended for. His short time arose from want of light, as in winter. It was with great difficulty that Mr. England succeeded in giving this explanation, in the teeth of reiterated orders from the magistrate, and expostulations by the counsel for Riding, both of whom afterwards admitted that "the explanation was most necessary." It was shown that no use had been made of Mr. England's plans by Riding in his new employment. The magistrate was of opinion, however, that it was quite clear the defendant had violated the Act of Parliament; but, under all the circumstances, he thought he might mitigate the punishment, and therefore committed him to two months' hard labour instead of three.

DRAWING IN GENERAL EDUCATION.—The idea, early suggested in our pages, of making drawing as much an elementary branch of general education as writing, is fast spreading, and we have every prospect of seeing it ere long fully realised. At the annual meeting and *soirée* of the Gateshead Mechanics' Institution, which it appears was so fully attended that many ladies and gentlemen, including the committee themselves, were excluded from the tables from want of room, the president, Mr. Hutt, while stating in his address, reported by the local *Oberverer*, that the committee had established a school for drawing, as suggested by Mr. Scott, the master of the Newcastle

School of Design, went on to remark that a knowledge of drawing, hitherto little regarded in all schemes of education in this country, is of great practical advantage to every one, whatever may be his situation or calling in life. Of course to every one engaged in constructive industry some proficiency in drawing is indispensable. The joiner, the builder, or the engineer who is unable to delineate on paper the objects he is required to make, will never pass for a conjuror at his trade. But it is a mistake to suppose that an acquaintance with drawing is of value only to artists and mechanics. It is valuable to every man in every position of life. It is valuable, not only for its own direct purposes, but for training the eye to observe with precision and accuracy the objects which it sees, and for enabling the memory to retain them. Perhaps no one ever observes external forms with entire correctness, unless he is able to draw them; and if any person not accustomed to the pencil should doubt the justice of this assertion, let him try to delineate from memory any object with which he is most familiar—a tree which he has gazed at from childhood—the house which he has lived in all his days—and he will soon discover that his real acquaintance with the details of these familiar objects is very limited and imperfect.

INCrustATIONS IN BOILERS.—We find by an American paper that in Louisville, where the water is strongly impregnated with lime, coal tar is said to have been found to operate much better than any other agent yet experimented with in protecting boilers from corrosion by lime incrustations. The mode of application is as follows:—The boiler having been thoroughly cleaned, a pint of tar is poured inside, and, as the boiler is re-filled with water, the thin film of tar which floats on the surface attaches itself to the interior. Afterwards, a pint of tar per week to a boiler of about 28 feet in length, is poured amongst the water to maintain the coating at first produced. By these means, the lime deposit adheres to the tar instead of the iron, and can be removed, it is said, with comparatively little or no trouble.

—In coincidence with this plan, we observe that Mr. J. Ashworth, of Bristol, manager of the Great Western Cotton-works, has secured a patent for the employment of a certain compound of coal-tar, linseed-water, plumbago, or black-lead, and Castile, or other soap, for the same purpose. The following proportions are said to have been found to answer:—33 gallons of coal-tar, 21 gallons of linseed-water (prepared by boiling with the aid of steam, 14 lbs. of linseed in water, and then straining to remove the seeds and other impurities), 5 lbs. of plumbago or black-lead, and 8 lbs. of Castile soap (or soft-soap, but not with so much advantage). These ingredients form a creamy composition, of which, for a 30-horse power boiler, one gallon is introduced twice a week (the steam having been previously blown off). The impurities scale off and fall to the bottom of the boiler, whence they can be swept out, or otherwise removed.

IPSWICH NEW GRAMMAR SCHOOL.—Since Prince Albert laid the first stone of this building (concerning the designs for which, the mode of selecting the architect, &c., our readers will remember an unpleasant correspondence in our pages) the works have proceeded steadily. The roof was on, and was, as we are informed, about one-third covered with tiles, when the western wall yielded, and the building has consequently been shored up pending the determination of remedial measures to be pursued. We have received some communications commenting in bitter terms on this result of an improperly-managed competition, and pointing out other defects, such for example, as placing the floor so low that it will at times be overflowed; but this seems so much like "hitting a man when he is down," that we do not insert them. It is an open timber roof, and the thrust appears to have been too much for the wall. The local *Journal* says,—"We much doubt whether the construction was such as it ought to have been, or in accordance with those ancient roofs which have survived some centuries; and we may also observe, that the

western wall being perforated for large windows, had not that thickness which is required for such a roof. There were certainly buttresses to the wall, but these were not placed so as to sustain the thrust of the principal rafters. Most unaccountably the tiles were first laid upon the eastern slope, thereby causing a pressure upon the wall, which was not supported by the adjacent building. The consequence was, as we have mentioned, the western wall gave way, and we suppose will have to be taken down."

ARCHITECTURAL INSTITUTE OF SCOTLAND—SANITARY IMPROVEMENT OF GLASGOW.—Thursday night, Dec. 11, the first sessional meeting of the Architectural Institute in Glasgow, was held in the Queen's Hotel—Sir James Campbell in the chair. Mr. Charles Wilson read a paper prepared by himself and the architects of the city, on the sanitary improvement of Glasgow. The subject was handled at great length, embracing the question in all its subdivisions, of width of streets, height of buildings, opening of thoroughfares, drainage, and supply of water. The whole was wound up with a scheme of sanitary improvement. The reading of the paper led to a discussion, in which Mr. W. G. Smith, Mr. Salmon, Mr. Finlay, Sir James Anderson, Mr. Carrick, Sir James Campbell, and the Lord Provost, took part.

LIVERPOOL ARCHITECTURAL SOCIETY.—The fortnightly meeting of this society was held on Wednesday, 10th inst.—Mr. Pictou in the chair. The chairman read a notice relating to the proposed architectural exhibition in London, to be held in the Portland Gallery, Regent-street. The chairman next alluded to the opening of the assize courts at St. George's-hall, on Monday, 8th inst., for the first time. He said the courts were not as large as they ought to be. The public accommodation was not consulted, for while the barristers had ample sitting room, there were no seats for strangers. The next defect was the bad hearing. The sound appeared to him to go behind the judge, instead of forward. Mr. Verelst suggested that a deputation of the members might investigate the causes of the deficiency of sound. Mr. Barry then read a paper upon the arrangement of workhouses, which embraced some remarks upon the present workhouse system. The subject for the next meeting was announced to be a paper by Mr. E. H. Stryke, "On the influence of fine-art schools."

MONUMENT TO THE LATE GEORGE STEPHENSON.—A meeting of the committee was held on Wednesday week at the Euston Hotel, Euston-square. Mr. Glyn took the chair. Mr. Geach, M.P., having been called upon to read the report, said the exertions of the sub-committee had been confined to the obtaining such subscriptions as could be raised in a quiet way, for they thought it was not necessary to raise a large sum of money, but rather to get subscriptions from a large number of persons. A general desire to contribute had been expressed by workmen, especially in the districts where the late Mr. Stephenson was well known. The result was that, with little publicity and very small solicitation, 178 subscribers had contributed 2,550*l.* 15s. 6d., and 3,150 workmen had given 285*l.* 2s. 7d. The expenses amounted to 72*l.* 18s. 4d., and the balance available was about 2,800*l.* That sum the committee believed to be quite sufficient; but if there should be any deficiency, the committee had authority for saying there would not be the least difficulty in making up the required sum. Mr. Ellis, M.P., then moved that the monument should be erected in London; and Mr. Geach subsequently moved that the directors of the London and North-Western Railway be requested to set apart a site at the entrance of the Euston-square station. A committee was then appointed, and the meeting separated.

BUILDING FOR THE AMERICAN EXHIBITION.—The building designed for this purpose by Sir J. Paxton is about 600 feet long, and 140½ wide, in three aisles. The roofs are sloping and slated, and have timber principals, which would require careful construction. There are turrets at the angles, and piers with lamps surround the whole.

HUNGERFORD HALL.—The theatres constructed here are now in full operation, and offer attractions to all sight-seers. In one, M. Langlois is exhibiting some capital "Conjuring," a very clever Indian juggler, and various optical illusions; and in the other, M. Lassaing is a magnetizer, and Miss Prudence are astonishing all who see them. Whether this last exhibition be regarded as the most extraordinary juggling that was ever effected, or the display of most mysterious natural phenomena, it should be seen by all who are curious in such matters.

MARYLEBONE LITERARY AND SCIENTIFIC INSTITUTION.—The new theatre, which we lately gave an account of, is in active use. The managers are going ahead with some spirit. On Thursday, 18th, a subscription concert was given, in which Misses Birch and Dolby, Mr. W. Harrison, and others appeared. We do think that whether the leading inhabitants of a neighbourhood delight in the literary, the scientific, or the more strictly amusing or entertaining branches of such institutions, or in all three combined, they ought to give their substantial support to them for the sake of the others to whom they are most useful.

CHESTER ARCHITECTURAL SOCIETY.—The monthly meeting of this society was held on the 1st. The Marquis of Westminster presided; and the Rev. G. B. Blomfield gave a topographical description of the original and present arrangements of the abbey buildings of St. Werburgh's, Chester. In reference to some remarks of the lecturer on the state of MSS. and abbey deeds, the Rev. Wm. Massie took occasion to bring before the meeting the general subject of the county, city, and ecclesiastical records. Those of the city were, as heaps of parchment, in heaps of dust, and the others at least needed a more minute classification, by some person well qualified to make a digest and descriptive catalogue of them for easy reference. Mr. Ayrton then drew the attention of the meeting to the objectionable character of new gas lamps now erecting on the city gates, and submitted a letter, which was adopted, and ordered to be signed by the secretary for transmission to the mayor, pointing out that the design of these lamps is out of character with the gates on which they are being placed.

ILES'S PATENT MARBLE.—The scarcity of the choicest kinds of marble and the expense of working, necessarily renders this material very limited in its application. As a partial remedy for this, numerous attempts have been made to supply the demand by artificial manufacture, and notwithstanding a growing feeling against "imitations," will doubtless continue to be so. The "patent marble" now before us, manufactured upon new principles, gives a successful imitation of many kinds of rare marbles, and is said to be durable and cheap.

NEW TABLE OF CAB FARES.—A correspondent, J. F., suggests the formation of cab fare tables founded on the principle of the square, or somewhat like the common multiplication table, with names of places instead of the multipliers, and amounts of fare between the two in the place of the product. An immense number of fares could thus be condensed into a small space, and be made intelligible to every one who understood the ordinary multiplication table. Even this, however, unless as a previous check, might be superseded by the use of the track-dial, measuring the distance run over by the cab-wheel and pointing it out to every passenger. The only objection we can see to this latter, on the faith, of course, that it measures the ground with exactitude, is the power it might give the cabman to take roundabout routes, for the purpose of lengthening his course, or of clearing uncompleted miles. The table suggested by our correspondent might be a check in such a case, and, at all events, it would have the advantage, which the dial has not, of informing passengers beforehand what they will have to pay between any two given points. In cases of cross-running, however, from place to place in irregular transit here and there, the dial should decide.

MARGATE PIER COMPETITION.—As the surveyor to the directors of the Margate Pier and Harbour Company, I am in a position to give a distinct contradiction to a correspondent's remarks appearing in THE BUILDER of the 13th inst., relating to the competition for a new landing-place. The directors have no plan before them: when the question of a new landing-place was first raised, a plan was offered to them, which they declined to accept or consider, nor has it been brought before the directors in any way; and I am quite assured that their only object will be to select from the plans which may be submitted to them that which may seem best suited to their requirements, without reference to its author.—WM. CAVELEER.

WESTMINSTER BRIDGE.—As you are taking some interest in the proposed new bridge at Westminster, let us hope you will exercise your influence in deterring the public mind from a cheap bridge, more especially from the so-called cheap foundations as are now being exemplified at Rochester and elsewhere, and such as were advocated before a committee of the House of Commons last session upon Westminster-bridge. The failures which have taken place in the foundations of the present Westminster and Blackfriars bridges ought to be a salutary lesson against cheap foundations. With the examples of Smeaton, Rennie, and Telford before us, and the noble bridges of Waterloo, Southwark, and London, which decorate the metropolis, it would be to our eternal dishonour if any but the most solid bridge were erected at Westminster. — It is to be hoped the architect will not forget to provide a railway on the new bridge to the central terminus in the City, as was proposed some little time since, as a branch to one of the railways on the other side of the river.—A BUILDER.

LITERARY AND SCIENTIFIC SOIRÉE AT NORTHAMPTON.—A grand soirée was held on Wednesday evening last, in the Corn Exchange, Northampton, to commemorate the opening of a new suite of buildings for the town and county Mechanics' Institute. There were nearly 800 persons present, including the principal resident nobility and gentry. Lord Fitzwilliam took the chair, and addressed the assembly, as did Mr. Layard, the traveller, in an interesting speech. Mr. Charles Knight, too, Mr. V. Smith, M.P., Mr. George Cruikshanks, Lord Henley, Dr. Conolly, and other gentlemen, addressed the meeting.

CONDITION OF FLEET MARKET.—I am old enough to remember when Fleet Market, in Farringdon-street, now, was one of the most frequented spots in London. But, alas! the spot is wonderfully changed. Putting the market on one side of the same street (on the shelf), and building a row of houses in front, has as completely crippled its use as though it had been sent out of town. You now enter a dreary cell-looking precinct, and if you enter it in Shoe-lane, your very limbs are in danger all the way through to Farringdon-street. It is a dark, dark, dismal hole, not even light enough for a criminal prison. Pray recommend them to put lights into the roof, and open the place to Farringdon-street wide. It ought, from its position, to be of as much use as Leadenhall or Newgate.—JOHNNY.

DONCASTER WATERWORKS, &c.—At a meeting of the Local Board of Health on Wednesday week, it was resolved "that the plan of Messrs. Nicholson and Tane, so far as the service pipes and tanks, be agreed to (previous to transmission to the General Board of Health for approval), but that the power of the present wheel be tested" before farther adoption. A letter from Mr. Trapp, of Manchester, was presented, but not read, in which the board was strongly dissuaded from taking their water from the river Don, into which the drainage from Rotherham, Sheffield, Chesterfield, and other places was disemerged before the water reached Doncaster. He recommended a minor stream called the "Beck" or "Great Ings," about five miles on the road to York, as a preferable source. Mr. Milner, a member of the board, offered his gratuitous services as surveyor to carry out their local Act.

DRURY-LANE THEATRE.—Mr. Marsh Nelson has been appointed architect to the theatre, in the room of the late Mr. Beazley.

TENDERS

Delivered 12th instant for the erection of the Bloomsbury Baths and Wash-houses. Messrs. P. P. Baily and G. Townall, architects. The quantities taken out by Mr. W. Wright and Mr. C. Balam.

Jewell	.....	£11,124	...	£185
Hicks	.....	10,500	...	255
Carter	.....	9,800	...	185
Little	.....	9,738	...	150
P'Anson	.....	9,600	...	200
Rigby	.....	9,440	...	150
Coleman	.....	9,240	...	150
Reading	.....	9,238	...	280
Piper	.....	9,194	...	300
Sanders and Woolcot	.....	9,150	...	195
Holland	.....	9,087	...	190
Mansfield	.....	8,985	...	190
Potter	.....	8,930	...	115
Myers	.....	8,668	...	185
Locke and Neesham	.....	8,188	...	277
Curtis	.....	8,182	...	492
Cooper	.....	7,880	...	135
Scissons and Robinson	.....	7,738	...	222

The second amounts were for enamelling the slate of the first-class Baths.

TO CORRESPONDENTS.

"Father and Payne v. Eslington."—Mr. Potter asserts that his name should stand more prominently in the report of trial than it does. He must settle this with Mr. Payne. "Edinburgh Weekly."—Perhaps some of your intelligent readers will be good enough to give a rule by which I may arrive at the best proportions for a retaining-wall of brick-work, and the batter proper to be given per foot. We will suppose the bank to be supported is of moderate ground, and 15 feet perpendicular.—A. Z.

"J. B." "W. R." (we have no time to call). "R. K." "W. D. P." "J. T. A. W." (we request you to forward him a plan of a tile and brick kiln, which he wishes to erect, and liberally enclose a postage-stamp. We cannot do this at the price). "A Subscriber" (Bristol). "W. H." "W. G. R." "E. K." "J. W." "Rev. H. A. C." "R. W. A." (call on the Editor). "M. N." "A Subscriber" (Chelmsford). "J. H. P." "J. M." (we shall pay a visit). "W. N." "S. S. T." "W. U." "W. J. B." "S. P." "R. B." "E. D. B." "R. W. G." "J. W. J." (received). "W. B." "Sir W. J." "C. C." Gas (send us your address).

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"Books and Addresses."—We have not time to point out books or find addresses.

ADVERTISEMENTS.

BENNETT'S THERMOMETERS, 66, Chancery-lane.—Baths, churches, gardens, and chimneys supplied with every kind of THERMOMETER at this manufacturing establishment, where 1,000 may be had for 6d., or may be selected from, at 1s. each, in which Lockwood frames, silver cases to suit every place, purpose, and climate. Bathing, and other Capital, Centre Flowers, Ballistics, Trusses, &c.; Elizabethan and other Chimney Shafts.

TO ARCHITECTS, BUILDERS, &c.
ALL descriptions of TERRA COTTA, CEMENT, AND PLASTER CASTINGS, executed in a practical manner, on reasonable terms, by J. HERBERT and SON, Modelers, &c., 44, Parker-street, Drury-lane. A splendid assortment of Cornish, Italian, and other Capitals, Centre Flowers, Ballistics, Trusses, &c.; Elizabethan and other Chimney Shafts.

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THE HOLYDAYS.—The ORIGINAL and EXTRAORDINARY PANORAMA of LONDON, painted by Mr. Farris, will be EXHIBITED, with the other splendid features of this Panoramic, on every evening (except Saturdays), from 4 till 10. The most admired music from two till half-past Four, and during the evening, when the conservatories, saloons, &c., are brilliantly illuminated. Admission, 1s.; children and scholars, half-price. CYCLOPEDIA, Albany-street, admission 1s. A grand exhibition of the Philosophy of Scientific Reasoning.—Numerous Prize Models, Works of Art, &c., from the Great Exhibition, will be explained by Mr. Crapsey—Optical Effects in Dissolved Colours, Microscopes, Schools and Children under ten years of age, half-price.—Open daily from Eleven to Five, and every Evening, except Saturday, from Seven till Half-past Ten.

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quality desired in a worn supply was softness. . . . The softening operation, by the use of lime" (proposed by Professor Clark, of Aberdeen, which uses the water from 2 grains of chalk per pint, or 1 ton per million gallons, without leaving anything else in the water in the place of the chalk) "is applicable in all seasons to the spring water, which indeed adapts itself with singular facility to that process. . . . The chalk is not only a softening agent, but it is also a purifying agent, and it is a fact which probably the extreme limit attainable anywhere in England for a great supply." *The water of the present companies is reported by the same authority to be about 14 degrees of hardness.* "The chalk spring water, after being softened," resumes the learned author, "is extremely pure water. It appears to be considerably superior even to the soft water from the surface of the Suesside. . . . The soft water is uniform in its excellence at all times, the sources of it lying beyond the influence of weather or season. In the judgment of the Commissioners, this softened chalk water is entitled, from the chemical quality, to a preference over all others for the future supply of

Water attested on such eminent engineering and chemical authorities to be ample in quantity, and the choicest in quality, can be furnished to the metropolis at the moderate average rate of 20s. per house per year, being only from a half to a third of the charges of the Grand Junction and West Middlesex Water Companies, and yet return a dividend of 8½ per cent. upon the capital to be expended in carrying out the undertaking. This was shown in a formerly published and carefully considered estimate of the Engineer of the Company, as follows:—

Say 40,000 houses, supplied with 170 gallons per day, at an average rental of 20s. per house	£40,000
1,200,000 gallons distributed to large wholesale consumers at 3d. per 1,000 gallons.....	5,475

Annual taxes, and working expenses	£15,725
Say, capital expended (including 10,000 <i>l.</i> for Act of Parliament), 350,000 <i>l.</i> , at 8½ per cent.	29,750
	<u>£45,475</u>

On the one hand, the well-attested superiority of the water, precluding all idea of future competition on the score of quality, and on the other, the economy of the proposed works compared with any of the existing ones, induced by the present low prices of iron and other materials necessary for the construction of them, unite in commending the undertaking to capitalists as affording a rare opportunity for making a profitable and safe investment.

proliferate and sale in increments of 25 gallons. A highly speculable pecuniary investment that the present undertaking claims encouragement. A cheap supply of soft, bright spring water, uncontaminated by the sewerage of towns or by the surface drainage of manured land, distributed at an agreeable and uniform temperature through pipes constantly charged into the houses of the city, is a desideratum which the House of Commons has long been disposed to secure to the public by the Act of Parliament authorising the present undertaking, — will be conducive to the health and to the comfort of all classes. The highest price for the water to be sold at the public sale, to be determined, by an express clause in the proposed Act, to a rate (according to the rental) that was agreed upon between the promoters and a committee, appointed for the purpose at a public meeting of the ratepayers of Marylebone, held in the Princess's Concert-rooms on the 29th of January 1829, was fixed at 10s. per 100 gallons. But the House of Commons has, at 280 feet above the sea the rates will be necessarily somewhat higher than the former mentioned, to compensate for the great elevation to which the water must be pumped and the dispersed situation of the houses, but the maximum rates for these places will be 12s. per 100 gallons. The water to be sold at the public sale, to be determined to the consumers a constant supply of cheap and good water, cannot fail to lessen the price and correct the quality of the water in surrounding districts. Indeed, the recent sale of the waterworks of the Corporation of London, which has made manifest that the introduction of such a company is the only practicable means of procuring long-desired but hitherto withheld improvements. It is a company similar in principle to the present that has lowered the price of gas in the City from 7s. per 1,000 cubic feet to 5s. per 1,000 cubic feet. The House of Commons has, by an express legislative enactment, that the present price of 4s. shall not be again raised. Promising a beneficial influence thus made, the undertaking claims the support of every intelligent and well-wisher of the community.

* Distilled water must be regarded as devoid of hardness, that is to say, no portion of any soap put into it for use is destroyed by any matter that the water itself contains. The presence of lime or magnesia is the cause of hardness in the Thames and most other waters. Each degree of hardness (or the quantity of lime or of calcium contained in a grain of chalk) dissolved in it by whatever means. Every water with any hardness will, in proportion to its degree of this quality, destroy 3 degrees of hardness will destroy about 6 ounces of pale soap, and another of 14 degrees will destroy 14 ounces of pale soap. If the water is so hard that it will destroy 14 degrees of hardness, but after these respective quantities are destroyed, the waters are equally soft, and every additional ounce will produce the same cleansing in 100 gallons of either as it would produce in 100 gallons of

† Consisting of Thomas Chapman, Esq., F.R.S.; George Glasier, Esq.; Edward Joseph, Esq.; William Kensitt, Esq.; Peter Northall Laurie, Esq.; John Nicholay, Esq.; William H. Chicheley Plowden, Esq., F.R.S., M.P.; Jonathan Soden, Esq.; John Williams, Esq., M.P.; James Wyld, Esq., M.P.

To the Directors of the London (Watford) Spring Water Company.

GENTLEMEN,—I request that you will allot to me Shares of £25 each in the above undertaking, and I agree to accept such of this number of Shares as may be allotted to me, and to sign the necessary Deeds, and to pay when required, the Deposit of £1 7s. 6d. per Share thereon.

Dated this day of 1868.

Name and Surname in full	...	...	...	...	...
Trade or Profession...	...	...	...	...	...
Residence	...	...	...	...	...
Reference	...	...	...	...	...
State whether Consumer or otherwise	...	...	...	...	...

The Builder.

No. CCCCLXIV.

SATURDAY, DECEMBER 27, 1851.

WE close to-day our Ninth Volume, and in accordance with what has been our custom, would offer thanks to our co-adjutors and friends, solicit the kindly verdict of our readers on review of the labours of the year, and renew our promises to endeavour to render the work more and more deserving of public support. Our promise at the beginning of the year to enlarge *THE BUILDER*, without increase of price, has been kept, and we venture to assert, without fear of contradiction, that such an amount of information and illustration as this volume contains on the subjects of which it treats, was never before given in the same space of time. Nearly the whole of the matter, too, is original, and appeared exclusively in our pages. The works going on in Ireland have for the first time been made generally known in England; of American doings we have given much information; and our foreign intelligence has been very full and interesting.

Amongst the modern buildings illustrated will be found the Model Baths and Wash-houses, Whitechapel (Baly); the Royal Irish Yacht Clubhouse (Mulvany); Trinity College, Perthshire (Henderson); Interior of the Great Exhibition Building (Paxton); Queen's College, Belfast (Lanyon); Interior of Army and Navy Club (Smith and Parnell); the Diana Baths, Vienna (Förster and Ekel); the Great Globe-house, Leicester-square (Abrahams); Hertford House, Piccadilly; interior of British Museum (Smirke); Batty's Hippodrome (Taylor); Prince Albert's Model Cottages (Roberts); Museum of Fine Arts, St. Petersburg (Von Klenze); Somerleyton Hall (Thomas); City of London Prison (Bunning); the Medieval Court, Great Exhibition; Middlesex County Lunatic Asylum (Daukes); entrance to St. Patrick's Church, Dundalk (T. Turner); new carved screen, Ely (Scott); design for a church (M. Nepveu); Ordnance Office, Pall Mall (Pennethorne); Sir R. Peel's Grammar School (Smirke); Training Institution, Bishop's Stortford (Clarke); St. Helen's Schools, Paddington (Meyer); interior of the new House of Commons, as altered (Barry); the new Record Office (Pennethorne); the Cloister Court, Westminster (Barry); monument to Frederic the Great of Prussia; the Freemasons' School, Wandsworth (Hardwick); King's Cross Railway Station (L. Cubitt); Oxford Diocesan School (Clarke); St. Apollinaris, Remagen (Zwirner); New College, London (Emmett); the Royal Panopticon (Finden and Lewis).

We have also given views and details of Ely Cathedral; the Great Hospital, Milan; an Indian Dargah; St. Stephen's, Walbrook; the Chapel Royal, Whitehall; Palace at Khorsabad; the Palace Dei Pergoli Intagliati, at Venice; the Cloisters at Chemnitz; the *Palazzo Dario*, Venice; Prior Cravden's Chapel, Ely; Casa Visetti, Venice; Notre Dame, Oberwesel; Waltham Abbey; the Interior of St. Mary Redcliffe, Bristol; the Mayor's Chapel, Bristol; the Cornari Palace, Venice; the Linen

House, Frankfurt; Cathedral of Catania; Woodwork, St. Geron, Cologne; Specimens in the Great Exhibition; Chapter House, Mayence Cathedral; St. Cross, Winchester; the Casa Zaporta, at Zaragoza; Ulm Cathedral; St. Stephen's, Mayence; and many other specimens of ancient skill. Were it not that we feared to tire the reader, we might remark, on an occasion like this, when a little self-gratulation is permitted, that opportunities afforded by the Great Exhibition to obtain information were not lost sight of, and we might also point to many essays of great interest and value by writers of known ability.* A glance through the volume will show how much has been effected in the United Kingdom during the year in our specialties, and we are led to exclaim—

"What cannot art and industry perform,
When science plans the progress of their toil?
They smile at penury, disease, and storm,
And oceans from their mighty moulds recoil."

But it shows also how much may yet be done,—how much must be done,—to advance the interests of the country, to lessen disease, to lengthen life, to improve the artistic perceptions, to elevate the condition and increase the happiness of the people. In furtherance of all improvements, we shall endeavour to assist: our efforts on some previous occasions, we venture to say with humility, have not been without effect: and we have still the same desire and determination to advance all good views, with, at the same time, increased means. Materials for our work are never wanting: they become more and more plentiful,—

"For the structure that we raise,
Time is with materials fill'd:
Our to-days and yesterdays
Are the blocks with which we build."

With increased space and increased influence, have come heavier responsibilities and the need of greater labour. We are fully prepared, however, for the task; we see where the journal may be improved, know how much more useful it might be made, and we earnestly invite the co-operation of our readers in bringing this about. Those who cannot give us information may be able to assist in increasing our circulation. We should be ungrateful and unjust if we complained of want of support; but if each of our present subscribers would obtain for us only *one additional buyer*, it would enable us to increase immensely the efficiency and excellence of *THE BUILDER*. We have many to thank for kindly feelings expressed and ready assistance afforded during the past year, and we do thank them warmly and sincerely. It has always been our ambition to obtain the good opinion of our readers, and to foster relations with them, we hope excusably, of a more friendly character than the merely professional purposes of our journal would seem to induce. Apart from other avocations, each of us has a building to erect of the greatest importance,—we have to *build up ourselves*,

* Amongst those whose writings will be found in the present volume of *THE BUILDER* are Professor Cockerell, Professor Donaldson, Professor Hosking, Mr. E. L. Garbett, Mr. Edward Cressy, Mr. Britton, Mr. J. H. Parker, Mr. E. Sharpe, Mr. G. G. Scott, Mr. Kerr, Mr. Tebay, Mr. Dove, Mr. R. Brandon, Mr. E. Freeman, the Rev. J. L. Pettit, Mr. Charles Hill, Mr. James Wyllson, Mr. Hughes, Mr. Eugenia, Mr. Fowler, Mr. Griffiths, Mr. Grace, Mr. Papworth, Mr. Ruskin, Mr. G. R. Corner, Mr. Roach Smith, Mr. Thomas Little, Mr. Colling, Dr. Bell, Mr. C. H. Smith, Mr. Fanson, Mr. Ashpitel, Mr. Sibley, Mr. Wornum, Mr. Waring, Mr. James Ferguson, the Rev. G. A. Poole, the Rev. R. Burgess, and many others.

A title-page in colours may be obtained *gratis*, as usual, by those subscribers who prefer it to that which accompanies the Index in the present number. Covers for the volume may be obtained at the office, price 2s. 6d.; or the publisher will bind it for 3s. 6d.

The binder should be reminded that some of the plates require to be folded. The complete volume may be obtained, price 21s.

and for this structure other materials are wanted than stone and mortar, other precepts than those of Vitruvius. It must be founded on Faith and Love, reared with Knowledge, strengthened with Good Principles, cemented with Earnestness, and adorned with Kindness and Charity. Let us each strive to do this, our greatest work, well,—not impeding, but with friendly hand helping one another.

"In the eider days of Art,
Builders wrought with greatest care
Each minute and unseen part;
For the gods are every where.

Let us do our work as well,
Both the unseen and the seen;
Make the house where gods may dwell
Beautiful, entire, and clean.

Else our lives are incomplete,
Standing in these walls of Time;
Broken stairways, where the feet
Stumble as they seek to climb."

ARCHITECTURE AND HER OFFICES.

WHEN our first parents wandered sadly away from the gates of Eden, beholding, as they gazed behind them, the fiery, forbidding swords of the angels, and before, a vast and lonely tract, desolate as their own minds, blank to them as their hopes,—then their one overpowering sensation doubtless was, that they were without a home. They, leaving in their misery a garden for the dreary wilderness, quitting hope for despair, felt then and long after, in one continual stroke, that last affliction, of being lonely without a home. They had experienced home in the very highest and most lovely sense—in their faith and their contentment; it had been alike expressed to them by the genial beauty of inanimate nature, and by the loving compliance of the lower creation,—of home, the voice of the many waters, the rustling of the trees, the lowing of the quiet herds, were all eloquent—light beamed of it, darkness prophesied of it; it was their home that the sun—terrible indeed in his splendour—rose daily to cheer and to adorn; the stars, they thought, were held forth as lamps by the angels only to illumine it; at each succeeding dawn the gay carols of the birds were but as blithe variations on the same theme; the tale of home dropped to them from heaven in the bubbling notes of the lark, and the last, deep tone of the nightingale's long-trilled and thrilling melody exquisitely syllabled "home." And they, being still natural, felt that story of all nature—the throbbing of emotion which answers to no words, the sudden glow through all the frame, which even now we experience, then often attested more eloquently than prayer or song that they felt what home was, and were grateful. But the time came when all this joy departed, and when, as the value of things is most fully appreciated only by their loss, man stood, so to speak, outside his happiness, naked and conscious of it, for the first time endeavouring, it may be, to form a word expressive of what he had lost, and wasting with a desire to replace it; then, feeling that he was indeed homeless, and striving for the restoration of at least the semblance of his peace, the reflection of the lost light, the echo of his Eden's music, in a word, the phantom of his former home. At this point we view him such as of ourselves we are; liable to disease, defenceless, shelterless, subject to the same moral miseries as we, and, like us, physically exposed to the vapours of the fen, the wandering sickness that haunts the wind, and the fury of hurricanes pursuing each other and battling round the world.

Man, then, was in fact left to himself in search of a home; in fact, for it is not mere poetry to say so, he wandered on the face of the earth seeking rest; he cried aloud in his solitude for one who should instruct him. And was there not truth in the prompt reply of that secret voice which said, "I have built around thee—imitate my work?" Then was it that the spirit was gathered together from mountain, vale, and forest, and assumed a shape, and met man the wanderer, like some consoling angel, breathing of order and beauty, and became associated with him; and from

the spirit of nature, in communion with the intellect of man, arose art, and so architecture. Thus, from the very origin of things, it is evident that architecture is the child of nature and necessity; and our idea of the feelings likely to result from a loss of home (for this purpose introductorily alluded to) will suggest the cogency of the force that first taught man to cover his head from the elements. Let us mark that, for it leads a step further. It means that the thing first aimed at in the building was the roof, as nature taught those who must first have used her trees, in the East her cedars, covering the earth like the tents of angels, and under whose dark bowers the Oriental people early sought protection. For among them, where, from excessive heat and faint movements of air, the main thing naturally desired was, shade from above, and free circulation of air beneath, the tree was an appropriate respondent to that want; but there being also a burning wind, enclosure would be necessary on this side against it,—aperture away from it, on that; and they would therefore train the branches into bowers to serve the end in view. But men would not ever remain in the same place; they desired to wander; they must carry their bowers with them. Having, then, often made them shelter with the forest branches intertwined, they made the first tent of the boughs of trees in imitation of trees, and bore the form away with them, whither often the forest was not. Thus, for centuries, many Oriental tribes dwelt in tents; but when they sufficiently congregated to settle in an available place, they employed architecture, and gave her the tent as a type. Here, then, have we traced a direct descent from nature: she produces the tree, the tree suggests the tent. Now for other, not Asiatic, tribes, let us take, not the tent, but the cool cavern as our type; and for each race, something suitable to their known habits; and we shall find, allowing for such modifications as nature experiences from the treatment and wants of man, that their various architecture was derived from her: we shall touch upon the origin of styles. But we have not yet struck our tent. The form of it is shadowed out in many Eastern edifices: numerous slender unobstructive columns, allowing free current of air, sustain a swelling and important roof to baffle the sun; the outline, as in China, is often strikingly suggestive of the type. The large buildings, successions of tents, encampments, so to say, serve still more to keep off the heat, and allow the cooler air to play with unseared wings amid their graceful plinths, as numerous and shaded as the trunks of the pine forest: there, too, murmur the multitudinous fountains like natural springs in the quiet grove of art; where the relaxed limbs are cooled, the hot brow is shaded, the fever of the lips assuaged. We have sufficiently for our purpose considered the question of natural origin of architecture, and origin of styles. Let not him who would build in the Eastern style forget the tent, or he will never arrive at the spirit of it! Neither let him disdain to learn from the grace of the palm, nor apply to Oriental art the gnarled rigidity of the oak. Let him not take for it his governing idea from those caverns and mountain hollows, from which other nations originated grand and severe modes of building; but endeavour, if he seek to follow out styles, to possess himself of the spirit that suggested them, of the forms that are naturally used in them, and he will do well. Here, then, let us style architecture in her first office a Provider of natural wants, supplying them according to their kind; composing the house, and by consequence much influencing the nature of home associations as she offers utility and comfort or their reverse—a fact to which we are only now awaking with respect to ourselves. We observe that she was originally a provider according to the habits of the people, the requirements of their climate, the productions of their land; and why? Because they were what we call natural, and made her so too. We see that she was not embodied in a stifling form in the heat, in a form foreign to the materials of the country she subserved, in a form repulsive to the

natural association of the people,—not forcing the Oriental to have a Parthenon if he and his necessity bade her build after the fashion of a tent. Styles of art are not causes, as some appear to imagine, but effects. There are those who think they can invent styles, and change the habits of the people through their means. How should a style invented by one individual, of necessity suit a nation for ages? It is the habits of nations that give rise to styles, not styles to habits. Many generations pass ere a style is perfected; and the building which is the model of that consummation of art, often stands over the graves and the bones of those who originated its system. A child plants the sapling, but the autumnal leaves of the mighty tree fall on the tomb of his descendant. The astute Egyptian on the banks of the Nile; the thoughtful Greek in Attica, in a rude colony with a barren soil; the secluded monk in an England of 11,000 castles, each bending his mind to the arts, severally elaborated those styles in which, far later, the Pharaohs glorified themselves; Pericles, his country; the Plantagenets, their God: which the sands of the desert long have covered; the modern Greek incuriously passes and understands not; the modern English imitate, but cannot advance. Architecture is not truly a provider, save she fully answer national wants, climate, and habits. The claim upon her in her first office is for sufficiency, observation, and compliance. And now she has provided the homes, now that the nucleus of the future city is formed, and every man sits under his own roof-tree, around which cluster all his hopes, Architecture asserts her second office, and becomes a Protector. She is embodied in the huge walls, the threatening ramparts, the looming towers; she becomes stern and terrible, and stands girt up for war; she looks over the whole country in search of the enemy, and his scouts ascending for the first time the other side of some opposite hill gaze with dread and disappointment on her unexpected grandeur. She circles China like a vast reposing serpent, silent of its origin. She rises with Babel to the clouds, and is so secure in Babylon, that she laughs alike at God and man, and is called impregnable. She frowns on the army of Cyrus, and seems to hurl back the arrows on the host that bend their idle bows at her, far down below. She has already kept the grand sire of Belshazzar waiting in fury ten years outside of Tyre, and then yielded only when every shoulder in his host was peeled; but at Babylon fell only before heaven, betrayed by the river. She, who had clothed the perpendicular rock beneath the temple of Solomon with stone from base to summit, and had crowned that summit with her greatest wealth, long defied the wrath of Titus, and again falls, not by the will of man. She stretches herself from Athens to Piræus, and becomes one main cause of the glory of Attica. She crowns the capitol of Rome, and guards the city; she strides across all Italy with stupendous aqueducts, and fetches the water to the city, which she never forsakes. She fortifies all Europe, hanging upon the peaks of the mountains, and crowning the valleys' slopes. But she has long, long since launched into the deep with the Phœnician; nations put to sea with her to found a Massilia or a Carthage: for Greece she becomes the terror of Asia; for Rome the terror of Greece. Nor need we dilate on the discoveries made by her means, nor say how she served the Venetians, nor the Genoese, nor the people of the Spanish peninsula—nor how, in the north, handed down from the vikings, she lent first her power to the Dane—then her glory and might to the race of Alfred; now surrounding the land of the Angles with a moving wall of defence, now traversing the far deep for the silks of China and the spices of the isles. Architecture, then, is a protector, and we claim for her, in this office, that she be equal to the defence assumed in it: that the main feature in her work be strength both in fact and expression, let the situation be well considered, the greatest strength be where nature is weakest,—an equal appearance of strength be afforded wherever approach is pos-

sible. Much that was valuable to know formerly, is now of little importance: fortification of the Babylon type has become useless: but there is much we may still insist on; such as, when possible, elevation of place for the fort, so that it commands and is not commanded by others. An orderly relation between the several points of defence, so that there be a facility of speedy communication and co-operation, should be observed, because there is nothing weaker than a series of straggling posts, every one of which is an aid for the destruction of the rest. I think this has been often enough proved in modern warfare. Orderly compactness, neither crowded nor over diffuse, good dispositions for the watch and signal, large and strong magazines, independence as much as may be of the surrounding country, many wells, all important buildings themselves built on the plan of fortresses, jealousy of gates and bridges, arrangement of streets well supporting a system of internal defence, a capability of resistance in many relative posts, are what we chiefly desire in the strong city. Nothing is more vexatious to a besieger, than to find a continually fresh obstacle where he imagines he has just overcome the last—hence the double, triple, and sevenfold walls of the ancients. The modern city well worth studying on this head is Genoa; also let us carefully consider its attack by General Massena. But, thank Heaven, little need have we of strong cities; our attention is claimed by our ships. It is impossible here to say all I would upon naval architecture; but it is an interesting subject, and there is much that is curious in the accounts of ancient vessels, and the construction of modern. It may seem useless (but what information is useless?) to enter on these branches of the art; but, indeed, they are monopolized too much amongst us, and the naval science appears greatly to suffer from the neglect it experiences in the most maritime country in the world.

But architecture, having provided and protected, appears to consider what she may do to Bless her nation. She has provided and protected, and will be grateful to the gods who have permitted her to do so. But the method of building that sufficed for the mere dwellings of the people, will not serve for the temples of the gods. The manner of the poets is followed. Poetry was first employed in the cause of religion. So soon as language came to be definitely formed, and to possess a variety and choice of expression, the celebrations of the divinities claimed the higher efforts of speech for their peculiar service; the poet, he who was naturally gifted with the power of expression, felt that the gods should not be hymned in the common language of life, but that sublime epithets, beautiful metaphors, and a chosen array of terms, all of them the best possible he could find, ought to be used in speaking of the highest powers he believed in or could imagine. And the poetry was nearly always in proportion to the subject in moral value—always of the best in art, independently viewed from religion. Hence the sublimity of the Jews—hence the beauty of Homer, especially to those of his day, and in those particulars that celebrated ideal divinities whom we ridicule—hence the fearful grandeur of Dante, the even splendour of Tasso, the calm magnificence of Milton. All arose from the intense desire in them to be in any way equal to their religious subject. Some have wrongly said that poetry is of itself a bane to morals; but the fact is, that the religions of old occupied the poetry first—because, when men came to exalt their deceased kings and chiefs to divine honours they exalted their vices with them, and worshipped—adoring themselves in those they had deified; and the poetry being applied to honour the gods, honoured, of course,—and very conveniently—their disgraceful attributes, became polluted, and so lent aid to keep up a system of lies, until it became the very Bible of paganism. Now, we have touched upon this topic because the case—so far as the determination in this way to excel is concerned—was the same with architecture, but from the difficulty of any expression—that of vice included—we have the beauty with-

out the bane. Beauty, after provision and protection, had time to develop itself; men were at leisure to study it; they had then homes, and were protected from the foe; they delighted in it naturally, and they built as though but to one goddess, and that one, Beauty: witness the glorious temples of the Greeks! We know that the ancients had some deity connected with nearly every relation and action of life; there were gods to propitiate, whether in the senate-house, the theatre, or the home; and, therefore, in all that they built, they would naturally endeavour to render them edifices worthy of divine acceptance and protection: should the goddess of Wisdom dwell in a foolish, ill-built house? Should Jove condescend to thunder from a hovel? Would he sit upon the capitol in a dilapidated hut? Would Janus bear with ungainly wooden doors? Would all Olympus consent to meaner habitations than the people they condescended to dwell with and protect? The demand for adornment called up painting and sculpture, and we at once find Architecture their preserver. She spread her wings over the sister arts, and warded off on to herself the cruel blows of Time! She stood ready with open doors for all that was beautiful in either house—the paintings blushed upon her walls, the statues thronged into her courts. Perfect in proportion, symmetry, and grace, she was as a goddess protecting gods. Jove came, and Minerva came, and sat serene in marble under the shelter of her temples, forsaking Olympus for the abodes of men. The architect unconsciously built the heaven, the sculptor made the god, and each worshipped himself in his work. Why did they never understand they must themselves be more gods than their own creations? It may be that they did; but knowing nought better than themselves, preferred to be silent, wiser, according to the world, than Socrates. Still Architecture preserved the rest, and they were at one with her, because they originated in the same principles: had they not so originated they would have disfigured, not adorned, her house.

H. T. BRAITHWAITE.

ROYAL ACADEMY MEDALS.

GENEROUS EMULATION.

It was with much surprise I saw Professor Donaldson's signature to a letter on the above subject, which appeared in your columns of last week, and I think it due to the competitors in general that your readers should be put into possession of the facts of the case, namely, that that portion of the conditions which he mentions as of "such trifling importance, namely, that the drawings should be made 'from actual measurement,'" is the main difficulty of the undertaking, and that the skill and ability requisite in making a "beautiful set of drawings" is of a very different nature to actually measuring so admittedly difficult a subject as the tower and spire of Bow Church, the only means which we could see of doing which was, by means of proper tackling, being raised in a box from the ground to the principal cornice of the tower, measuring the various details as we ascended, the same process being repeated in the measurement of the greater portion of the spire. Now, I think the "wisdom and justice" of the council will be very apparent when it is known that the said student's drawings were not rejected "because he had not climbed to the top of Bow spire," but because he could not have (comparatively speaking) measured any portion of the structure.

Again, as Mr. Donaldson says, "I am anxious to express my disbelief in the report current in the rooms at the time that the other competitors, fearful of the brilliant talents of their able antagonist, memorialised the Academy to exclude his drawings on the ground of non-compliance with the instructions;"—I now take this opportunity of denying distinctly that we acted from any such motive; we were totally unacquainted with the "brilliant talents" of our "able antagonist," having never seen or heard of any drawings executed by him; but, acting from a sense of the duty we

owed, not only to ourselves, but to the students in general, having first consulted one of the council, we wrote praying an investigation. The council, we presume, feeling the justice of this appeal, excluded the drawings, and no doubt lamented with Mr. Donaldson the want of energy, determination, and spirit which induced the student to fall short of his duty.

HENRY SAXON SNELL.

I AM sorry to have it in my power to dispel the very charitable disbelief expressed in Professor Donaldson's most proper and well-timed letter of last week. It is beyond a doubt that certain of the candidates for the silver medal in architecture did memorialise the council, demanding the exclusion of one of the sets of drawings submitted.

The simple facts of the case (which, as containing a warning to future candidates, I hope you will not refuse to publish) are as follow:—The student whose drawings were set aside, went to Bow Church, and very carefully measured the steeple from the ground to the base of the obelisk; the remainder, the most remarkable feature wherein is the dragon-shaped vane, being inaccessible, he drew from the eye, and according to pre-existing drawings. He subsequently discovered, however, that the other candidates had clubbed together, and erected a scaffold upon this part of the building; but unfortunately he made this discovery too late to enter into any negotiation for the use of such scaffold. He did not, however, put himself to the trouble and expense of erecting another scaffold, but felt assured that, as in previous instances, it would not be expected that the candidates should have measured those portions of the building inaccessible by ordinary means. The drawings were hung in the Royal Academy; but, owing to the memorial to which I have alluded, were taken down again. It is certainly very curious to observe the result of the increased facility supposed to have been gained by the aid of that most humble of architects' assistants, the bricklayers' labourer, contrasted with the case wherein such aid had not been resorted to. The several sets of drawings represented the total height of the tower thus:—

1st set	22ft. 8½ in.
2nd do.	230 6
3rd do.	217 3
4th do.	No total height given.
and 5th do. the rejected set	218 10½

The memorial combination has been so justly characterised by Professor Donaldson, supposing the possibility of its having taken place, that I refrain from offering any further comment upon it; but one thing it were easy for me to show, that the rejected, but nevertheless much honoured, candidate might have avoided the ill-natured cavillation to which he was so subjected, and yet, after all, never have measured the dragon and obelisk. * * *

W. B. COLLING.*

PANORAMA OF NIMROUD.

MR. BURFORD, assisted by Mr. Selous, has set up at the Panorama in Leicester-square a view of "the throne and glory of the ancient and illustrious kingdom of Assyria," showing the scene of the greatest of modern explorations,—explorations which have justified history and illustrated the truths of religion. At the *soirée* in Northampton, mentioned last week, Dr. Layard told his audience that in speaking of the ruins of Babylon or Assyria, they must not picture to themselves temples and monuments such as were to be seen in Italy. Those ruins, on the contrary, consisted of vast mounds of earth, something like the ancient barrows to be found in this country, and some of them were as much as 3,000 yards in length, and occupied many square acres of ground. These vast mounds were literally the heaps to which the prophet Isaiah referred when speaking of the ultimate fate of those cities, which were in his days as flourishing, as great, and as populous as our own London is at present. They must re-

* We have received some other letters on the same subject, but have not space for them.

member, he said, that the mounds to which he had referred consisted of vast platforms of earth, beneath which the remains of palaces lay entombed. The mode of construction employed in these edifices accounted for the present state of their ruins. The lower stories of the edifices were built of alabaster, a substance exceedingly well calculated to perpetuate the pictorial representations of their great national events, and the explanatory descriptions with which they were accompanied. The upper part of the buildings was constructed entirely of sun-dried bricks. The consequence was, that when, in the lapse of time, the materials of the upper stories decayed, they eventually fell in, and buried in their debris the imperishable memorials beneath.

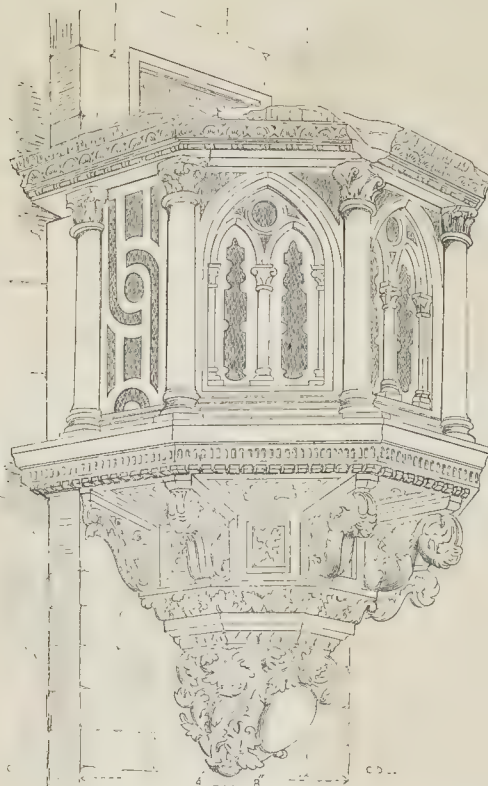
Mr. Burford's view, which well illustrates this statement, is very charmingly painted, especially the distance, and will be viewed by all with interest: it scarcely gives that notion, however, of the extent of the excavations which the accounts describe, notwithstanding the remarks we have quoted. In the north-west palace, for example, the excavations disclosed a perfect labyrinth of halls and chambers: by bringing these closer to the spectator a striking point of interest would have been obtained, and a variety given to the view. The removal of the great bull forms an interesting feature: it is on a rude carriage dragged by a large crowd of men precisely similar to representations of the transport of similar monoliths thousands of years ago, still remaining in the tombs in Egypt.

THE IMPROVEMENT OF GLASGOW.

IN the course of Mr. Wilson's paper read at a meeting of the Architectural Institute of Scotland, already mentioned, it was recommended that no ash-pits or dungsteads should be permitted in back courts, and the accumulation of ashes should be removed daily, the same as in other towns. Landlords should be bound to have their stairs well lighted. It was further recommended that baths, washing-houses, and public parks should be established, under the sanction of the authorities, the latter especially, as both securing recreation for the inhabitants and improving the salubrity of the city. A hint was also thrown out that much good would be done by removing fleshers' shops out of the public streets, and that more stringent regulations for such public works as emitted noxious vapours might be devised. All places of public amusement should have fire-proof stairs, and all the egress doors of them should be made to open outwards. In obtaining a Municipal Sanitary Bill, provision should be made for opening up the lanes and wynds in the denser parts of the city, and to look out for and purchase ground on which houses for the working classes might be built. The Board to be appointed under the Act should be empowered to tax the inhabitants at a rate not heavier than the present court-house tax; and it was not thought that, for such a worthy object as the one contemplated, anybody would object to be assessed at 1d. in the pound. As to the drainage of the city, this was viewed as of very great importance. After a minute inspection of various parts of the city, the committee who drew up the paper were of opinion, and they were so advisedly, that the drainage was alarmingly deficient. In the case of Glasgow, with a population of nearly 400,000, the idea of discharging within a confined range the sewerage of such a town into the river was most dangerous. If the Clyde was to be used as the great common sewer of the city, it must be under such arrangements as should secure to the inhabitants its salubrity instead of the reverse as at present. The plan proposed to obviate the evil was to form parallel drains to the Clyde, which should run alongside the river for a certain distance, and be discharged at such a place below the town where the tide would fully act.

THE LATE MR. JOHN BUCKLER, ARCHITECT.—We regret to have to record the death of this gentleman on the 6th. We will give some particulars next week.

PULPIT AT PERUGIA.



PULPIT AT PERUGIA.

THE pulpit represented in our engraving is one of those elegant specimens of a mixed style which are so frequently met with in Italy: it is projected externally from the façade of the cathedral, which forms one of the sides of the principal piazza of the town. The present building dates originally from the end of the fifteenth century, but the exterior has been Romanized. The pulpit is very sharply carved in marble, and the panels have been encrusted with mosaic work. It was entered from the interior of the church, and is not much raised above the terrace, which is in front of the cathedral; but as that is reached by a flight of steps from the piazza, it occupies a commanding position with reference to the latter. The date of the work is probably nearly coeval with that of the building itself. C. F.

THE LATE STRIKE.

THREE journeymen and two apprentices have been charged at the Lambeth Police Court under the Combination Law, 6th of Geo. 4, cap. 129, with various acts, proved in evidence against one or other of them severally, such as annoyance, threats and intimidation, stealing and injuring tools, tearing and destroying clothes, throwing an axe, stones, wood, &c. at fellow-workmen employed by Mr. Myers during the late strike, and thus putting them in fear of their lives by ruffianly and illegal conduct, and compelling them to quit their employment. On the part of the defendants, Mr. Thomas Walker, their foreman, was called, and his testimony was entirely against the complainants, and in favour of the defendants. Witness admitted, however, that he had advised the complainants to

leave their employment, as there might be danger in their stopping.

Mr. Binns, in reply to the charge, contended that there was a total absence of any proof of combination.

Mr. Elliott observed, that intimidation and other improper acts had been proved against all the prisoners except Summers, and that person he should discharge. The conduct of the others, and more particularly Smith, was highly improper, for although the law gave workmen the perfect option to work or not, they must not prevent others from working, and if they did, they must take the consequences. He then sentenced Smith to two months' imprisonment, and Collins and the two apprentices, Pointon and Hayes, to one month each. Mr. Elliott, in conclusion, expressed it as his opinion, that the conduct of the foreman was deserving of reprobation.

NOTES IN THE PROVINCES.

Thetford.—The restoration of St. Cuthbert's Church has formed a subject of difference in the parish vestry, one party, according to a correspondent of the *Norfolk Chronicle*, being determined to patch up the old work, such as the "rotten roof," which they proposed to "line up and slate, extending the flat ceiling, which is 17 feet only from the floor, with other propositions nearly as reasonable," the whole cost to be 500*l*. A report by Mr. Farrow, of Diss, architect, was read, in which it was stated that the foundation, walls, arches, and roof of chancel were mainly sound. Plans and specifications, it is said, were produced for the complete restoration and enlargement of the church, with open roof, and a small bell-tower. The patchwork plan, however, it is added, was moved and adopted by a major-

rity of one; but as "the more intelligent part of the vestry declined forming a committee, or in any way assisting to carry out such a plan," the majority of one was nonplussed, and did not know what to make of the victory, and subsequently adopted the rival plan, leaving out the extension of the south aisle, to which the churchwardens and others are said to have reluctantly assented in the meantime, in the hope that the bishop will exercise his prerogative in ordering the carrying out of the plan in its integrity. Another correspondent gives a different account of the matter, stating objections to the plan adopted, the cost of which he says, was estimated at 800*l*., and alleging that the leading man of the party voting for it was himself dissatisfied.

Lynn.—It is still intended to erect a corn exchange, although it was reported that the intention had been given up. Steps are now to be taken to raise the requisite funds; and the space occupied by the Tuesday Market House is spoken of as the site to be appropriated to the purpose.

Luton.—The Wesleyans, intending to erect a new and more commodious chapel, the committee, says the *Bedford Times*, met on the 15th inst., to receive tenders for the erection of the building. The following are the amounts of the revised tenders:—

Cooper, London	£2,719
Smith, ditto	2,649
Higgs, ditto	2,569
Williams, Luton	2,345
Hazelgrove, ditto	2,559
Mills, Whittlesea	2,530
Twelvetrees, Biggleswade ..	2,495
Parker, Thrapston	2,157

Derby.—On Thursday in week before last the opening of the new district schools in connection with Christ Church, was celebrated

CAPITALS: DUCAL PALACE, VENICE.



The principal room of the schools is seventy-two feet in length, by thirty-six feet wide. The room is divided into two equal lengths of thirty-six feet each, by a curtain of painted cloth, woven for the purpose, and so fitted as to be drawn up when it is desirable to have the whole space thrown into one. In the end of the building next the church, light is admitted by a window, divided into twelve compartments by mullions and transoms. One side of the edifice is fitted with a range of windows, of the plain style prevalent in 14th century. On the same side there are two separate entrances, each of which consists of a doorway crowned by a Tudor arch. The roof is so constructed as to display the principal timbers.—Forsome time, says the *Derby Advertiser*, the gas company have been engaged in replacing the general service pipes by mains of greatly enlarged diameter in comparison with those previously laid down. To provide for the increased and still increasing consumption of gas, the company has been induced to fit up an additional gas-holder of colossal dimensions. The new holder has been fitted up on the most improved principle. The tank is ninety-three feet in diameter, and has a depth of twenty six feet; giving a means of containing upwards of a hundred and fifty thousand cubic feet of gas additional to that which the company had previously the means of storing. The excavation and building necessary for this tank have been executed by Mr. J. Wood.

Edinburgh.—“Steeple Jack,” in our last notice of him, was about to climb the spire of the General Assembly Hall on the Castle-hill

at Edinburgh, by order of the Woods and Forests, for the purpose of fixing a lightning conductor. Wright, with his usual alacrity, ascended the spire after throwing a leaden ball and tackling over the summit by means of a kite. The rope to which this weight was affixed was passed through a pulley at the capstone, and seating himself on a narrow board, the steeple climber soon drew himself to the top, a height of nearly 240 feet. The greatest precaution was exercised by “Jack,” lest the rope should sustain damage by coming in contact with the turrets and other projecting parts of the building. Having reached the summit he mounted the vane, stood upright, waved his cap, and huzzaed, with allowable self-glorification at having thus safely reached the pinnacle of his ambition; the crowd below repaying the cheer with compound interest. The lightning conductor has been fitted up, but the conducting rods have yet to be attached. “Jack” is to receive “a handsome remuneration” for the risk of his life; but the sum will not amount to a tithe of the expense which would have inevitably been incurred by the erection of extensive scaffolding, &c.

Glasgow.—The plan for the new post-office, Manhattan-buildings, has, it is said, been definitely fixed upon, although instructions have not yet been received for commencing the work. Two plans had been forwarded to Government,—one with a house for the post-master attached, as proposed by Government; and the other without this appendage, and of a more ornate description. The latter plan has been preferred.

CAPITALS: DUCAL PALACE, VENICE.

THESE are four of the capitals which crown the shafts of the columns to the lower arcade around the ducal palace at Venice, and although there are nearly forty in number they all vary in design: they vary in size also, but the shafts average about 2 feet 4 inches in diameter: they are for the most part exquisitely carved.

J. T. W.

ARTISANS' SCHOOLS OF DESIGN.

At a time when measures are in hand for forming schools for training men engaged in the productions of manual labour and art, in order to improve the character of British manufactures and decoration, it is thought that any hint that may be offered for promoting their success will, at least, be worthy of consideration.

It will be to the interest of the patrons of these schools to encourage original design as much as possible, by bestowing some testimonial of ability or professional assistance on those students who may give proofs of it in the drawings and works emanating from them. Where a proficiency in correct drawing has been already obtained, the means of developing this originality appear to be the following: First, *Altering or improving* the manner, character, and style of a composition, figures, patterns, or whatever might be the object. For it is now supposed the draughtsman, potter, or modeller, no longer requires to imitate another artist, but to become one himself. Too much copying, or rather that servile imi-

tation that is apt to attend it, as well as excess of mechanical labour, does but weaken original vigour. Secondly, Designing a group, a landscape, furniture, or the façade of a public edifice *from description*. Bacon's poetical idea of a villa;* the account of such a palace as a Contarini or a Gradenigo dwelt in; the rich combinations of a Claude or a Poussin, are fine studies. Here, too, is a beautiful subject for some young man aspiring to the fame of a Grinling Gibbons,—three figures in bas relief. They were two syrens, which, twining their fishy tails together, made a seat, on which was placed, sitting, a naked woman, her arms and the syrens' on each side mutually entwined. Thirdly, Drawing *from memory* any beautiful object, a cast, cartoon, or painted vase. By such means the inventive faculty may, perhaps, be brought out. Mere copying will not do this, nor will labour, unless well-directed and animated by the spirit of ambition. It is much to the advantage of the artists and of those who superintend them, to the manufacturers, and to the public, to endeavour after this originality.

FREDERICK LUSH.

TELEGRAPH FOR PREVENTION OF FIRE.

It is well known that, from the outbreak of a fire to the arrival of the engines, generally a considerable time elapses: upon some occasions the building is entirely gutted before they can reach the scene of action, and sometimes a life has been sacrificed to the devouring element. To prevent this in a great measure, I propose the following:—

To have at the main points of London an iron post (similar to the ones now belonging to the Telegraph Company, and having their name) fixed, the front to be hung on hinges, thus forming a door, and to be provided with a lock, the key of which to be kept by the policeman whose beat is past that post, the day-man handing it to the one going on duty at night, and *vice versa*. Upon a fire breaking out the policeman opens this door, or turning a handle connected with the wire in the street, a bell is rung at the principal fire-establishments: at the same time an arrow points to a number on a dial. The fire-man refers to a book made out for the purpose, and against the number pointed out, sees to what part of London it refers: for instance, if the number is 13, he sees "13, Charing-cross," and proceeds accordingly: thus in some instances an engine might be upon the spot in about ten minutes after the discovery of a fire. It would not require an immense number of these posts, for if the engine proceeds to the vicinity, supposing again, for instance, it is Charing-cross, a very few moments would suffice for them to reach John-street, Adelphi, or any of those courts in St. Martin's-lane, or even the Seven Dials; or supposing the bell is rung from the Eastern Counties Railway, once there the men would soon be at the fire, supposing it at Whitechapel, or Spitalfields, and such like crowded neighbourhoods: of course the policeman's beat would not extend to such a circuit, but the one who was on duty at the spot would soon find him upon proceeding to the post, and springing his rattle.

As a plan has been adopted at one of our large hospitals, where, by merely turning a handle, and causing a hand to point to numbers on a dial, various different messages are delivered, the time of operations, and the arrival of the surgeons, &c., &c., are made known all over the establishment, I do not see how the plea of impossibility can be made.

R. H. D.

ORNAMENTAL WALLING FROM MACHINE-MADE BRICKS.—A correspondent sends us a sketch of ornamental walling, the pillars and copings of which are moulded *from tile and pipe machines* in the same way as the pipes are moulded for drainage purposes. The first cost is, if anything, less than the ordinary plain brick walling, and the durability fully as great. Any form of pillar and moulding can be adopted suited to the architectural character that is required.

* Essays.

BRISTOL HIGH CROSS.



BRISTOL HIGH CROSS.

From the report of the architect employed, Mr. Norton, it seems that the architectural portion of the High Cross represented above, is completed, and only waits the statues, for which funds are needed. The following are the particulars of expenditure up to this time, showing the present deficiency in the funds:—

1851. RECEIPTS.	1851. DISBURSEMENTS.
To subscriptions £279 2 6	By Dighton, for model £21 4 6
Present deficiency to balance.. 170 18 9	Jewitt, for woodcut..... 8 7 0
	Messrs. Freeman, for granite 45 17 0
	Messrs. Wilcox, for fixing ditto, and forming foundations 60 12 0
	Printing and sundries..... 24 0 9
	John Thomas, for contract 300 0 0
£450 1 3	£450 1 3

As to the sculpture Mr. Thomas says,—"I would undertake to find Caen, Painswick, or Box-hill stone, model and execute four standing figures, 6 feet high, and four sitting figures, 4 feet 6 inches high, to fill the eight niches in the new cross at Bristol, fixed complete, for the sum of 480l. The likeness and costume to be taken from the best authorities."

"The standing figures are taken at 65l. each, the sitting figures at 55l. each."

THE MONTROSE PEEL MONUMENT.—The committee have approved of a design by Mr. Ritchie, of Edinburgh, sculptor, and agreed to his estimate for its execution, with some trifling alterations. The monument is to consist of a freestone statue, 9 feet high, with a pedestal about 12 feet high. The middle of the High-street is recommended as the site.

LIABILITY OF BUILDERS FOR INATTENTION TO BUILDING ACT.

SOUTHWARK COUNTY COURT.—Before Mr. G. CLIVE.—**EVANS v. DICKS.**—The plaintiff in this action, a cowkeeper, sought to recover of the defendant, a master builder of Cross-street, Blackfriars-road, the sum of 17l. 12s. for rent of a carpenters' shed. Defendant, through Mr. Russell, his attorney, pleaded a set-off of 15l. 7s. 9d. for building the said shed. At the first hearing of the cause evidence of a most conflicting nature was given by master carpenters as to the fair charges for the builder's work done in question; plaintiff's witnesses valuing it at one-fourth and one-half the demand, whilst defendant and his witnesses valued it at being too low.

The Judge intimated that this was one of those instances where the opinion of the judge could not but be valueless. It was a case which ought to be submitted to a jury of builders having no interest in either party. He must suggest that the parties choose an arbitrator, and agree to abide by the arbitrator's decision. Plaintiff and defendant, at the advice of their solicitors, acceded to this, and mutually appointed Mr. Bond, builder, of Lambeth, as referee. It then transpired that the shed, after being constructed by defendant at the plaintiff's express directions and design, was not built in accordance with the Buildings Act, and that the district surveyor made them pull it down again.

The plaintiff's solicitor contended that the referee should only value the work done as *once*, and not both the erections. He urged that his client, being ignorant of the provisions of the Buildings Act, had a right to suppose that the defendant, as a builder, was versed in all matters relative to his trade, and would not commit himself by infringing upon any statute or parochial regulations, which it was clear the defendant had in this case. He would put a test:—Suppose A. contracts or gives orders for a building, and B. erects it, knowing that its construction did not accord with the Buildings Act, and purposely builds to have a second job, would

it not be a manifest robbery upon A. to re-build at his own expense?

Bussell, for defendant, contended that when persons chose to be their own architects, they must be so on their own responsibility. The builder only had to work to orders. His client had received the orders as to size, site, and design of the shed, and merely acted as he was desired. The manifest robbery would be if he had to be at the cost of the rebuilding.

The JUDGE ruled that defendant was supposed to know his business, and that plaintiff was not liable for the cost of the second erection. The referee then valued the work done for once only, and adjudged the value at £l. 14s. Verdict for plaintiff less the referee's award.

LANDLORD AND TENANT—ILLEGAL DISTRESS.

TAIT v. RICHARDSON, in Clerkenwell County Court.

This was an action to recover compensation in damages for an alleged illegal and excessive distress. It appeared from the evidence of the plaintiff (who described himself as a chemist and a policeman in easy and independent circumstances on the Great Northern Railway), that he formerly occupied apartments of the defendant, who is a news-vender and stationer, from whence he (plaintiff) removed. The removal took place in open day, but the defendant followed the goods, which he distrained for nine weeks' rent. The witness denied that he was in any way indebted to the defendant, and with a view to substantiate his assertion, put in a receipt, without a date, for 2l. 10s., which sum both he and his wife swore positively was paid in liquidation of the defendant's claim.

The defendant deposed that, at the time the distress was made, the plaintiff was nine weeks' rent in arrear, and that the receipt for the 2l. 10s. was given for rent previously due. The receipt now produced was a duplicate acknowledgment for the payment of that sum, and had no reference whatever to the claim for which the distress was made.

His Honour observed that, although the defendant had acted illegally, it was manifest that a gross attempt had been made on the part of the plaintiff to swindle and defeat his landlord; for it was as clear as possible that the receipt, which he had endeavoured to palm off as having been given for the payment of the rent for which the defendant had distrained, had reference to a former transaction. He had no doubt whatever that the rent was justly due; but as the goods were not removed clandestinely, the landlord had no power to distraint upon them after their removal from his premises. As the plaintiff was therefore entitled to a verdict, he would award him half the amount sought to be recovered, viz., 4l. This was afterwards increased to 4l. 15s. to carry costs!

Books.

A Reply to Lord Wharncliffe's Letter on Draining. By HEWITT DAVIS. London: Ridgway; Simpkin and Marshall.

MR. HEWITT DAVIS, in this pamphlet, supports deep parallel draining in opposition to a mixed system set forth by Lord Wharncliffe. We are quite satisfied ourselves of the superiority of deep drainage, but we see no reason for acrimony on the part of those who are discussing the question.

The House on the Rock. By the Author of "The Dream Chintz," "A Trap to catch a Sunbeam," &c. London: W. N. Wright, Pall Mall. 1852.

SUCH a title as "The House on the Rock" in *THE BUILDER*, suggests instructions in concreting and piling, and in other ways obtaining a safe foundation. It belongs, however, in truth, to the last, or we would rather say the latest, of a series of charming little tales which have been produced in rapid succession by a gifted and right-minded young lady, the daughter of one well known and esteemed by the public. We are glad to find the previous tales have been sold by thousands, both here and in America, and we augur for "The House on the Rock" a similar popularity. It has a frontispiece and title-page designed by James Godwin, the latter more particularly excellent.

ARCHITECTURAL EXHIBITION.—We would remind our readers that all works intended for exhibition must be sent in on the 1st or 2nd of January. Money subscriptions are needed, and will doubtless be forthcoming.

Miscellaneous.

SUPPORT OF SCHOOLS OF DESIGN.—In a lecture on art recently delivered at the Athenian Institution, by Mr. Hammersley, the principal of the Manchester School of Design, the lecturer, after pointing out the great importance of schools of design to a manufacturing district, suggested the desirability of endeavouring to get a local rate levied of, say, a farthing in the pound, which would not be very oppressive to anybody. That was the way in which they supported schools of design in France and Prussia. It was a most fallacious thing to go on supporting them out of voluntary contributions: by that means they put their hands into the pockets of the generous, and allowed the stingy to go scot-free; and as the stingy formed about nine-tenths of the population, of course the generously disposed had to pay for them. But there was another means of supporting these institutions; and that was the surplus fund of the Great Exhibition. He most emphatically declared that that surplus stood a very fair chance of being thrown away. He understood it was to be appropriated to centralizing in London some gigantic scheme of what was called "the practical application of science to manufacture;" that was, it would be something equivalent to an accumulated series of museums. He contended that it was neither fair nor legitimate, nor likely to end in any good, to have the expenditure of the money centralized in any shape in London. What was the Great Exhibition in itself? Although it appeared to be a never-ending accumulation of all sorts of things from all sorts of places, still there was no doubt that all could be brought down to three distinctive heads, viz., raw material, machinery, and art. The Exhibition, therefore, resolved itself into being an embodiment of these three forces, which were to be found in every manufacturing town in Great Britain; and it did appear to him that the use of this surplus should be, not for the benefit of any one of these, but for the mutual benefit of all three, for they were all inseparably allied. He strongly recommended that an application should be made to Parliament in the next session (and he would assist them in drawing up the requisite documents), out of which he firmly believed they would get some pecuniary aid.

THE LEICESTER-SQUARE SOUP KITCHEN.

—This active and untiring charity proposes to supply substantial Christmas fare, in the form of presents, to no less than 10,000 poor families, especially of the industrious struggling class, who, in the midst of severe privations, are nevertheless too self-dependant to be hangers-on for parish relief. Such a charity well merits extended and general support, and we should earnestly hope that the managing committee will be fully enabled to carry out their benevolent design, the adequate fulfilment of which depends greatly on the influx of the means necessary, whether in money or in material. Those who are too late in contributing their mite for this special purpose, could not do better than still forward it for the general purposes of the charity, which does an immense deal of good, especially during this the most trying and inclement season of the year. Our only regret is that our own entreaties cannot come before our readers in sufficient time to "increase their store" of beef and plum-pudding, tea, coffee, and sugar, for the Christmas distribution itself.

MARKET FOR CHELMSFORD.—A proposal to obtain a market-place for Chelmsford, much needed, appears likely to be abandoned through want of agreement as to site, and the inhabitants seem to be quite willing to surround the statue of Chief-Justice Tindal with the swine which one of his chroniclers informs us he "delighted in so much;" and to obstruct its roadways with bullocks, to the annoyance and danger of those who are unfortunate enough to be necessitated to pass through them—the whole forming a back and fore-ground to the statue. The matter is of importance to the town, and it is to be hoped that something will shortly be done.

METROPOLITAN.—It is stated in the report of the Commissioners of Woods and Forests, just published, that the Commissioners have sold a piece of ground from Charlotte-street to Long-acre as a site for baths and wash-houses for St. Giles' and St. George's parishes. The parishes have paid 2,650l. for the site. A sum of 30,000l. has been appropriated by the Commissioners towards the expense of forming and completing a line of street between Southwark and Westminster-bridge. The Commissioners have lent 30,000l. to the Westminster Improvement Commissioners, to enable them to complete and open the new street from Westminster Abbey to Piccadilly. It appears that on the 31st of March last there were 1,013 men employed on the new Houses of Parliament—742 upon the works at the building, 163 at the workshops and on the Thames bank, and 108 at the other establishments. The Commissioners of Public Works are to advance 120,000l. for the new suspension-bridge and Thames embankment at Chelsea. It appears that the cost of taking down, removing, and reinstating the marble arch was little short of 11,000l. The state of the streets of London during the past week has been very creditable to the authorities. The contractors ought to be heavily fined.

NEW ROOFING.—The patent recently enrolled for Mr. C. Cowper refers to a tile or plate of thin sheet iron, coated with an enamel protecting the metal from the weather. The tiles may be of any suitable form. The body of the tile is cut or stamped of the proper shape. It also has a raised head formed round the edge, to prevent the water running off the tile, except at the lower end, where it drips on to the next. Two holes are also punched for fixing the tiles to the woodwork. The patentee sometimes rivets a hook so as to project on the under side of the tile: the stem of the hook is rivetted through a hole in the metal plate before it is enamelled, and obviates the necessity of an India rubber washer under the head of the nail. The coating is applied in two separate compounds, the one as the body and the other as a glaze. The body consists of sand or silica. The glaze is applied in fine power, dusted on the wet coating. The powder adhering to the moist coating causes it to set in some measure, when the tile is deposited in a drying-room, previous to baking or firing. The tiles may be rendered ornamental by the application of colouring matters, which are burnt in.

THE GREEN PARK.—I am glad to see you are agitating for an opening from Constitution-hill into the Green-park, near the angle of Buckingham-palace. There is a wicket at this point already, but it is kept closed, for no reason that I can see except to save the keepers a few minutes' walk morning and evening. A passage this way would be a great convenience to the inhabitants of Westminster and Piccadilly. The Green-park can only be entered now (from the southward) at its extreme ends; and in order to pass from the Birdcage-walk to May-fair, a considerable detour must be made.—P.

TENDERS FOR IRON.—A correspondent, "R. W.," with reference to "A. B.'s" note as to price named for lamp-posts, Mile-end, asserts that a reasonable profit may be made, even on the low sum named. As "A. B." represents the opinions of some leading firms, we must conclude there are secrets in the iron trade worth knowing.

CORK CITY HALL COMPETITION.—The committee have received forty-six plans from forty-three persons. It has been suggested in the corporation that they should be referred to a London architect for examination. One of our correspondents says this is the more desirable as one of the gentlemen competing has a relative on the committee.

THE LATE MR. J. M. W. TURNER, R.A.—By the death of Mr. Turner, the world has lost one of the greatest landscape painters that ever lived. His mind and character will afford curious matter for analysis to psychological writers. He has left a large fortune behind him, and will be buried in St. Paul's Cathedral.

THE HOUSES OF SEVILLE.—The number of excellent houses is immense, though few of the façades are remarkable for their architecture; but the pride of the Sevillians is their patiz. A hundred thousand columns are said to decorate the courts of Seville, and I cannot conceive the number exaggerated. I was never weary with looking at them, with their marble columns and pavements, the pretty fountains and flowers in vases generally so fresh and so beautiful. In searching for private collections of paintings, I saw the interior of many houses belonging to nobles, members of the cortes, employés, and tradespeople, and they were always scrupulously clean and neat, and often handsomely furnished. The windows are invariably covered with iron lattices, which give a Moorish appearance to the houses. The walls are generally white-washed, but almost always quite fresh, and without a spot.—*Hoskins's Spain as it is.*

FIRE VARNISH—A NEW INVENTION.—The Paris correspondent of the *St. Louis Republican*, says,—"An important discovery is the fire varnish, recently brought out by a Spaniard, Don Jose Gueseda. It was first tried at Matanzas in the presence of the governor and city authorities, and succeeded to the admiration of everybody. It has since been tried at Madrid. Five small frame houses, covered with tar and turpentine, were erected in an open square. Two of these houses were covered with the varnish and the others were not. The latter were reduced to ashes almost as soon as they were set on fire, whereas the former, in spite of the tar and turpentine, remained perfectly uninjured to the end of the trial, which lasted two hours. The trial was the more severe, as the five houses were close together, and all of them were on fire in the inside, but the flames did not break forth at all from the varnished houses; besides this, in the midst of the conflagration, two gallons of some strong essence were thrown upon the varnished houses and they were immediately entirely enveloped in flames; but when the liquid was exhausted, the walls appeared perfectly intact as before."

INTELLECT DEVELOPED BY LABOUR.—Are labour and self-culture irreconcilable to each other? In the first place we have seen that a man, in the midst of labour, may and ought to give himself to the most important improvements, that he may cultivate his sense of justice, his benevolence, and the desire of perfection. Toil is the school for these high principles; and we have here a strong presumption that, in other respects, it does not necessarily blight the soul. Next we have seen that the most fruitful sources of truth and wisdom are not books, precious as they are, but experience and observation; and these belong to all conditions. It is another important consideration, that almost all labour demands intellectual activity, and is best carried on by those who invigorate their minds; so that the two interests, toil and self-culture, are friends to each other. It is mind, after all, which does the work of the world; so that the more there is of mind, the more work will be accomplished. A man, in proportion as he is intelligent, makes a given force accomplish a greater task, makes skill take the place of muscles, and with less labour gives a better product. Make men intelligent and they become inventive; they find shorter processes. Their knowledge of nature helps them to turn its laws to account, to understand the substances on which they work, and to seize on useful hints, which experience continually furnishes. It is among workmen that some of the most useful machines have been contrived. Spread education, and, as the history of this country shows, there will be no bounds to useful invention.—*Channing.*

HOUSES IN THE WEST INDIES.—As Jamaica houses are commonly built on one principle, I will briefly describe it. The furnished part of the house is all on the same level, forming what we should call the first-floor, the whole of the ground-floor being devoted to store-rooms and cellars. An arched passage open at each end leads through the house, beneath the dwelling apartments, from the road in front to the yard behind. A flight

of stone steps, with iron balustrades, on which run beautiful twining and creeping plants, such as the lovely crimson quamoelid, the wax-like hoyá cornosa, and others, leads the visitor up to the front-door; and he is immediately ushered into a spacious hall, of the form of a cross, extending the whole length and breadth of the house. This large hall is characteristic of all Jamaica houses: it forms the principal sitting-room; and, from its shape, admits the cooling breeze to sweep through it, whenever there is a breath of air. The two square areas formed by one side of the cross are filled by bed-rooms; but with these exceptions, the whole of the sides and ends of the hall are either occupied by windows, or open, and furnished with balconies.—*Spectator.*

NONCONFORMIST CLUBHOUSE IN LONDON.—The want of some place of meeting for specific objects apart from formal convocation, has induced the more active members of the Nonconformist body to take measures for the erection of a clubhouse. The front is to be arranged on the principle of a reputable clubhouse, such as the Reform or the Gresham—containing dining-rooms, reading-rooms, and rooms for extempore committees or private social parties. A second side is to be laid out in suites of chambers or offices for Nonconformist societies. At the back is to be a public hall, with seats for 1,500 or 2,000 persons, to be let out for public meetings during the week, and to be used on Sunday as a place of religious worship for the special accommodation of strangers in London. A capital of between 50,000*l.* and 60,000*l.* would be required, which it is proposed to raise in shares.

LAMP-LIGHTING BY ELECTRICITY.—A correspondent, "W. N.," not aware, apparently, that we long since made the same suggestion, reiterates the idea that the street-lamps of towns might be lit simultaneously by the electric current. The wire, as he remarks, in passing along would of course require to be supported by isolators where interrupted in passing each burner. In speaking of this idea some years ago, we suggested that, not only the lighting but the extinction of the jets might be simultaneously effected by the electric current, or at least, by electro-magnetism, one semi-rotation of the magnet shutting off the gas, and another letting it on; and, moreover, that a light sweeping apparatus, or slip of brush-work, might be made to rotate, one inside and another out, on the face of lamp glasses of a globular form, by the continued rotation of the same magnets, so as to clean the lamps, thus altogether dispensing with the heavy expense of lamp lighting and cleaning. The invention of the magnetic telegraph seems to prove these three latter operations, cleaning, and letting on and off the gas, to be possible with even less expense than ever, while the lighting could still be effected by the attachment of a battery, as so clearly instanced by the firing of gunpowder even across the British Channel. We suspect, however, that the poor lamp-lighter would rather be excused from the necessity of availing himself of the "ease and benefit," which we and our correspondent have thus in store for him.

TO INCREASE THE ILLUMINATING POWER OF GAS.—The paragraph on this subject, signed "C. C." (p. 776, ante), has excited a singular stir in various quarters. We shall be glad to hear whether or not the writer desires his name to be made known.

THE LATE FIRE AT MESSRS. COLLARD'S.—We have received some contradictory statements of circumstances connected with the building which was destroyed, but do not think it necessary to publish them. We have no evidence to justify the objection made by one correspondent to part of the construction.

[ADVERTISEMENT.]

TO BUILDERS.

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Carter	£1,057	0	0
Higgs and Case	1,044	0	0
Wigg	1,032	0	0
Hill	1,028	0	0
James	996	0	0
Greenwood	870	0	0
Cott	885	0	0
Wood and Sons	843	0	0
Webb	800	0	0
Dark and Porter	783	9	0

For erecting a new Wesleyan chapel at Luton. Mr. W. W. Pocock, architect.

The first column is for the designs in full.
The second if the ceiling be plain instead of panelled.
The third if the front be Portland cement instead of Caen stone.

	£	s.	d.
J. Cooper, London	2,880	2,883	2,719
T. Haseelgrove, Luton	2,979	2,915	2,638
W. Twelvetrees, Biggleswade	2,917	2,885	2,499
Smith, London	2,885	2,797	2,640
E. O. Williams, Luton	2,850	2,785	2,645
W. Higgs, London	2,847	2,782	2,689
C. B. Mills, Whitlessen	2,689	2,632	2,640
W. Parker, Thrapston (accepted)	2,498	2,417	2,157

TO CORRESPONDENTS.

"Scrutator" (the problem known as the *Possidonium* in the fifth in the first book of Euclid), "Vigilant," "E. W. G." (will appear), "P. G." (some of the district surveyors do not take fees for greenhouses. They could enforce payment), "A. V.," "C. E.," "S. O.," jun. (shall appear), "J. W. T." (thanks), "W. T. B." (declined with excuse), "A Subscriber," "A. B." (it would depend entirely on the terms of the agreement), "B. J. W." (there are several stains used. Stevens's answers very well), "T. J. G." "H. R." (we have already expressed an opinion), "E. P." "W. A. P." "J. E.," "J. P." "H. R." "A. & C." "G. H." "J. W." "J. R." "T. F. B." "J. T. L." "W. B. C." "G. E. G." "J. C.," "F. & B." "Clericus."
"Books and Addresses."—We have not time to point out books or find addresses.

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